In order to develop a corporate memory system it is necessary to introduce new technologies into the organization and teach the staff how to use existing technologies more effectively. More than traditional training is required: learning in a technological environment is becoming more and more important as traditional training turns out to be expensive and, often, transitory. Organizations are beginning to look at various ways to solve the problem of introducing technology into the workplace. Our goal must continue to be to integrate information whenever possible and make it accessible to those who need it.  

Traditional training

Too often, when new technologies are introduced the workflow is changed to meet the requirements of the software. A software package is identified, purchased and introduced into the organization. Trainers are then hired to teach the software application. In the traditional training environment, a trainer who is familiar with the new technology is brought in to teach staff how it can be used. However, the trainer is not usually

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21 Barry Wheeler contributed many of the ideas in this chapter. Since the first edition of this book in 1997, I have had the privilege of working with Noel Dickover, who has taught me much about how a performance-centered learning environment can be created. See http://www.communibuild.com/
familiar with the work situation and generally leaves its specific application up to the students. There is also often a time lapse – sometimes very long – between training and the actual implementation of a technology.

The introduction of new technology enables changes in the work process, so that much of what has already been learned becomes obsolete once the technology is fully implemented. Users are normally left on their own, with generic documentation and access to a help desk, and often make use of only a small percentage of the capabilities of the technology. However, there is a better way to introduce technology to an organization.

Learning

The trouble with traditional training is that it does not enable the user to learn about the product over time, and to take control of the technology. The technology, not the user, determines how it is used. The power of modern technology, however, is only fully unleashed when the user masters it and uses it in new and unexpected ways. Learning how to use technology must be based on an understanding that people learn in a context over time.

Learning is a student’s activity; training and education are often done from the viewpoint of the instructor. An organization needs to become a learning organization – one in which the acquisition of new skills and knowledge is a normal part of life. Learning, like any other activity, takes time and commitment, and in this chapter we will discuss how an organization can develop the type of learning environment that is necessary to implement a corporate memory system.

Implementing a corporate memory management system with adequate computer search and retrieval technologies requires significant changes in work processes and thought processes. The workflow of the organization will change over time. Such changes should not be required by the software but should arise out of new possibilities for improved customer service.

In other words, information systems should support business activities, not create new work. Staff will need to learn new ways of doing business. Learning is best done in context: ‘just-in-time learning’ that is available when and where a new skill is needed. Much more is needed than simply training to use a tool.

Computer technology is used by workers at all levels of an organization and frequently changes the way in which tasks are done. In addition,
automating certain activities may hide work functions and make it difficult for the worker to see all the activities that take place.

The pace of change adds to the problem: systems may be introduced and replaced within a single working year. No sooner is one system learned than it is replaced by one using different commands to perform more complex tasks. This means that most training programs will be inadequate. Workers will need sufficient expertise and the flexibility to respond and adapt to the required changes of complex new environments. Traditional training and education will continue to have a role, but should be integrated into the learning environment that encourages the staff to assimilate new skills and techniques at the most appropriate time. Learning cannot be optional: if a corporate memory system is to work individual staff members cannot be allowed to decide whether or not to use it. Information appropriate for the corporate memory belongs to the organization and needs to be managed as a corporate resource.

Individual staff members will need to make decisions that determine the value of documents. They will need to identify the type of document and appropriate keywords (subject terms or descriptors) to describe it. Such decisions can be simplified by providing each staff member with clearly defined choices that can be made easily and quickly. Only then can privacy be protected while the corporate memory is used to its fullest extent. In the end, staff must take responsibility for what goes into the corporate memory and provide the appropriate description. Staff will also learn how to use the power of the corporate memory to improve their work. Over time, the value of the corporate memory system will grow as the information contained therein expands.

**Minimize training and support**

The successful introduction of technology that encourages the improvement of work processes requires the development of systems that minimize the need for training and support. A system should use terms and techniques already used by staff members, and should be designed from the point of view of those who use it. Therefore, members of the work team need to be involved in system development. There are ways to minimize the need for training and support:

1. Use metaphors: Choosing the proper metaphor (one that makes sense to the staff member in a particular situation) means that staff do not need to learn a new language in order to use the technology. Graphic
user interfaces enable systems to represent concepts and structures symbolically, with representations familiar to the users.

2. Rapid prototyping: Current tools allow the development of initial program models and prototypes that approximate closely to the desired user interface. These can then be used as starting points for system development. Involving users directly in their design greatly reduces the amount of training and support subsequently required.

3. Performance support systems: Integrated computer technology provides, on demand, a combination of hypertext help systems and multimedia computer-assisted learning sequences to minimize training.

The information specialist

Experience shows that the best teacher is a peer.22 Thus, the most effective way to promote the efficient implementation of technology is where one member of the workgroup teaches the others.

• The ultimate integration of work, technology and learning, however, will be in teams comprising both task and information technology specialists. Such specialists have knowledge of the work being done and also of how to implement technology in the workplace. The term ‘information specialist’ is used to designate the person responsible for effective implementation of the technology. This responsibility could be shared between a number of staff, and time must be specifically allocated to the job: a new task cannot be added to existing responsibilities. The job description of an information specialist might include:

• participating in prototype and system development. Someone is needed at the workgroup level to develop and implement individualized systems for searching and learning, including work screens, task scripts and other custom modifications that are appropriate for a particular workgroup;

• being responsible for obtaining, installing and configuring support systems and tailoring them to meet the needs of the workgroup;

• providing help desk services for specific tasks as needed.

The information specialist provides training, continuing education and support services at the workgroup level. This extends the current ‘train

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22 This statement comes from many years as a teacher and educator. It is also supported by educational research which shows that the most effective learning situation is one in which learners and teachers participate together.
the trainer’ approach that maximizes the use of instructional resources while distributing expertise and support to each workgroup. A number of other steps can be taken to enable staff to learn how to use the system effectively.

**Integrated learning**

There is always a trade-off between instructional power and instructional efficiency. A personal instructor, available whenever needed, is always the best way to learn. In order for learning to take place, however, it requires a comfortable atmosphere where staff can play with a new system to learn how it works. Efficiency has traditionally been achieved through large lectures and in uniform learning experiences, but it is clearly impossible to imagine and teach the sequences for every imaginable task. As a result, mass training is inefficient if there are different learning styles and cognitive starting points for each member of the workforce. What appears to be efficient often ends up alienating staff from new technology, which is seen as one more burden to bear rather than a tool to liberate them from drudgery.

Learning, in contrast, takes place where and when it is needed. It is the result of an interaction between a student and a situation. A teacher is important in setting up and structuring a situation in which learning can take place, and in encouraging co-workers to teach each other. Learning is a personal activity and proceeds at various speeds for various people and at various speeds for the same person at different times. An ongoing learning environment is important and is essential for implementing a corporate memory system, whose power comes from the staff having new resources available to improve their work. Thus, the integration of learning with the organization’s workflow is essential, and should continue as the corporate memory system develops and changes the workflow.

**Tools**

The tools to develop a system that integrates learning and support include:

1. Hypertext learning systems: These allow a user to follow links from a known starting point to a specific text, image, audio or video sequence. The starting point may be a table of contents provided by the help system, a wizard invoked at the start of a complex process, or a request
for information after a problem has occurred. The response is directly related to the work context of the request and is delivered directly to the workstation when needed.

2. Instructional delivery systems: These currently include four components:
   • help sequences, which are usually straightforward text sequences, formatted for comprehension and retention to provide specific information upon request. Windows environments provide a hypertext help system that may be modified and extended by the information specialist to meet specific needs;
   • instructional sequences that present simulated tasks and interactive sequences. They may include formatted text, images and work screen sequences, audio and/or full-motion video;
   • wizards that guide a worker through the actual task, step by step. With this help the worker can complete part of an actual job and, in the process, learn how the system operates;
   • hypertext materials that can be mounted on a user’s workstation as part of the initial program load and available whenever the program is in use, or may be mounted on a networked server made available to the worker upon demand.

Learning needs to be seen as an ongoing part of the work process, rather than something done in isolation. Learning is internalized when the user wants to know and use a process, not beforehand. When a new procedure or concept is introduced, it needs to be repeated in the work situation and support needs to be given within the work context, for it to be used effectively and thoroughly learned. For this reason, learning is best done when information professionals are involved in the reengineering of the work process that implements the effective use of the new technology.