Chapter 8

E-learning and Use of Technology in Training

Introduction

- Technology is having a major impact on the delivery of training programs.
- Using technology for training requires collaboration among the areas of:
  - Training
  - Information technology
  - Top management

Use of New Technology in Training
(1 of 3)

- 24 percent of companies have a separate technology-based training budget.
- 18 percent of companies have full-time trainers who are paid from the information technology department’s budget.
- The most frequently used technology in training is the Internet/intranet/extranet (54 percent of companies).

Use of New Technology in Training
(2 of 3)

- Training delivered by the computer:
  - 60 percent is not instructor-led and is done through self-paced Web courses.
  - 32 percent uses CD-ROM/DVD/diskettes.
- 34 percent of online learning follows the classroom learning model, i.e., connects trainees with an instructor or other students.

Use of New Technology in Training
(3 of 3)

- 80 percent of companies who use e-learning are creating the content of these programs internally.
- Of those companies who use e-learning:
  - 56 percent offer it to all employees.
  - 45 percent offer it to select groups of employees.
  - 26 percent offer it to customers.

Technologies’ Influence on Training and Learning:

- New technologies have made it possible to:
  - Reduce the costs associated with delivering training.
  - Increase the effectiveness of the learning environment.
  - Help training contribute to business goals.
- New technologies include:
  - Multimedia
  - Distance learning
  - Expert systems
  - Electronic support systems
  - Training software applications.
Technology has made several benefits possible: (1 of 2)

- Employees can gain control over when and where they receive training
- Employees can access knowledge and expert systems on an as-needed basis
- Employees can choose the type of media (print, sound, video) they want to use in a training program

Technology has made several benefits possible: (2 of 2)

- Course enrollment, testing, and training records can be handled electronically, reducing the paperwork and time needed for administrative activities
- Employees’ accomplishments in training in progress can be monitored
- Traditional training methods can be delivered to trainees rather than requiring them to come to a central training location

Technology allows digital collaboration to occur: (1 of 2)

- Digital collaboration - the use of technology to enhance and extend employees’ abilities to work together regardless of their geographic proximity

Digital Collaboration (2 of 2)

- Digital collaboration can be:
  - Synchronous – trainers, experts, and learners interacting with each other live and in real time; just like face-to-face classroom instruction
  - Asynchronous – non-real-time interactions; learners can access information resources when they desire them

Impact of new technology on the learning environment:

- Prior to the introduction of new technology:
  - Learning was a very linear process
  - Instructors presented information to the learners
  - Practice and applications occurred after instruction
  - Instructor/trainer and learner were only ones involved
  - Communication was one way – from instructor to trainee
  - Trainee played passive role in learning

Classroom Learning Environment

- Trainer / Instructor
  - Delivery
  - Content
- Learner
- Learner
- Learner
- Experts
  - Resource Materials
Impact of new technology on the learning environment: (continued)

- Technology has allowed learning to become a more dynamic process
  - The learning environment has expanded to include greater interaction between learners and the training content
  - There is greater interaction between learners and the instructor
  - Instruction is primarily delivered to the learners online using the internet
  - Instructor is more of a coach and resource person

Learning occurs through:
- communicating with other learners
- working on virtual team projects
- exchanging ideas
- interacting with experts
- discovering ideas and applications using hyperlinks
- Experts and resource materials are part of the learning environment

Technological Learning Environment

- Delivery Mechanism
- Content
- Trainer / Instructor
- Learner
- Learner
- Learner
- Experts
- Resource Materials
- Websites

Blended Learning Environment

- Online Learning
- Trainer / Instructor
- Delivery
- Content
- Learner
- Learner
- Learner
- Experts
- Resource Materials
- Websites

Multimedia Training

- Multimedia training combines audiovisual training methods with computer-based training
- These programs integrate text, graphics, animation, audio, and video
- Because this training is computer-based, the trainee can interact with the content
- Can be delivered using interactive video, the Internet or intranets

Advantages and Disadvantages of Multimedia Training:

Advantages
- Self-paced
- Interactive
- Consistency of content
- Consistency of delivery
- Unlimited geographic accessibility
- Immediate feedback
- Built-in guidance system
- Appeals to multiple senses
- Can test and certify mastery
- Privacy

Disadvantages
- Expensive to develop
- Ineffective for certain training content
- Trainee anxiety with using technology
- Difficult to quickly update
- Lack of agreement on effectiveness
Computer-Based Training

Computer-based training (CBT) is an interactive training experience in which:
- the computer provides the learning stimulus,
- the trainee must respond, and
- the computer analyzes the responses and provides feedback to the trainee.

CD-ROM, DVD, Laser Disc
Interactive Video
The Internet, Web-Based Training, and E-Learning
Virtual Reality

Levels of internet-based training:

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Characteristics of E-Learning

- Content
  - Text
  - Video
  - Graphics
  - Sound
- Collaboration and Sharing
  - Communities of Practice
  - Peers
  - Experts
  - Mentors and Advisors
- Learner Control
  - Practice
  - Pacing
  - Feedback
  - Accessibility
- Delivery
  - Internet / Intranet
  - Web
  - Distance Learning
  - CD-ROM
- Administration
  - Enrollment
  - Monitoring
  - Progress Assessment
- Diversity
  - Internal / Internal
  - Risk
  - Distance Learning
  - CD-ROM

Advantages of E-learning (1 of 3)

- It supports company’s business strategy and objectives
- It is accessible at any time and any place
- The audience can include employees and managers as well as vendors, customers, and clients
- Training can be delivered to geographically dispersed employees

Advantages of E-learning (2 of 3)

- Training can be delivered faster and to more employees in a shorter period of time
- Updating is easy
- Practice, feedback, objectives, assessment, and other positive features of a learning environment can be built into the program
Advantages of E-learning (3 of 3)

- Learning is enhanced through use of multiple media and trainee interaction
- Paperwork related to training management can be eliminated
- It can link learners to other content, experts, and peers

Factors Limiting the Use of E-Learning

- Cost
- Lack of motivation of employees to learn online
- Lack of management buy-in
- Lack of employee intranet access
- Lack of proof concerning return on investment
- Lack of high-quality content

Intelligent Tutoring Systems

- *Intelligent tutoring systems (ITS)* - instructional systems using artificial intelligence
- There are three types of ITS:
  - tutoring
  - coaching
  - empowering environments
- Tutoring is a structured attempt to increase trainee understanding of a content domain

Components of intelligent tutoring systems:

- **Domain Expert**
  - Provides information about how to perform the task
- **Trainee Model**
  - Provides information about student's knowledge
- **Training Session Manager**
  - Interprets trainee's actions and reports the results or provides coaching
- **Trainee Scenario Generator**
  - Determines difficulty and order in which problems are presented to trainee
- **User Interface**
  - Enables trainee to interact with the system

Characteristics of Intelligent Tutoring Systems (ITS):

- ITS has the ability to match instruction to individual student needs
- ITS can communicate and respond to the student
- ITS can model the trainee’s learning process
- ITS can decide, on the basis of a trainee’s previous performance, what information to provide
- ITS can make decisions about the trainee’s level of understanding
- ITS can complete a self-assessment resulting in a modification of its teaching process

Distance Learning

- Distance learning is used by geographically dispersed companies to provide information about new products, policies, procedures, and skills training and expert lectures to field locations
- Features two-way communications between people
- Involves two types of technology:
  - teleconferencing
  - individualized, personal-computer-based training
Technologies for Training Support

- **Expert Systems**
- **Groupware**
- **Electronic Performance Support Systems (EPSS)**

**Conditions When Training Support Technologies Are Most Needed:**

- Performance of task is infrequent
- The task is lengthy, difficult, and information intensive
- The consequences of error are damaging
- Performance relies on knowledge, procedures, or approaches that frequently change
- There is high employee turnover
- Little time is available for training, or resources are few
- Employees are expected to take full responsibility for learning and performing tasks

**Training Support Technologies: Expert Systems (1 of 2)**

- **Expert systems** - technology that organizes and applies the knowledge of human experts to specific problems
- Used as a support tool that employees refer to when they have problems or decisions they feel exceed their current knowledge and skills


Expert systems have three elements:

1. A knowledge base that contains facts, figures, and rules about a specific subject
2. A decision making capability that draws conclusions from those facts and figures to solve problems and answer questions
3. A user interface that gathers and gives information to the person using the system

**Training Support Technologies: Groupware (1 of 2)**

- **Groupware** (electronic meeting software) - a special type of software application that enables multiple users to track, share, and organize information, and to work on the same document simultaneously
- Companies have been using groupware to improve business processes, to improve meeting effectiveness, as well as to identify and share knowledge in the organization

**Training Support Technologies: Groupware (2 of 2)**

- A groupware system combines such elements as:
  - electronic mail
  - document management
  - electronic bulletin board
- A popular brand of groupware is *Lotus Notes*
An electronic performance support system (EPSS) is an electronic infrastructure that:
- captures, stores, and distributes individual and corporate knowledge assets throughout an organization, to
- enable individuals to achieve required levels of performance in the fastest possible time and with a minimum of support from other people.

Use of new technology training methods should be considered under certain conditions:

1. Sufficient budget has been provided to develop and use new technology
2. Trainees are geographically dispersed and travel costs related to training are high
3. Trainees are comfortable using technology including:
   - the web
   - personal computers
   - CD-ROMs
4. The increased use of technology is part of the company's business strategy
5. Employees have a difficult time attending scheduled training programs
6. Current training methods allow limited time for practice, feedback, and assessment