Chapter 11
Technology Training for Users

A GUIDE TO
COMPUTER USER SUPPORT
FOR HELP DESK AND SUPPORT SPECIALISTS
SIXTH EDITION BY FRED BEISSE

Chapter Objectives

- Goals of training activities
- Steps in the training process
- How to plan a training session
- How to prepare a training session
- How to present a training module
- How to progress toward higher-quality training

What Is Training?

- **Training**: a teaching and learning process that aims to build skills that are immediately useful to trainees
  - Related to, but different from, education
  - Skills may be long-term
  - Some tasks may be performed only once or a few times

Compared with Education

- **Education**: provides conceptual understanding and builds long-term thinking skills
  - Builds basic vocabulary (concepts)
  - Fosters an understanding of general principles
  - Intended to have long-lasting effects

Characteristics of Training

- Focuses on performing activities and building expertise
- Is evaluated by measuring a trainee's ability to perform specific tasks
- Skills can be long- or short-term

The Training Process

- The four Ps of end-user training:
  - Step 1: Plan the training
    - Gather information about training objectives
  - Step 2: Prepare the training
    - Gather and develop materials
    - Organize materials into modules
  - Step 3: Present the training
    - Deliver training modules
  - Step 4: Progress toward higher-quality user training
    - Evaluate and improve training

Step 1: Plan the Training

- Determine:
  - Who the trainees are
  - The background the trainees bring to the training
  - What the trainees already know
  - What the trainees need to know or be able to do as a result of training
  - The skill level trainees need to achieve
  - Specific learning or performance objectives

Determine the Trainees' Backgrounds

- Skill level
  - Novices
  - Intermediate users
  - Advanced skills and expertise
- Age
  - Youth
  - Adults
  - Seniors
- Motivation level
  - Required attendance
  - Self-selected attendance

Determine
What Trainees Already Know

- Measure prior knowledge with:
  - Trainee interviews
  - Supervisor interviews
  - Pretests
- Trainers can adjust for differences in prior knowledge with:
  - Background and supplementary materials
  - Introductory sessions

Appropriate Level of Training Materials

- Alternative levels of training:
  - Teach to the "average" of trainees' knowledge level
  - Target training somewhat below the average
- Use demonstrations and examples trainees relate to
- Be aware of trainee diversity
  - Cultural experiences
  - Languages
    - Avoid English-language idioms and jargon

Determine the Trainees' Content Needs

- Discover the content the training needs to cover from:
  - Employee position descriptions
  - Interviews with:
    - Trainees
    - Supervisors

Determine the Skill Level Trainees Need

1. Concepts level: an ability to use basic vocabulary

   Lowest Level

2. Understanding level: an ability to explain concepts

3. Skills level: an ability to perform a basic task

4. Expertise level: an ability to perform a task effectively and efficiently

   Highest Level

Define the Training Objectives

- **Learning objective**: a statement of the knowledge and skills trainees need to learn
- **Performance objective**: a statement of what a trainee needs to be able to do at the end of a training session
- Training objectives:
  - Should be measurable
  - Usually start with an action verb: *plan*, *describe*, *explain*, *perform*, *evaluate*, *analyze*, *repair*
    - These are more measurable than "understand" or "know"

Step 2: Prepare for the Training

- Specify topics to cover
  - Use brainstorming to develop list of potential topics
  - Then narrow the list
- Organize the topics
  - Major topics
  - Subtopics
- Select an effective training format
  - How will the training be presented?
  - How do trainees learn most effectively?

Specify Which Topics Will Be Covered

- Sources of topics:
  - The trainer's knowledge of what is important
  - Training objectives (from Step 1)
  - Topics covered by other trainers and writers
  - Examples from successful training materials
- Tip: Decide what *not* to cover, too
- Avoid:
  - Copying training materials verbatim
  - Covering too much information
    - Tip: Effective trainers usually cover a little less material, rather than too much

Organize the Topics

- Progress from lower-level skills to higher-level skills
  - First, introduce concepts and vocabulary terms
  - Then provide explanations to build understanding
  - Next, focus on building basic skills and abilities
  - Finally, build expertise through exercises and experience

Training Session Template

1. Introduce the trainer
2. Review previous topics, if applicable
3. Introduce the new topic
4. Establish motivation for the new material
5. Present the new material
   - Concepts
   - Explanations
6. Deliver training activities
   - Teach basic skills and abilities
   - Build skills and develop expertise
7. Summarize and review the main points
8. Describe follow-up activities and resources
9. Obtain evaluation and feedback

Select an Effective Training Format

- Classes (15–25 trainees)
- Small groups (12 or fewer trainees)
- One-to-one training
- Self-guided tutorials

Classes (15–25 Trainees)

- Advantages:
  - Cost-effective
  - A single trainer for many trainees
  - Potential use of a special training facility
  - Takes advantage of **social learning**, which is knowledge or skills learned during interactions among trainees

- Disadvantages:
  - Some trainees are reluctant to ask for help in a large group
  - Harder to accommodate different learning paces
  - Some trainees are shy about social learning situations

Small Groups (12 or Fewer Trainees)

- Advantages:
  - Greater availability of individual assistance
  - More trainee-to-trainee interaction and social learning

- Disadvantage:
  - Lower number of trainees per trainer can mean higher cost per trainee

One-to-One Training

- Advantages:
  - Trainer can closely monitor the learning curve
  - Availability of immediate help and feedback
- Disadvantages:
  - Very high cost
  - No social learning among peers
- One-to-one training variation: **on-the-job training**, in which a work colleague or supervisor plays the role of coach and mentor to a trainee

Self-Guided Tutorials

- Advantages:
  - No additional trainer cost after materials have been developed
  - The trainee sets individualized pace of learning
- Disadvantage:
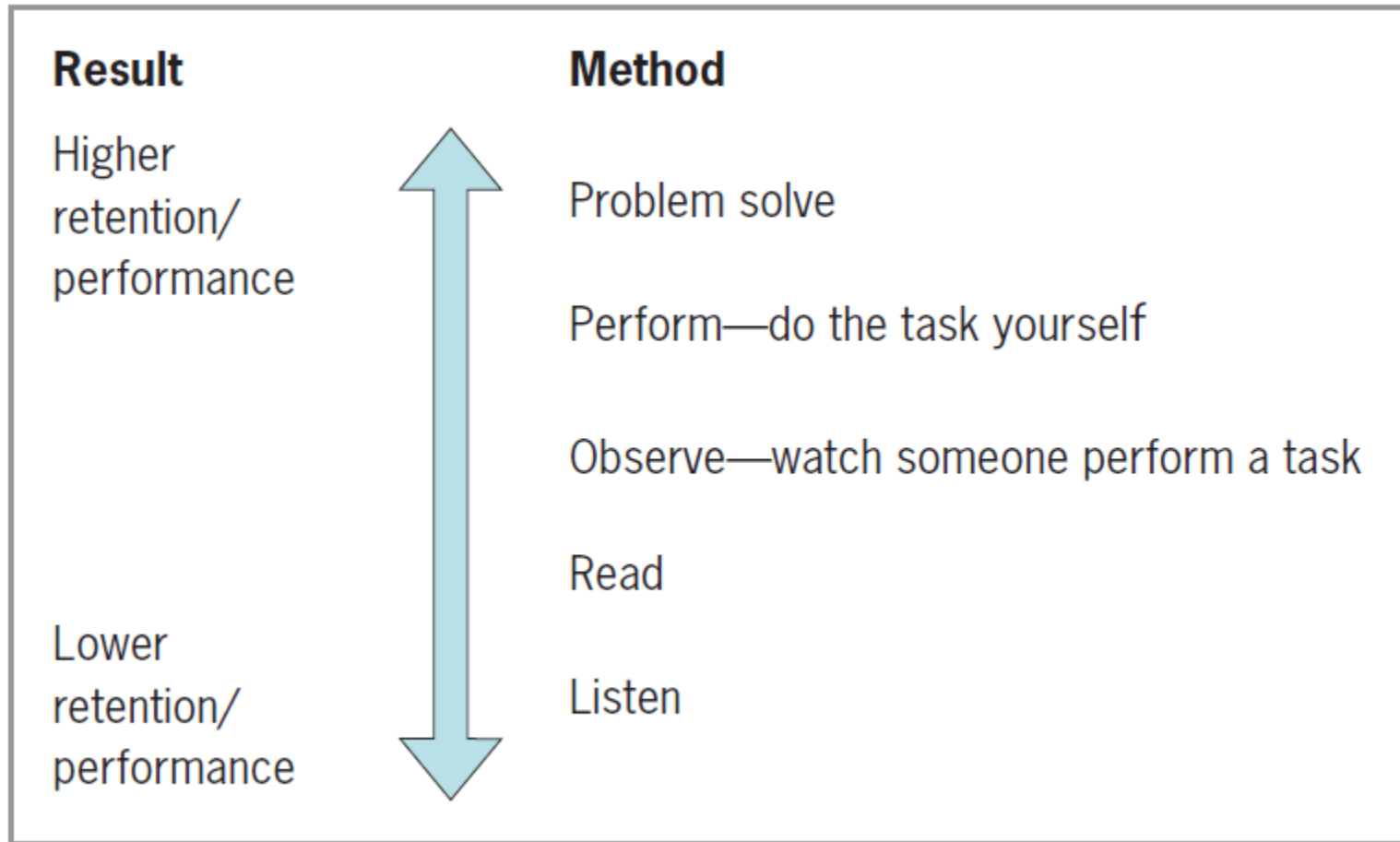 - Assistance and feedback may not be available

How Learners Learn

- **Learning style**: the way each trainee learns most effectively
  - No single learning style works for all trainees
  - Each trainee has a preferred learning style
  - Information retention and learning performance improve with activity and repetition

Common Learning Styles

- **Visual learner/verbal**: a trainee who learns most effectively by *seeing* new material in the form of words
  - Reading, taking notes, working through self-guided tutorial
- **Visual learner/nonverbal**: a trainee who learns most effectively by *seeing* new material in the form of images
  - Viewing a picture, diagram, or chart; watching a demonstration or video
- **Auditory learner**: a trainee who learns most effectively by *listening* to someone talk through new material
  - Listening to a lecture or demonstration
- **Experiential learner**: a trainee who learns most effectively by *performing* a task (hands-on learner)
  - Also called kinesthetic learning

Learning Methods and Retention

Result		Method
Higher retention/ performance	↑	Problem solve
		Perform—do the task yourself
		Observe—watch someone perform a task
		Read
Lower retention/ performance	↓	Listen

Bloom's Taxonomy of Cognitive Skills

1. Knowledge: an ability to *remember* facts or information
2. Comprehension: an ability to *understand* meaning
3. Application: an ability to *use* information in a new situation
4. Analysis: an ability to *break down* information into understandable parts
5. Synthesis: an ability to *reconstruct* a new pattern or meaning from facts and data
6. Evaluation: an ability to *judge* ideas or information

Select Delivery Methods for Training Materials

- **Delivery method**: a choice among several instructional technologies, media, or approaches to presenting information or training materials
- Lectures and readings are popular delivery methods, but are they the most effective?

Common Delivery Methods

- Lecture method
- Reading assignments
- Online reading assignments
- Group discussion
- Visual aids
- Multimedia materials
- Handouts and reference sheets
- Product demonstrations

- Tutorials
- Hands-on activities
- Case studies
- Role playing
- Collaborative or group learning
- Computer-based training (CBT)
- Web-based training (WBT)

Lecture Method

- Advantages:
  - A traditional, familiar training method
  - Makes effective use of the *trainer's* time
- Disadvantage:
  - The learner's role is passive
- Often used in combination with other training delivery methods

Reading Assignments

- Example materials:
  - Textbook
  - Trade book
  - Vendor manual
- Advantage:
  - More active learner involvement than in lectures
- Disadvantages:
  - The amount of reading must be limited to the amount of time available
  - Trainers must carefully evaluate the organization and effectiveness of materials
  - Need to match the level of materials with the reading ability of trainees

Online Reading Assignments

- Example materials:
  - Tutorials
  - Online help systems
  - Manuals on CDs and DVDs
  - Manuals available on the Internet (PDF files)
- Advantages:
  - Tend to be better written than some printed vendor manuals
  - Enable increased trainee interaction and flexibility with hyperlinks
- Disadvantages:
  - Online access is no guarantee of quality
  - Some online materials are difficult to read
  - Online materials are not as portable as print materials

Group Discussion

- Advantages:
  - Actively involves trainees in peer-to-peer learning
  - Most effective when shared trainee experiences are beneficial to the learning process
- Disadvantages:
  - Trainees may be reluctant to participate
  - Trainers may fear loss of control over training session

Visual Aids

- Example materials:
  - Pictures
  - Charts
  - Diagrams
  - Maps

- Advantage:
  - Visual information tends to be retained more effectively than auditory information

- Disadvantage:
  - Must be large enough to be visible to entire audience

- Tip: Choose simple designs with careful use of color, fonts, and artwork for emphasis

Multimedia Materials

- **Multimedia materials** combine:
  - Text
  - Still images
  - Animation
  - Sound
- Advantages:
  - Each form of media can reinforce the others
  - Can increase the amount of material learned and trainees' ability to recall
- Disadvantage:
  - Cost-prohibitive for a single use (a single training session)
- Tip: More cost-effective when development expense can be spread among multiple training sessions

Handouts and Reference Sheets

- Training session attendance is a one-time event
- "Take-away" information from a training session is useful
  - Handouts
  - Reference sheets (sometimes called "cheat sheets")
- Advantages:
  - Reinforce training when trainees return to work
  - Include enough information that trainees can recall important facts or steps in a procedure
- Disadvantage:
  - Should not contain excessive detail
- Tip: A simple handout is preferable to a comprehensive one

Product Demonstrations

- Facilitate hands-on demonstrations of hardware or software products
- Effective with LCD, LED or DLP projectors
- Advantages:
  - The cost of projectors is now more affordable
  - Visible to large groups of 50–75 trainees
  - Trainees can "look over" the trainer's shoulder during demonstration
- Disadvantage:
  - Important to adjust the pace, especially in a GUI environment

Tutorials

- **Tutorial**: an interactive learning method
  - Self-guided
  - Self-paced
  - Step-by-step
- Advantages:
  - Effective for introductory materials
  - Opportunity for trainee to repeat difficult lessons or take a refresher course
  - After development, the cost for additional trainees is low
- Disadvantages:
  - High initial cost to develop quality tutorial materials
  - Trainee assistance may be unavailable

Hands-On Activities (Lab Exercises)

- Advantages:
  - Let users:
    - Try out what has been learned
    - Practice what has been learned
    - Build skills and expertise
    - Learn to become self-reliant
- Disadvantages:
  - Requires access to equipment
  - Most effective when trainees receive immediate feedback on performance
    - Unlearning a habit or skill is difficult

Case Studies

- Larger hands-on or teamwork projects
- Advantages:
  - Encourage the transition from the artificial training room environment to the realities of the business world
  - Based on real business situations
  - Require trainees to apply skills they have learned
  - Can build teamwork skills on group projects
- Disadvantage:
  - May take longer to complete than other methods
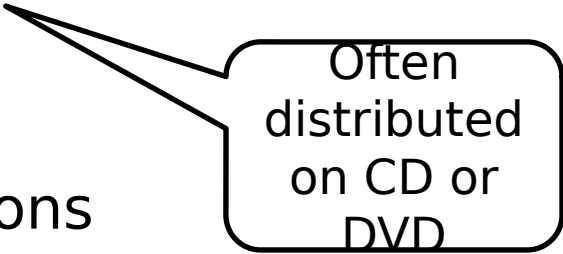
Role Playing

- **Role playing**: trainees participate in a rehearsal or practice of a simulated work situation
  - Trainees experience the roles of:
    - Users
    - Support staff
    - Project leader
    - Trainers
    - Trainees
- Advantage:
  - Trainees build skills and experience emotions
- Disadvantage:
  - Some trainees are uncomfortable in role-playing situations

Collaborative or Group Learning

- **Collaborative learning** (cooperative learning) involves:
  - Group discussions
  - Collective hands-on activities
  - Group problem solving
  - Role playing
  - Participation on a case study team
- Advantages:
  - Based on the finding that learning is often a social activity
    - Trainees can learn from each other as well as from the trainer
  - Builds teamwork and participation skills

Computer-Based Training (CBT)

- **Computer-based training (CBT)** is a combination of:
  - Tutorials
  - Multimedia
  - Product demonstrations
  - Hands-on activities

  > Often distributed on CD or DVD

- Advantages:
  - Uses a computer as an automated training system
  - Cost-effective for large numbers of trainees
- Disadvantage:
  - Expensive to develop quality CBT modules
- Tip: Some CBT systems handle training administration tasks

Web-Based Training (WBT)

- **Web-based training (WBT)**: similar to CBT
  - The Internet replaces CDs or DVDs as the distribution media
- Advantage:
  - Cost-effective for large numbers of trainees
- Disadvantages:
  - Expensive to develop quality WBT materials
  - Not all available web-based materials are high quality
- Tip: Trainers must carefully evaluate the quality of web-based materials prior to use

The Changing Role of Trainers in an Online, Self-Guided Training World

- Less trainer time is spent on preparing and presenting training materials
- More trainer time is spent on:
  - Assessing trainees' needs
  - Planning and designing training programs
  - Evaluating and recommending training materials
  - Motivating trainees
  - Helping to make transitions between modules
  - Assessing training performance and effectiveness
  - Providing help when needed

Develop Specific Training Materials

- Most trainers do not develop training materials from scratch
- They rely heavily on existing resources:
  - Vendor manuals
  - Trade books
  - Textbooks
  - Industry training packages
  - Web-based materials
- Caveats:
  - Respect copyrights
  - Credit sources
  - Select materials related to trainees' interests

Design Training Evaluation Methods

- Training **assessment**: measures whether training activities met the learning and performance goals
  - <u>Trainee</u> evaluation: *How well did trainees learn the material?*
    - Test or quiz
    - Hands-on activities and exercises
  - <u>Trainer</u> assessment: *How well did the trainer prepare and present the material?*
    - Trainee performance results
    - Evaluation form or survey

Training Evaluation Form

- Provides a vehicle to obtain trainees' perspectives on strengths and areas that need improvement in training sessions

- Sample questions:
  - Were the training objectives clear?
  - Were the terms used in the training session defined?
  - Was the training session well-organized?
  - Was the pace of the training too fast or too slow?
  - Were the training aids useful?

Sample Training Evaluation Form

Training Evaluation

☐ Trainer: _____   ☐ Trainee: _____

Place a check mark (√) in the column that represents your reaction to each statement.

	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Does Not Apply
1. The objectives of the training were clear.					
2. Terms used in the training were defined.					
3. The training was organized in a step-by-step approach.					
4. The training included useful examples.					
5. The trainer made effective use of time, and the pace was about right.					
6. Training aids were useful.					
7. Overall, the training was done well.					

What was the best part of the training?

What could be improved?

Step 3: Present the Training

1. Practice the presentation
2. Arrive early to check out the facility
3. Don't read notes and PowerPoint slides verbatim
4. Don't try to cover too much material
5. Teach the most important skills
6. Use humor sparingly
7. Pause for comprehension checks
8. Monitor the training environment
9. Provide frequent breaks
10. Obtain professional feedback

Presentation Tips

- **Beta test run**: a practice training session to give a trainer feedback; helps improve:
  - Training materials
  - Presentation skills
  - Timing
  - Transitions between topics
- Do a dry run at the training facility to check on:
  - Computer equipment
  - Projection equipment
  - Lights
  - Sound
  - Furniture
- Tip: Check for the location of the nearest restrooms

Presentation Tips (continued)

- Use notes in outline form
  - Don't read the entire presentation
- Cover too little rather than too much material
- Avoid trainee questions that may get off track
- Cover the important skills first
- Avoid features that are "bells and whistles"
  - **Bells and whistles**: features of technology that are interesting, but infrequently used
- Focus on training and education instead of entertainment

Presentation Tips (continued)

- Prepare occasional "quick check" comprehension questions for trainees
  - Direct questions
  - Open-ended questions
  - Group discussion questions
- Read the body language of trainees
  - Are they comfortable, interested, engaged?
  - Are they bored, inattentive, asleep?
- Provide frequent short breaks in a long session
- Obtain feedback from colleagues or a videotaped session

Step 4: Progress Toward Higher-Quality User Training

- Purpose: improve the quality of training
  - Obtain feedback from:
    - Trainees
    - Colleagues
  - Evaluate trainer performance
  - Look for opportunities to modify:
    - Presentation style and methods
    - Training materials

Trainer Evaluation Resources

- Training beta test results
- Trainee performance test results
- Trainee feedback on training
- Observations of colleagues
- Videotaped training sessions

Tips on Training Quality

- Modify technical materials to keep current with changes in technology
- Verify materials and screenshots against the latest versions of hardware and software
- Take advantage of resources for trainers available on the Internet
  - See page 529 in the chapter

Learning Management System

- **Learning management system (LMS)**: a software tool to automate training program tasks
  - Authoring tool
  - Facilitate online learning (chat, forums, blogs)
  - Training session management (e.g., scheduling)
  - Organize libraries of instructional and reference materials
  - Trainee testing and exam management
  - Progress tracking
  - Record keeping:
    - Skills database
    - Certification database

Chapter Summary

- Training is an important user support function because it helps users be:
  - More self-reliant
  - More productive
  - Less likely to need support services
- Training and education are related, but not the same
  - Training: Often short-term, emphasizes skills development
  - Education: Longer-term, emphasizes concepts and understanding

Steps in the Training Process

1. Planning
    – Who are the trainees?
    – What background do they bring to the training?
    – What do the trainees already know?
    – What do they need to know or be able to do?
    – What skill level do they need to achieve?
    – Based on the above, define:
        • Learning and performance objectives
        • Training session content (concepts, understanding, skills, expertise)

Steps in the Training Process (continued)

2. Preparation
   – Identify which specific topics need to be covered
   – Identify the training format:
     • Classroom
     • Small group
     • One-to-one
     • Self-guided training

Steps in the Training Process (continued)

2. Preparation (continued)

- Prepare materials for delivery as:
  - Lectures
  - Readings (print and online)
  - Group discussion
  - Visual aids and multimedia
  - Handouts
  - Demonstrations
  - Tutorials
  - Hands-on activities
  - Case studies
  - Role playing
  - Group learning
  - Automated learning (CBT, WBT)

Steps in the Training Process (continued)

3. Presentation
   - Practice the presentation
   - Arrive early to check out the facility
   - Don't read presentation verbatim
   - Don't cover too much material
   - Teach important skills
   - User humor sparingly
   - Pause for comprehension checks
   - Monitor the training environment
   - Provide frequent breaks
   - Obtain feedback for colleagues

Steps in the Training Process (continued)

4. Progress
   – Evaluate both the trainees and the trainer
   – Improve training materials and presentation style

- Learning management systems automate many training presentation and administrative tasks