



DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

Training and Education Directorate Leading Practices in Training

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Introduction

This guide provides practical suggestions for course developers and instructors to use when designing courses and teaching adults. It summarizes the leading practices in eight key topic areas of course design:

- Adult Learning Principles
- Learning Styles
- Instructional Goals
- Information Layout
- Skill Development
- Attitude Development
- Knowledge and Skill Retention and Sustainment
- Evaluation

Each topic begins with a brief overview, followed by practical suggestions and tips for course design and concludes with a list of references for further reading. Each topic can be studied and applied independently.

The information in each topic area can be used to both plan new courses and review existing courses. Applying these leading practices will have a positive impact on course effectiveness.

Adult Learning Principles

OVERVIEW

Adults are motivated to learn by a different set of conditions than younger learners. Adults:

- Are self-directed in their activities
- Are focused on activities that can help them in their work environment or personal lives
- Have a large reservoir of experience that they bring to the classroom
- Look for the immediate relevancy of the learning activities in which they are asked to participate

Understanding these conditions and applying the six principles described below will help to create courses that capture the attention of adults and motivate them to learn.

Andragogy (adult learning) is a theory that proposes a set of assumptions about how adults learn. The study of adult learning originated in Europe in the 1950s and was then pioneered as a theory and model of adult learning in the 1970s by Malcolm Knowles, an American practitioner and theorist of adult education. Knowles defined andragogy as "the art and science of helping adults learn." Knowles identified six principles of adult learning and suggested that training for adults will be most effective if it follows these six principles:

- Support adults' internal motivations for learning
- Incorporate adults' life experiences and knowledge in training experiences
- Support adults' personal learning goal achievement
- Show adults the relevancy of course subject matter
- Involve adults in practical learning experiences
- Show respect for adults' knowledge and experience

Pedagogy is the opposite approach to adult learning. Pedagogy is considered "teacher-centered" versus andragogy, which is considered "learner-centered." It is the more typical approach to learning and is the foundation of many of the K-12 education programs around the world.

The table on the following page compares and contrasts the two approaches to learning development.

Learning Approach Continuum		
	Andragogy	Pedagogy
Role of instructor	Learners are autonomous and self-directed. Teachers guide the learners to their own knowledge rather than supplying them with facts. Instructor is a facilitator.	Learners rely on the instructor to direct their learning. Instructor is a transmitter of knowledge to the student via lectures.
Typical learning activities	Team projects, self study, Q&A discussions with experts, practical exercises, role play, simulations.	Lecture, drill and practice, instructor-directed activities, assessment determined by instructor.
Life experiences	Learners have a lot of life experiences. They need to connect the concepts to their knowledge base. They must recognize the value of learning.	Learners are building a knowledge base and must be shown how their life experiences connect with the present learning.
Purpose for learning	Learners are goal oriented and know the purpose for learning new information.	Learners often see no reason for taking a particular course. They just know they have to learn the information.
Permanence of learning	Learning is self-initiated and tends to last a long time.	Learning is compulsory and tends to fade shortly after instruction.
Responsibility for learning	Learners are responsible for achieving their learning goals.	Learners have less responsibility for learning. Achieving goals is the responsibility of the instructor.

IMPLICATIONS FOR COURSE DESIGN

Course developers can apply adult learning principles to improve the design of training courses. Listed below are some ways to facilitate adult learning by applying Knowles' adult learning principles:

1. Support adults' internal motivations for learning

To support adults' internal motivations for learning, course developers should:

- Set up a course agenda or syllabus that moves from more to less structure, from less to more student responsibility, and from more to less direct supervision of students
- Include many opportunities to encourage asking questions and exploring concepts
- Provide opportunities for students to share thoughts and opinions
- Lead students toward inquiry before supplying them with too many facts
- Provide opportunities for constructive and specific feedback (both positive and negative) from students
- Encourage use of resources, such as libraries, journals and Internet
- Acknowledge the preferred learning styles of students. The Learning Style section, on page 6, of this document describes learning styles

2. Incorporate adults' life experiences and knowledge in training experiences

Adults like to be given opportunities to use their existing foundation of knowledge and experiences gained from life experience and apply them to their new learning experiences. To incorporate adults' life experiences and knowledge, course developers should:

- Provide opportunities for course facilitators/instructors to learn about students' interests and past experiences (personal, work and study related)
- Facilitate reflective learning opportunities to assist the student in examining existing biases or habits based on life experiences and move them toward a new understanding of the information presented

3. Support adults' personal learning goal achievement

To support adults' personal learning goals, course developers should show students' their progress in the course and allow them to see how much more they have to complete to finish the course materials.

4. Show adults the relevancy of course subject matter

Adult students become ready to learn when "they experience a need to learn in order to cope more satisfyingly with real-life tasks or problems" (Knowles, 2005). Adult learners want to know the relevance of learning to their job or day-to-day interests. To help students to see the value of the course subject matter, course developers should:

- Provide relevant, realistic case studies
- Incorporate opportunities for student reflection
- Provide an opportunity for fieldwork
- Include several study options so that students can choose the option that best reflects their interests

5. Involve adults in practical learning experiences

Through practical fieldwork experiences interacting with real clients and their real-life situations, students move from classroom and textbook mode to hands-on problem solving mode in which they recognize firsthand how their learning applies to their life and work contexts. To involve adults in practical learning experiences, course developers should:

- Be explicit about how students' learning is useful and applicable
- Promote active participation by allowing students hands-on experiences rather than passive activities
- Provide plenty of practice opportunities before assessment with ample repetition in order to promote development of skill, confidence and competence.

6. Show respect for adults' knowledge and experience

To demonstrate respect for adults' knowledge and experience, course developers should:

- Acknowledge the wealth of experience that students bring to learning events
- Regard students as colleagues equal in life experience
- Encourage students' expression of ideas, reasoning and feedback at every opportunity

By understanding and applying the theory and principles of adult learning, course developers can facilitate their students' learning and help them see the relevance and applicability of the information to their daily lives or job roles.

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Learning Styles

OVERVIEW

Most educational researchers and practitioners agree there are differences in how people learn. The term “learning style” is used to describe how each learner concentrates on, processes, absorbs and retains new and complex information (Dunn & Dunn, 1978, 1992; Dunn, Griggs, Olson, Beasley, & Gorman, 1995). In addition, the interaction of learning styles can be different for each learner. Several researchers have developed comprehensive models of learning that identify different learners’ strengths and preferences across the full spectrum of physiological, sociological, psychological, emotional and environmental elements.

BACKGROUND

One of the most widely accepted and applied models of individual learning styles was developed by [Dr. Rita Dunn](#) in 1967. Since that time, research has been conducted at more than 90 institutions of higher education that validate the model. The Dunn model is based on certain premises, as follows:

- Every individual has learning strengths and different people have different strengths
- Individual instructional preferences exist and can be measured reliably
- Given responsive instructional environments, students attain statistically higher achievement and aptitude test scores in matched, rather than mismatched, environments
- Most instructors can learn to use learning styles as a cornerstone of their instruction
- Many students can learn to capitalize on their learning style strengths

Rita Dunn’s model defines three distinct types of learning styles:

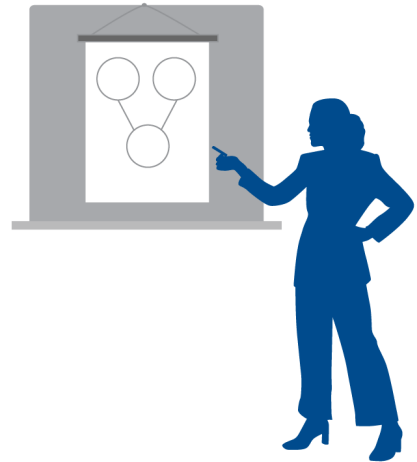
Visual – Auditory – Kinesthetic (VAK) Learning Styles		
Learning Style	Description	Learning Activities
Visual	Seeing and reading	<ul style="list-style-type: none"> • Charts, diagrams and pictures • Important information highlighted • Flashcards to memorize terms or definitions • Ask visual learners to draw their understanding of a concept
Auditory	Listening and speaking	<ul style="list-style-type: none"> • Opportunities to listen, ask questions and discuss learning • Recorded learning sessions for later review • Recorded sounds when appropriate
Kinesthetic	Doing and experiencing	<ul style="list-style-type: none"> • Examine, manipulate and handle materials and models • Role-playing • Simulations • Field trips • Practical exercises • Group work

Visual Learners

Visual learners absorb and retain information best when it is presented visually. This means using charts, maps, diagrams, photos, animations, videos and written directions. Direct their attention to key points using highlighting or color coding. Instructions or directions should be provided in written format. Visual learners have more difficulties processing spoken information because their strongest mode of information input is visual.

Visual learners: Implications for Course Design

- Communicate concepts using charts, diagrams and pictures
- Use flow charts to communicate processes
- Highlight text or use a new color scheme to signify a new topic
- Use flashcards to memorize terms or definitions
- Ask visual learners to draw their understanding of a concept



Auditory Learners

Auditory learners absorb information best through their auditory channel. They process and retain information more easily if they can listen to explanations or discuss the subject matter with others. They prefer listening to lectures, stories and music rather than reading materials or writing. Auditory learners especially benefit from discussing their learning with other students.

Auditory Learners: Implications for Course Design

- Provide an opportunity in the curriculum for auditory learners to listen, ask questions and discuss learning
- Encourage recording the learning session and listening to it later to help retain new information
- Include sounds when possible in instruction. This may be either recorded or live sounds to assist in associating concepts with the sound. For example, play combat sounds when discussing combat-related stress conditions.
- Read assignments out loud
- Encourage class discussions



Kinesthetic/Tactile Learners

Tactile learners learn best from handling materials, writing, drawing and being involved with concrete experiences. In addition, such learners learn best by doing and moving, by becoming physically involved in learning activities that are meaningful to them. Tactile learners enjoy activities such as role-playing and simulations and benefit from opportunities to move about the classroom.

Kinesthetic/Tactile Learners: Implications for Course Design

- Provide tactile learners a chance to examine, manipulate and handle materials and models
- Plan for role playing or simulations
- Take field trips
- Incorporate practical exercises
- Encourage group work in courses



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Instructional Goals

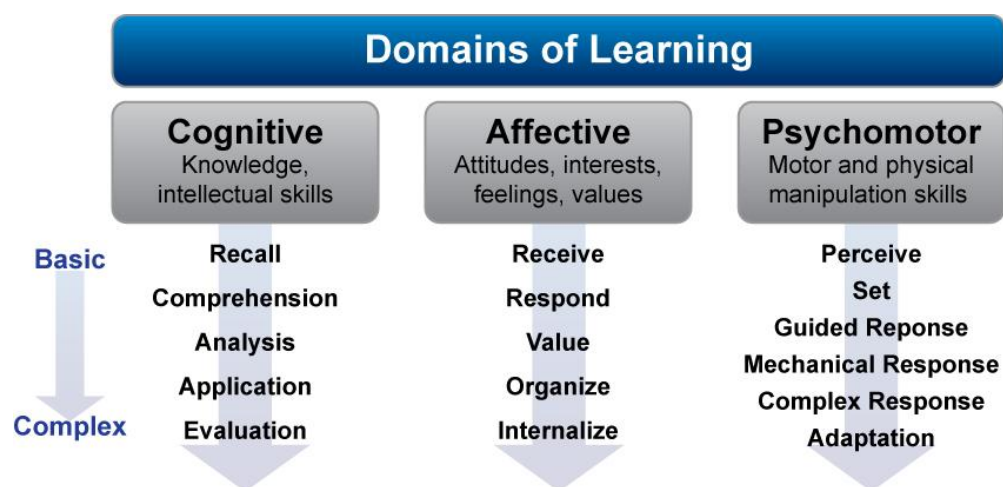
OVERVIEW

Training courses are designed to achieve a variety of desired new behaviors and attitudes. Desired behaviors are the ways that course sponsors would like students to perform their job duties as result of training. That is, after the training session, course sponsors expect students to be able to apply their new knowledge, skills and/or attitudes to perform their job in a specific way.

Changes in attitudes are often key to eliciting desired new behaviors, since attitude can either support or hinder the performance of the new behavior. For example, it may be relatively easy to teach the signs of compassion fatigue and the process to address compassion fatigue in a colleague. However, achieving consistent performance in recognizing and addressing compassion fatigue may require students to change their attitude regarding the condition, its symptoms and/or the process of recovering from it. In other words, students must not only know the symptoms and how to address the problem, but also be willing to re-assess their attitude and make changes if needed. Thus, each course must achieve a variety of instructional goals in order to help students perform the desired new behaviors. Highly effective training courses are designed to help students reach a specific set of instructional goals.

BACKGROUND

Instructional goals can be categorized to help identify the types of learning and attitude changes required to produce desired new behaviors. Several taxonomies have been proposed for learning and attitudinal goals. One of the most widely accepted and applied is the *Taxonomy of Educational Objectives*, defined in 1956 by a committee led by Benjamin Bloom (Bloom, 1956). The committee identified educational goals grouped into three domains: Cognitive, Affective and Psychomotor.



- **Cognitive** – growth in mental abilities. Includes five levels of mental skills:
 - *Recall* – recalls data or information
 - *Comprehend* – understands the meaning of new information
 - *Apply* – uses a concept or rule in a new situation
 - *Analyze* – breaks down data into its component parts and assembles information in a structured way
 - *Application* – applies knowledge and skills to new situations
 - *Evaluate* – makes judgments about the value of ideas or materials

- **Affective** – growth in feelings or emotional capacities (*attitude*). Includes five levels of affective abilities:
 - *Receive* – willing to attend to a new idea or concept
 - *Respond* – actively participates in an activity
 - *Value* – attaches a value to a desired concept or behavior
 - *Organize* – prioritizes values and makes commitments to them
 - *Internalize* – exhibits a personal value system that guides behavior

- **Psychomotor** – growth in physical abilities and motor skills. The most widely accepted psychomotor objective classification was developed by Elizabeth Simpson. Simpson's psychomotor taxonomy defines six levels of physical development:
 - *Perception* – Awareness
 - Sensory stimulation
 - Cue selection
 - Translation – relating perception to action
 - *Set* – Preparation for action
 - Mental set – knowledge of steps to perform
 - Physical set – body in position to perform
 - Emotional set – desire to perform
 - *Guided Response* – Behavior exhibited under instructor guidance
 - Imitation – performance previously demonstrated
 - Trial and error – responding until behavior is achieved
 - *Mechanism* – Learned behavior becomes habitual
 - *Complex Overt Response* – Behavior becomes skilled
 - Resolution of uncertainty – performance without hesitation
 - Automatic performance – coordinated motor skill with ease
 - *Adapting and Originating* – ability to modify as conditions change

IMPLICATIONS FOR COURSE DESIGN

Learning at the complex levels is dependent on having first attained prerequisite knowledge and skills at the basic levels (Orlich, Harder, Callahan, Trevisian, & Brown, 2004). A goal of Bloom's Taxonomy is to motivate trainers and educators to focus on all three domains, creating a more **holistic** form of education. Course developers should be aware of the level of cognitive and affective learning desired as a result of the training course. They should use this knowledge to identify specific instructional goals for

students as a result of the training. Course developers should write specific course learning goals for the students to help guide course development and inform students of the course's learning goals.

Specific learning goals should be written in the following structure (U.S. Department of Defense [DoD], 2001):

- **Behavior** – the specific, measurable action the student will be able to perform as a result of the training
 - e.g., apply appropriate buddy care actions
- **Condition** – the specific situation in which the student will exhibit the desired behavior, including the tools, environment and timing
 - e.g., when buddy exhibits signs of combat-related compassion fatigue
- **Standard** – clearly stated standard of performance
 - e.g., with the goal of helping buddy build self resilience

Course developers next select appropriate instructional strategies for each learning goal. For example, if a course learning goal is to value warfighter psychological health, the course should offer activities that promote internalization of the desired values related to warfighter psychological health.

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Information Layout

OVERVIEW

The layout of information in course materials can help or hinder students' ability to learn. Even well-designed activities will not be as effective in accomplishing their goals when the information is not easy to read and absorb. Course developers can enhance students' ability to take in new information, process it and retain it in long-term memory by following the principles of information layout for printed and online (Web) materials.

BACKGROUND

There are several related fields in psychology, information science and graphic design that contribute to an understanding of how to lay out information in course materials. These include the following:

- **Information processing** – How readers take in, process and store information in long-term memory
- **Usability** – How to design written materials that are easier for users to find what they need and apply the information in learning activities
- **Graphic design** – How to layout written and online materials to attract attention and focus the viewer on the important information contained in the materials

IMPLICATIONS FOR COURSE DESIGN

The list below provides a set of principles, validated by research, that will help guide the most effective layout of material. These principles include the following:

- **Organize pages to facilitate reading** in the order the information is intended to be presented. In Western cultures, viewers read pages (including Web pages) from top to bottom and from left to right
- **Present information in a manageable number of “chunks.”** Individuals can retain in memory and recall five to seven items at one time. Memory performance falls off with larger groups of items. Information should be grouped in “chunks” of five to seven items to enhance retention in long-term memory
- **Group items together on the page** that are meant to be grouped together in the student's memory. These items should be clustered closely together or presented in a vertical list to enhance students' memorization of the group of related items
- **Make pages easier to read** by using headings, subheadings, indentations, bulleted lists (five to seven items) and the proper font style for each media: Times New Roman on printed pages and Arial on online pages
- **Focus students' attention on the important points** in the instructional materials by using a consistent method such as bold-facing or highlighting. Keep in mind some students may be color blind, so red or green color coding will not work for them

- **Minimize overloading students' memory capacity** by offering job aids, reference documents or note-taking features to help students deal with voluminous or complex information
- **Organize both printed and Web pages in the following order:**
 1. Header or instructions at the top of the page
 2. Orienting information, such as page numbers or outline numbers, so the reader can locate information in the document
 3. Body text and graphics in the center of the page
 4. Next steps or additional directions at the bottom of the page
- **Provide a consistent look and feel** in the document so that readers feel confident they can find the information they need.
- **Use advance organizers** to help students "pre-organize" the information they are about to study such as:
 - Overviews
 - Outlines
 - Statements of objectives
 - Suggested questions to answer while studying the material

Course developers can maximize students' absorption and retention of information of their course materials by following the above principles. These principles are derived from research in several related fields of knowledge. They have been shown to provide readers of all types with the following benefits:

- Better attention to the important points presented in the document
- More efficient intake of the information into the reader's short-term memory
- Better organizing and processing of the new information for the reader
- Improved retention of the new information in the reader's long-term memory

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Skill Development

OVERVIEW

Skills are defined as learned abilities to carry out pre-determined tasks to reach desired goals. Examples include: examining patients, interviewing family members or interpreting lab results. Skills are usually supported by a variety of knowledge and individual abilities. Health care practitioners perform complex work that requires a broad variety of knowledge, problem-solving skills and psychomotor skills.

BACKGROUND

There are a variety of methods that training developers can employ to provide opportunities for students to practice what they have learned. These include, but are not limited to, the following:

- **Practice Exercises** – Skill development can be effectively accomplished through instruction followed by practice, along with feedback from an expert practitioner. Practice provides opportunities for the learner to apply newly acquired skills and knowledge in real-life situations. Providing a variety of practice situations helps learners adapt their skills to the situations they will encounter on the job.

Sometimes it is best to teach step-by-step a set of tasks that are part of a larger task. Many learning researchers have found this “part-task” approach to be more effective than practicing the whole task at once. This especially applies to complex tasks with many steps, such as using a patient-tracking computer application.

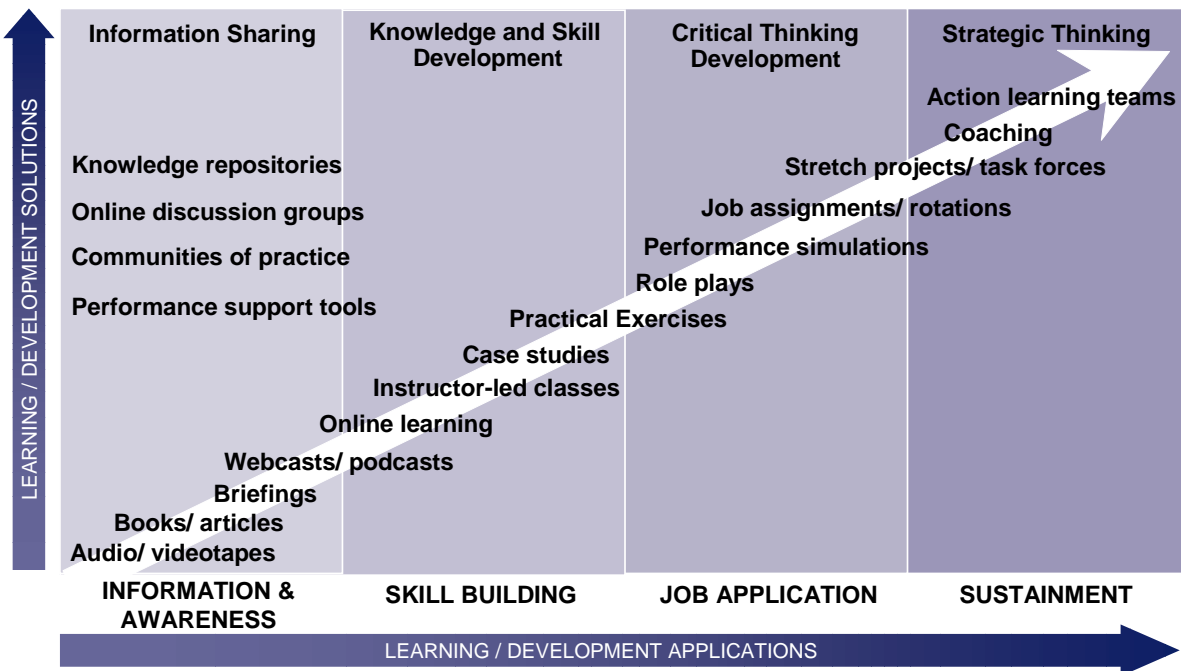
- **Role Play** – Role play is used to practice human relations skills and to learn how to make decisions and exercise judgment for mission-critical situations in a practice environment. Role play can be used when students need to experience how others will react in realistic interpersonal situations.
- **Team Projects** – Team projects allow students to practice their skills and communicate with team members about the course subject matter. Team projects can be made a part of the classroom or out of classroom course activities. They provide an opportunity for students to support and learn from other students in the class.
- **Peer Tutoring** – When students teach job-related skills to their peers, they reinforce their own knowledge and skills, as well as provide valuable training to their peers.
- **Immersive Simulations and Games** – Simulations can be highly realistic (e.g., flight simulators for pilots) or low in realism (e.g., Monopoly board game). The goal is to learn to make decisions and important judgments in a practice environment to ensure learners are ready to act in the real environment (with real consequences).
- **Post Training – Skill Evaluation** – Observations are used to determine a candidate’s readiness for independent practice of a job skill. Typically, instructors or examiners observe the

performance of a typical procedure, such as drug addiction counseling, looking for key behaviors. The observer may or may not provide feedback to the practitioner.

IMPLICATIONS FOR COURSE DESIGN

Course developers and instructors employ a variety of instructional approaches to help students reach their learning goals. Each approach works best to foster a certain level of learning. Development of advanced thinking skills and judgment requires critical thinking and the ability to apply skills on the job. The types of solutions that have been found to be valuable in development of these skills include practical exercises, role plays, performance simulations, job assignment rotations and stretch assignments. Note that the last two approaches are not training approaches but job assignments designed to allow trained practitioners to practice their skills in the real work environment. Normally coaching is combined with these new assignments to support the assignee for success.

There are a broad spectrum of learning applications designed to meet a variety of specific learning goals



In addition, as practitioners become more experienced they may be asked to coach more junior personnel. Becoming a coach is also a developmental activity for the coach. Course developers and trainers should consider including some of these approaches to ensure students develop the target skills and can apply them on the job.

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Attitude Development

OVERVIEW

Attitude development is a part of many, if not most, instructional plans, whether or not it is stated explicitly. It is clear, however, that there are effective instructional strategies to promote attitude formation and change, and this is an area of continuing research. Effective instruction for addressing attitudes involves presenting a persuasive message containing new information that relates to something the learner already knows. The message must involve the learner emotionally. This is often accomplished by presenting a credible role model demonstrating behaviors that are consistent with the desired attitude. Finally, it provides learners with an opportunity to express or act out the target attitude with positive reinforcement. Any instruction that includes these qualities is likely to result in the desired attitude formation or change (Miller, 2005).

BACKGROUND

Smith & Ragan (1999) focus on the behavioral aspect of attitude learning and emphasize the importance of three key instructional approaches:

1. Demonstration of the desired behavior by a respected role model
2. Practice of the desired behavior, often through role playing
3. Reinforcement of the desired behavior

Bednar & Levie (1993) make similar recommendations. They state that when designing instruction for attitude change, “three approaches emerge from the theoretical literature: providing a persuasive message; modeling and reinforcing appropriate behavior; and inducing dissonance between the cognitive, affective and behavioral components of the attitude. These approaches are ideally used in tandem” (p. 286).

Medical Training Course – Example Syllabus Incorporating Attitude Development

The DMRTI C4 Provider Resiliency Training Module provides an example of how to structure a course that includes knowledge and skill instructional goals, as well as attitudinal goals. The module’s primary instructional goal is to implement prevention and intervention measures to strengthen resilience to operational stressors in military health care providers by providing resiliency training.

The training course agenda includes the following activities:

- Provide panel or video vignettes of providers discussing reactions to combat casualty



- Identify four of 10 specific emotional reactions; four of 10 specific behavioral reactions; three of eight specific spiritual reactions; three of eight specific interpersonal reactions; and two of seven specific work-related reactions that occur as a result of provider fatigue
- Provide panel and/or video vignettes of providers and paraprofessionals who have deployed and were exposed to combat trauma casualties and experienced periods of stress and then employed effective coping strategies to regain focus and remain on task (Best Practice: Demonstration of the desired behavior by a respected role model)
- Facilitate discussion (at end of panel, with or without providers present) addressing:
 - Thoughts and affect in response to hearing stories from deployed providers
 - Normalization of experiences of providers and normalization of use of coping skills and/or additional help to return to mission
 - Summary of lessons learned and value gained from listening to first person stories, tie in lessons with future deployments for attendees
- Present video impact clips of relevant trauma exposure
- After video, facilitate discussion of reactions to video; facilitator/instructor should either have personal experience with trauma exposure or be an experienced provider resiliency trainer
- Further develop an understanding of the impact of combat casualty on self and others; role play on experience of combat casualty exposure with confederate who demonstrates response to exposure (e.g., acute stress reaction) or provider fatigue
- Identify and discuss protective behaviors/techniques including best and promising practices for improving daily stress management and exposure to traumatic events
- Discuss how to demonstrate care and concern for buddies, e.g., Navy’s “Building a Culture of Resilience”
- Have participants create their own self-care plans – could be created in smaller groups or individually

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Knowledge and Skill Retention and Sustainment

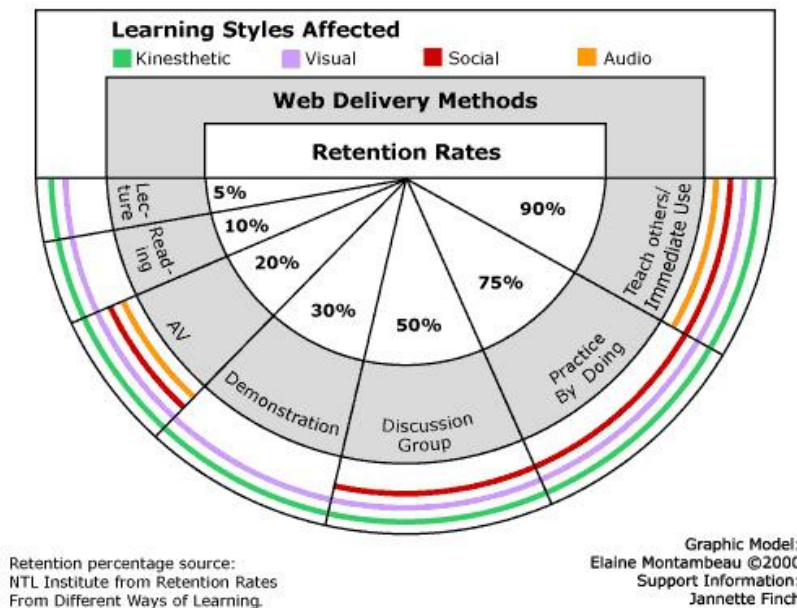
OVERVIEW

Skills sustainment is imperative to ensure military mission readiness. There can be a steep loss of newly learned information and skills from memory after formal training. In addition, there can be difficulties encountered by students when they attempt to perform newly learned skills in the workplace due to a variety of factors. Often the problem is that mission-critical skills are not used frequently enough to be readily performed when called for on future missions. There are a variety of strategies that address the retention of newly learned knowledge and skills, transfer of those skills to the workplace and sustainment of critical skills for mission readiness.

BACKGROUND

Retention of newly learned information and skills can be greatly enhanced through the type of instructional strategies employed during training. Some strategies have been shown to have greater effectiveness than others, as detailed in the figure below:

Retention Rates of New Learning Based on Primary Instructional Strategy in Training



Skill sustainment or refresher training is a key to long-term retention in memory of new information. Regular recall and rehearsal of new skills and concepts ensures long-term memory pathways are built so that knowledge and skills can be recalled and used when needed in the workplace.

IMPLICATIONS FOR COURSE DESIGN

The strategies that specifically address retention of newly learned knowledge and skills include the following:

- Present clear performance expectations (instructors, supervisors)
- Employ a hands-on approach throughout training
- Minimize lecturing and lengthy presentations during class
- Present real-world applications of new concepts or skills
- Provide opportunities to learn from trial and error with feedback
- Allow for individual differences in the way trainees accomplish important skills
- Set aside time for small group discussion about new learning topics
- Employ a variety of teaching methods, student grouping and learning activities
- Provide a safe environment for taking risks in training
- Ensure the teacher's role resembles that of a facilitator or coach of trainees
- Allow students to direct their own learning activities (Wiggins & McTighe, 1998)

The transfer of learning to the workplace can be enhanced through a variety of strategies that encourage application and retention of new skills. Trainees may have difficulty transferring their learning in the classroom into skills on the job as a result of infrequent practice, lack of clarity on their role/job in their unit or lack of opportunity to practice skills immediately (especially when the learned task or equipment is new).

Supervisors can have a positive effect on the transfer of learning to the workplace when they are involved in the training process. Supervisors can explain their expectations and the relevance of training to the job role to motivate and focus students on the courses' learning goals and their specific post-training performance expectations. They can also follow up after training to help focus students on applying their new knowledge, skills and attitudes to meet performance expectations. Supervisors can address barriers to on-the-job performance, such as conflicting or ill-designed job roles, to ensure trainees are able to put their new skills into practice.

Coaching can be an effective technique to help shape the way trainees put new skills into practice and to help personnel overcome obstacles to performing new skills, such as mismatched job roles or new expectations.

The military services employ coaching and job shadowing in developing well-rounded, effective personnel. The coach is seen as a tool to address job retention and performs the following roles:

- Answers the question HOW, as in "How should I approach that?"
- Allows for uncertainty and encourages discussion about confidence levels
- Makes suggestions rather than provides directions
- Emphasizes thoughts, feelings and meanings
- Models service perspectives on work mission and life
- Articulates quality standards

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Training Evaluation

OVERVIEW

Evaluating training courses can help ensure that courses achieve desired results. By collecting and analyzing information on student satisfaction, change in knowledge level, ability to perform skills and changes in attitude, the course instructors and developers can continuously improve the courses. Acting on this information helps improve the quality and effectiveness of training courses. It also helps identify opportunities to invest in additional training.

BACKGROUND

Military Handbook 29612-2A (DoD, 2001) provides guidance on the systems approach to training and how evaluation should be performed at each stage of the training process. Evaluation of training materials during development is called formative evaluation and helps to control the quality and effectiveness of the training products. Section 10.0 of 29612-2A describes how to conduct formative evaluation, which is called “training validation” in 29612-2A.

Evaluation of the results of training conducted after training events is called summative evaluation. The most widely accepted and applied model for summative evaluation of training results was developed by Donald Kirkpatrick. Kirkpatrick first set forth his four-level approach to the evaluation of training in a series of articles appearing in 1959 and 1960 in the journal of what was then known as the American Society of Training Directors (ASTD). He later wrote a book that outlined a foundational model for training evaluation (Kirkpatrick, 1994).

Kirkpatrick recommended evaluating training at four levels, including:

- **Level 1: Reaction of student** – what students thought and felt about the training
- **Level 2: Learning** – the resultant increase in student knowledge or capability
- **Level 3: Behavior** – capability to perform the learned skills while on the job
- **Level 4: Results** – the impact on the business or environment resulting from the trainee’s performance

Kirkpatrick suggested that training should be evaluated at each of the above levels and that the training sponsors may want to consider emphasizing planning for evaluation at levels 3 and 4 since changes in worker behavior and achieving business results are the primary reasons for sponsoring training (Kirkpatrick, 1994).

IMPLICATIONS FOR COURSE DESIGN

The table below details suggested sources of summative evaluation data and recommended collection and reporting mechanisms.

Training Evaluation Metrics and Methods			
Performance Metric	Source of Data	Recommended Collection Mechanism	Recommended Reporting Mechanism
LEVEL 1:			
Student satisfaction with learning events	Post-training satisfaction questionnaires	Student survey results recorded in online database	Reports generated from online database
LEVEL 2:			
Student performance in course assessments and course completion	Pre- and post-training tests and practice exercise evaluations	Test results recorded in online database and course completion data	Reports generated from online database
LEVEL 3:			
Transferal of learning to the workplace as measured by evaluation of performance metrics by supervisors	Evaluation protocols on performance of targeted job roles	Surveys of supervisors and evaluation data recorded in online database	Reports generated from online database
LEVEL 4:			
Achievement of business results (percentage attributable to training)	Selected business metrics for the organization	Scorecard tracking for key business metrics	Scorecard reporting for key business metrics

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