## DL XXI Contract Instructional Design and Development Guidelines

The trainer's challenge is to design instruction in such a way that Soldiers are most likely to learn from courseware delivered *via* distance learning (DL) technologies. The following guidelines, based on findings from research in learning and instruction, were mainly taken from *What Works in Distance Learning*, a document developed for the Navy by the University of Southern California. The guidelines are divided into three parts. Part I lists what prerequisites the contractor shall have, Part II addresses what the contractor shall do in designing and developing The Army Distributed Learning Program (TADLP) instruction, while Part III lists what actions that TRADOC strongly recommends the contractor will do, as appropriate, in designing TADLP courseware.

Taken together, the three parts should be used as a springboard for discussion between the contractor and the TRADOC proponent school with regard to how proponents will evaluate contractor-developed TADLP courseware. Discussion is critical because the guidelines below are not all-inclusive, and the final product is subject to courseware requirements stipulated by the proponent school with which the contractor works. A contractor's request for exception to a specific guideline in Part II shall only be granted from the Chief of Staff and Faculty, or if the organization has no Staff and Faculty, then by the senior Instructional Systems Specialist at the installation for which TADLP courseware is being developed.

### Part I:  The contractor shall have the following prerequisites:

1)  A professional instructional designer working on its TADLP courseware development team. This individual shall have a Master's Degree in instructional design or a related field, and shall have worked for the past five years in designing technology-based instruction.

2)  A DL team made up of professional instructional designer(s), and as required: computer programmer(s), subject matter expert(s), evaluation expert(s), and access to audio, graphical, and video capabilities.

3)  At least two examples of technology-based DL courseware that are representative of the quality of the contractor's work, along with a description of how the courseware reflects application of learning theory and principles of instructional design.

### Part II:  The contractor shall do the following:

1)  Involve the learner in real-world scenarios/problems/situations that grab and hold attention.

> o  Grab attention and stimulate curiosity within the first minute of instruction.

o Involve learners throughout instruction by incorporating learner-learner, learner-content, and learner-instructor practice and feedback interactions, as appropriate.

o Within the context of the learning experience, clearly communicate the benefit of learning the task (from the trainee's point of view) as well as the consequences of _not_ achieving the learning objectives.

2) Ensure consistency between learning objectives, information content, examples, practical exercises, and test items.

3) Minimize cognitive load in instructional presentations.

o Use graphics, pictures, animation or video when concrete examples are needed, rather than relying solely on printed text, audio, or a talking head.

o If creating a multimedia message consisting of graphics and printed words, integrate the printed words and graphic by placing the words next to the place they describe rather than apart from the portion of the graphic they describe.

o Use animation or diagrams to demonstrate processes that are difficult to visualize from verbal descriptions, or that are costly or impractical to videotape (e.g. cutaways of mechanisms in operation, physical/ chemical/biological laws).

o If creating a verbal explanation or a description of a procedure, present corresponding graphics (e.g. animation, video, illustrations, pictures) that unfold so that the narration and visual information is fully integrated (so that the narrator talks about what trainees see at the moment).

o When providing audio narration, use a human voice with a standard accent.

4) When teaching a concept provide a definition of the concept, examples from the work environment, and exercises requiring learners to classify novel and varied examples of a concept.

5) When teaching a process (how something works), provide a visual model with a narrated description stating the sequence of events in the process and explain how each action leads to the next stage.

6) When teaching a procedure ("how to" knowledge), use direct instruction rather than experiential learning. Within the instruction:
   o Provide a clear, step-by-step _how to_ description of all actions and

decisions needed to achieve the performance.

- o Demonstrate the procedure and explain *why* the procedure works.

- o Provide opportunities to practice the procedure on problems in settings that mirror the work environment.

- o Follow part-task practice with whole-task practice, where procedural chunks are gradually assembled into larger wholes.

- o Use an informal, conversational style when creating a short verbal explanation or verbal description of a procedure.

- o When an instructor is available either synchronously or asynchronously, have learners show *how* a solution was achieved when they practice procedures.

7) When providing direct instruction in teaching cause-and-effect principles:

- o State cause(s) and resulting effect(s) in the principle.

- o Provide an example from the work setting.

- o Require practice that begins with simple examples and moves to more complex examples in which learners are asked first to describe and label each phase of the cause-and-effect chain.

- o Require learners, when given one phase, to predict the next phase or the previous phase, and then to use the cause-effect principle to solve novel problems.

8) Provide effective instruction on all learning objectives.

Learning Objectives

- o Provide concrete and challenging but achievable learning objectives that are clearly understood by the target population.

Exercises

- o Present performance and provide practical exercises within the context of the job (mission) upon which the objectives build.

- o Provide exercises supporting enabling objectives that build required skills needed to support full performance, steadily building on one another,

using conditions and standards increasing toward those required in the terminal learning objective and the test, and including adequate iterations of practice to master each skill.

Feedback

- o Build in periods of review.

- o Describe the gap between the student's learning objectives and his performance, and suggest how to close the gap.

Evaluation

- o Construct the test to cover terminal learning objective(s) as a scenario simulating actual job performance conditions and standards as closely as media will permit.  The test and terminal objective should mirror each other, differing only in scenario details.


**Part III:  The contractor will, as appropriate, do the following**:

1. Use video scenarios to stimulate critical thinking and discussion.

2. If creating a multimedia message without learner control, present verbal explanations in speech rather than writing.  Provide a link to written explanations for the hearing-impaired.

3. Except for the most advanced learners, limit learner control over sequencing and learning strategies.

4. Relate the lesson to the learner's prior knowledge and call upon the learner to begin relating prior knowledge to the current task.

5. If creating a multimedia explanation with narration of how something works or how to carry out a procedure, organize the narration to include a preview summary outlining the main steps, section headings corresponding to the main steps, and pointer words such as *first*, second, *third*, or *as a result*.  Use these words to position the student within the lesson.

6. Chunk elaborate procedures into segments of four to five new (to the learner) steps during instruction and present examples and explanations of their underlying principles, processes, and concepts.

7. Provide demonstrations of the performance required in terminal learning and enabling objectives, tests and exercises prior to the student beginning the exercise.

8. Include enough feedback so errors do not accumulate. Focus corrective feedback on the strategy being used by the learner and not the learner or his mistake.

9. Follow instruction with reflection in two areas –
  (1) *what* was learned, and
  (2) *how* it was learned (what worked well and not so well during instruction).

10. Use whole-part-whole sequencing.

11. Use easy-to-difficult sequencing.

12. Point out unusual/new elements of what students are learning.

13. Provide distributed exercises separated by time to enhance long-term memory.

14. Develop content incrementally, test it, and submit it to the proponent as it is developed rather than at the end of a year-long contract.