Distributed Learning (DL) Design Guidelines

I have reviewed the DL XXI Contract Guidelines as requested and provide the following replacement of the IMI Levels. This replacement incorporates standard terminology, is in compliance with policy, and incorporates the approved IMI minimum lesson requirements.

Education and training is presented by various techniques. The two primary means for delivering education and training are resident and distributed learning. Distributed learning uses a variety of education/training products. The primary DL products include tutorial (Page-turner), individual self-paced instruction (Asynchronous), web-managed instruction (Synchronous and Asynchronous), and computer- based simulations. These DL products will be primarily distributed by computer network but may be distributed by CD-Rom or other means.

Distributed learning encompasses the delivery of standardized individual, collective, and self-development education/training to soldiers, civilians, units, and organizations at the right place and time through the use of multiple means and technologies. Distributed learning may involve student-instructor interaction in real time (synchronous) and non-real time (asynchronous). It may also involve individualized, self-paced student instruction.

The following chart provides a definition and criteria for selecting and evaluating these DL education/training products

DL Product	Description	Criteria
All		> The product must validate. > The product must be based on command approved critical tasks and task analysis data. > Product must be identified as a requirement in the proponent's project management and TD plans. > Product must contain Learning Objectives (Action, Condition, and Standard) and supporting learning steps/activities. > Learning activities include checks on learning. > A course map (show mandatory training sequence) must be developed and provided. Available online to students

DL Product	Description	Criteria
Tutorial (Page-turner)	A program that presents information (text and graphics) to read and/or view on a computer screen. The user may have to activate some icon or "button" such as when moving from one screen to another. The information is presented in a linear fashion. **Note 1:** Should not normally be used for formal education/training but a few screens in an individual self-paced program may be "page turner" to introduce an idea or concept. (Not to exceed x% of the total lesson/course) **Note 2**: Awareness training may use this means to disseminate priority or new information. **Note 3**: It takes longer to read information on a computer screen than on paper. (Agree, but don't understand significance here. It's stated as a fact, not as guidance or a recommendation like note 1 and 2 above).	> Learner reads material either on the computer or on paper. > Learner has minimum control over what he/she sees (Why? How limited?) > Learner may have to answer questions but not necessarily so. > Terminal Learning Objective (TLO) are: = Required if part of a course. = NOT required if it is Awareness training (Not part of a course) > Each screen is limited to one fact or idea.. > Graphic and words must be tightly integrated (not in separate blocks on same screen)

DL Product	Description	Criteria
Individual, Self-Paced Instruction (Asynchronous)	An individual, self-paced instruction (course, phase, module) that guides the learning through the learning material based on the learner's ability and learning hierarchy (mandatory training sequence). It provides the interactivity between the learner and the courseware that is essential for the learner to efficiently and effectively achieve the performance prescribed by the learning objectives. The product must contain a combination of learning activities that capture interest, make sense, have instructional values (not just entertain), and contributes directly to learning to perform the objective. It may also include simple simulations. The interactivity includes, but is not limited to, Checks-on-learning, tests, and exercises, providing remedial learning, and simulated performance (e.g., assembling an object, setting gages and switches, preparing reports). Complies with proven adult learning design practices and individual self-paced learning procedures. Amount of branching increases with the skill level of the target audience.	> The academic time required to learn the material must be at least 15% less than the instructor presented equivalent. > Over 95% of the material is asynchronous without instructor involvement. > Only contains interactivity and audiovisuals that contributes directly to learning. > Includes branching to learning material based on learner input. > Positive and guidance feedback that enhances transfer of learning is built into the product. > Learning activities feedback includes examples of the consequences of :"bad" choices. > Includes built in remediation based on learner input. > Learner completes assignments as an internal part of the courseware > Criterion referenced, performance or performance-based tests that measure performance of the TLO/all ELOs are embedded in the courseware. > Instructor-learner interactivity is minimal and only occurs when a learner needs and asks for additional help or when an instructor, monitoring a learner's progress, notes a performance deficiency that requires intervention. (Is this part of the max 5% instructor involvement – see item 2 above). > Product may be distributed by the internet or on a CD-ROM > Terminal and supporting Enabling Learning Objectives are required. > Learners must provided an opportunity to practice before taking a scored test. > Learning activities are varied such that the student will not have the same interaction with the course materials more than three times in a row. > Courseware provides for "testing out" of each learning objective. **Note 1:** Learner use of help, moving from one page to another, accessing a reference does not constitute interactivity. **Note 2:** Should only be produced when the content material is stable (not likely to change in 3 years) and there is a large target audience. (How **large** should the target audience be? xx% of total population, greater then xx number. **Note 3:** Product may be used in residence or via distributed learning.

DL Product	Description	Criteria

Web-managed Training (Synchron-ous and Asyn-chronous)	Producing an instructional unit (course, phase, module) to be presented via the Internet. Materials are distributed via the internet. Learners must comply with provided guidance. Instructor ensures learners meet stated requirements to include submission of assignment, completion on time, and meeting the Student Evaluation Plan requirements. The program complies with proven adult learning design practices. Courseware provides and requires communication between the instructor-to-student and student-to-student. Student submits assignments via the internet. May include threaded discussions and Collaborative learning. The instruction may include both synchronous and asynchronous education/training. Course should build a sense of community among the learners when the Learning objectives are clearly articulated and can be objectively scored. Assignments are as realistic as feasible. Learning opportunities must be made equitably among the students especially when using collaborative learning activities.	> Instructor has direct management and control of the material. > Instructor may allow access to all course materials or release them in a phased process as assignments are made. > Terminal and Enabling Learning Objectives are required. > All TLO and/or all ELO must be tested. > Courseware prescribes whether assignments are accomplished independently or as a team. > Lessons only contain materials, activities, and audiovisuals, and links that contribute directly to learning. > May involve learners accomplishing individual self-paced programs or simulations as a part of the instruction. (These are contracted for separately as Individual Self-paced learning or as a simulation.) > Assignment completion suspenses are realistic > Learning activities are varied such that the student will not have the same interaction with the course materials more than three times in a row. > Students are provided opportunities for un-scored practice before taking a scored test. > Learner participation in learning activities is mandatory. > Learner submits assignments via the internet (via threaded discussion, e-mail, collaborative programs, etc.). May be posted to a web-site. > Tests must be criterion referenced, performance or performance-based tests that measure performance of the TLO/all ELOs > Instructor is required to provide regular feedback to the learner. > Instructor provides positive and guidance feedback that enhances transfer of learning. > Learning activities feedback includes examples of the consequences of "bad" choices. > Remedial instruction presented/managed by the instructor/courseware.

DL Product	Description	Criteria
Individual Simulations	Simulation is any representation or imitation of reality. This product would simulate a part of a system, the operation of a system, and/or the environment in which a system will operate. An instructor, course manager and/or observer controller may be directly involved or monitor learner progress.	> Learner operates the simulation either on a computer or in a simulator. > Simulation provides information/data to the learner. > Simulation provides for task or skill performance to include the application of supporting knowledge.
Video Tele Training (VTT)	Producing an instructional unit (course, phase, module, lesson) to be presented via a synchronous VTT. The materials required by the students are distributed via the internet. Learners must comply with provided guidance. Instructor ensures learners meet stated requirements to include submission of assignment, completion on time, and meeting the Student Evaluation Plan requirements. The program complies with proven adult learning design practices.	> Instructor has direct management and control of the material. > Instructor may allow access to all course materials or release them in a phased process as assignments are made. > Terminal Learning Objective(s) are required. > Learner participation in learning activities is mandatory. > All TLO must be tested. > Instructor is required to provide regular feedback to the learner. > Instructor provides positive and guidance feedback that enhances transfer of learning.

Courseware Check list

This checklist applies to all courseware not just IMI. It can and should be used when producing the product as well as for evaluating the product.

When used for evaluating a product, it is necessary for you to make a judgment call as to whether or not a specific item applies to the courseware. If it does not, place a check in the NA (not applicable) column.

Criteria	NA	GO	NO GO
Introduction			
Prerequisites (course, phase, module, lesson) are identified.			
Contains an introduction to each lesson that:			
> Grabs attention and stimulate curiosity within the first minute of instruction.			
> Clearly communicates *why* the learner needs to be able to perform the task to be trained as well as the consequences of <u>not</u> achieving the learning objective.			
> Points out the novel elements that are to be learned and the need to "work hard."			
> Motivates learner by building their self-confidence in his/her capability to accomplish the learning objectives.			
> Presents its full lesson context (i.e., what came before, what comes now, and what comes next)			
> Informs the learner of average time required to complete each phase/module.			
> Informs the learner of the maximum time allowed to complete the courseware. (self-paced IMI only)			
Presentation			
Courseware has a Terminal Learning Objective for each lesson that:			
> Are clearly delineated in action, condition, and standard terms			
> Has a concrete and challenging but achievable action statement			
> Has an observable, measurable performance standard			
> Provides sequential, progressive education/training			
> Sequenced based on a learning hierarchy			
> Was derived from the commandant approved critical tasks and supporting task analysis data. (Answers the question. "Is the education/training provided relevant?")			
Has Enabling learning Objectives (ELOs) that are: (Mandatory for IMI)			
> Directly support the TLOs			
> Are clearly delineated in action, condition, and standard terms			
> Has an observable, measurable performance standard			
> Sequenced based on a learning hierarchy			
> Provides sequential, progressive education/training			
Learning activities/steps that:			
> Includes varied methods of instruction (Discussion, demonstration, PE, etc. See Appendix H, paragraph H-1 of TR 350-70).			

> Provide learners opportunities to apply skills/knowledge (practice) followed by performance of the learning objective.			
> Provides time for adequate practice of the required performance.			
> Provide complete and clear (to the learner) procedural "how to" examples of decisions and actions needed to solve performance problems and perform learning objectives and supported tasks.			
> Involves learners in activities by using visual (seeing), auditory (saying, hearing), and physical senses (touch, tasting, smelling, writing).			
> Leverages collaborative learning			
> Activities are relevant (e.g., support the objective)			
> Maintains learner's attention (e.g., uses humor, novelty, 3-D graphics, music, storytelling, etc.)			
> Includes instructional media that directly supports learning activities. (e.g., No unnecessary media is included.)			
> Uses scenarios to stimulate thinking and discussion (May be written or video.			
> Includes various types of interactivity to maintain learner interest and promote learning.			
> Triggers concrete imagery through stories, examples, analogies.			
> Presents the information (e.g., knowledge (cognitive load) sequentially, and progressively so learner can focus on the new information. [Need to add a ")" to close parentheses]			
Checks-on-learning that:			
> Are built in to the courseware to ensure they occur.			
> Includes summaries that reinforces the lesson/material presented			
> Ask learners to explain orally or in writing how a solution was achieved when they practice procedures.			
> Provide for a smooth transition to the next module, lesson, or part of a lesson as appropriate.			
> Enhances provision for transfer of knowledge/skill to the job (Transfer of learning)			
Feedback that enhances learning transfer. Feedback ---			
> Is based on the learning objectives that are clearly understood by the learner.			
> Provides positive reinforcement.			
> Is based on the gap between the learning objective requirements and the learners performance, and suggests how to close the gap.			
> Is presented so the learner has the opportunity/time to identify personal learning shortfall and solve the problem			
> Focuses learner attention on the learning objective, and not on learner failure to achieve the required learning.			
> Is timely (e.g., provided immediately for safety or environmental reasons, paced to enhance transfer of learning.).			
> Is meaningful (e.g., related to instructional objectives).			
> Is frequent enough so that errors do not accumulate and in progress corrections can be made.			
In general the education/training courseware:			
> Is designed based on the data (skills, knowledge, etc.) identified during individual task analysis.			
> Is created on a learning hierarchy presented in a course map that is made available to the learner.			
> Does not contain leaps in logic.			
> Provides for craw-walk-run learning.			
> Has internal consistency between learning objectives, content, examples, exercises, and test items.			

>	Involves the learner by using scenarios/problems/situations that grab and hold his/her attention. **Note:** Always follows the experience (practical exercise) with time to reflected (AAR) in two areas – (1) *what* was learned, and (2) *how* it was learned (what worked well and not so well during instruction).			
>	Involves the learners through out the instructional material by incorporating a variety of learner-learner, learner-content, and learner-instructor interactions into the lesson material.			
>	Requires the learner to interact with content (e.g., use content in some activity). **Note:** This applies to IMI as well as instructor presented learning.			
>	Contains everything the student needs to learn the material, i.e., links, a glossary, help desk, reference material, assignments, etc. (will vary with the course)			
>	Provides IMI courseware content assistance.			
>	Provides a means IMI courseware provides means for assigned instructor/facilitator to monitoring learner progress			
>	Contains clear instructions on expected learner response(s).			
The courseware includes Audio/visuals that: (may want to add audio on/off option to this list)				
>	Excludes words, pictures, and sounds that are not directly relevant to the required learning.			
>	Uses animation to demonstrate processes that are difficult to visualize from verbal descriptions and costly or impractical to videotape (e.g. cutaways of mechanisms in operation, physical/chemical/biological laws.)			
>	Presents corresponding graphics (e.g. animation, video, illustrations, pictures). and narration segments simultaneously.			
>	Places each set of printed words next to the graphic it refers to.			
>	Presents narration using a voice with a standard accent. Note: A female voice is recommended for clarity as it centers on the sibilance region of human hearing.			
>	Uses conversational style narration when presenting a short verbal explanation or description.			
>	Uses graphics, pictures, animation or video when concrete examples are needed rather than relying solely on printed text or audio.			
>	Excludes the “talking head” approach to presenting material.			
>	Contains no sensory conflicts (e.g., audio & text present the same information). (Except when conflict is desired to create confusion as during a battle)			
>	Cues the student to pauses			
>	Meets audio/visual technical standards. For example:			
	= Graphics/videos are clear/sharp and easy to see.			
	= Text is readily legible (uses a san-serif font, uses the appropriate font size for the presentation).			
	= Text in not obscured by background.			
	= Colors are appropriate for their use.			
	= Audio is clear and distinct. (except when muffled, garbled sound is desired.)			
>	Displays material (screen design) so it is conducive to learning. Specifically:			
	= The text is balanced with diagrams, video, stills, or graphics			
	= Visual images are placed on the screen so the viewers eye is drawn to it and so it leads the viewer to the next image (screen direction and image placement).			
	= The visual and audio elements are combined with text to present one complete thought (chunk of learning material).			
	= The screen focuses learner attention on what is to be learned.			

= The screen does not contain distracting objects/items.			
= The screen design is consistent throughout the courseware.			
> The audio:			
= Does not contain unfamiliar terms, ambiguous words, undefined terms, or long strings of numbers.			
= Is paced is varied so that silence allows for processing of information and prevents learner boredom.			
Learner Self-development/Study Guidance			
Advised/informed the learners to:			
> Periodically summarize content in their own words (verbally or in writing).			
> Represent content visually in the form of a concept map.			
> Form and answer questions by continually asking ”why,” “what,” or “how” questions.			
Reminded learners that they can annotate text (personally owned) while reading to improve comprehension. (e.g., Underline key words or phrases.)			
Encouraged students to:			
> Focus on ideas rather than topics.			
> State key ideas in the learner’s own words.			
> Note examples of concepts.			
> Put key information on graphs and charts.			
> Jot down possible test questions.			
> Make note of puzzling or confusing ideas..			
Informed learners of additional information.			
Identified sources of additional information.			
Made additional information available to learners.			
Performance Measurement/Tests			
The student performance measures/tests are ---			
> Criterion referenced performance or performance based tests			
> Valid and reliable			
> True measures of the TLO performance to prescribed standard			
> Based on the LOs and supporting learning steps/activities (are relevant to the course)			
> Designed/developed as an integral part of the course			
> Sequential and progressive.			
> Varied (e.g., simulations, role-play, exercises, etc.)			
The student performance measures/tests:			
> Are actually performance based			
> Do not contain test items on material not covered by the learning material			
> Measures performance of all LOs covered by the test.			
> Verifies the learner can actually perform the TLO to the prescribed standard after s/he completes this lesson without the help of an instructor			
The student is provided the opportunity to “test out.”			
Remediation			

> Is based on actual or potential learning performance problem. E.g., failed test, low performance exercise result, slow progress.			
> Is built into individualized self-paced courseware.			
> Is included in the training schedule.			
Course Management Document			
Course design			
> Proponent approval required prior to developing the education/training.			
Course map that ~~that~~ .			
> Shows the mandatory training sequence (Based on the learning hierarchy).			
> Allows for alternative paths to completing the provided education/training (alternative scheduling).			
Course Management Plan			
> Provides clear and concise guidance for the learner			
> Provides clear and concise guidance for the instructor/facilitator			
> Provides clear and concise guidance for the course manager			
Student Evaluation Plan			
Individual Training Plan (ITP)			
Course Administrative Data (CAD). It:			
> Clearly states the purpose of the course			
> Clearly states the scope of the course.			
> Includes supplemental CAD information for DL courses			
Program of Instruction (POI). It:			
> Clearly states the purpose of the course			
> Clearly states the scope of the course.			
> Identifies major resource requirements			
Copyrights releases			
An Instructional Media Design Plan (IMDP) that provides the information required to design and develop Army education/training courseware.			
Technical Matters			
Installation			
> Courseware does not require installation or learners can install the course without assistance. (…and does not require system administrator rights)			
> Courseware installs IAW the statement of work with no technical problems (if applicable).			
> Minimal “plug-ins” are required.			
> “Optimization” test is available.			
> Technical support is available.			
Multimedia			
> Text is minimized (ANSI/ADA courseware spec 1001)			
Registration			
> Student registration is simple & straightforward.			
Navigation through an IMI			
> Provides navigational tutorial and/or help is available.			

>	Includes all required navigational features (start, exit, forward, backward, pause, return to main menu, bookmark).			
>	Clearly and correctly labeled navigational features			
>	Location of navigational features is consistent throughout the courseware			
>	Navigational features (buttons) that are consistent in size, placement, and color			
>	Navigational features operate consistently			
>	Navigational features ensure learner always knows his/her location in course. (Should be required for Individual, self-paced [asynchronous] instruction)			
>	Navigational features cue the student to his / her position within the lesson? (Screen numbers, etc.)			
>	Navigational features ensure learner knows how he/she arrived at location in the course			
>	Navigational features ~~ensure learner~~ allow the learner to navigate both forward and backward			
>	Requires minimal scrolling			

Design Considerations/Guidance				
		NA	**GO**	**NO GO**
When the courseware teaches a --	The courseware provides:			
Concept (Concrete)	> A definition of the a rule			
	> Examples from the work environment			
	> Practical exercises that require learners to classify novel and varied examples of a concept			
	> For an transition between concepts, allowing for a smooth pace.			
Concept (Abstract)	> Abstract graphics			
Process (how something works, not how someone does something)	> A visual model with a narrated description that presents the sequence of events in the process			
	> An explanation concerning how consequences of each action lead to the next step in the process			
Principles, Cause-and-effect	> An explanation of the cause(s) and resulting effect(s) in the principle			
	> An example from the actual work setting			
	> For practice that begins with simple examples and moves to more complex examples (Crawl-walk-run)			
	> For requiring students to use the principle to solve novel problems.			
Procedure				
How-to knowledge	> A clear, step-by-step "how to" description of all actions and decisions needed to achieve the performance objective			
	> A demonstration of the procedure with a model and/or example			
	> An explanation as to why the procedure works			
	> For practice that begins with simple examples and moves to more complex examples (Crawl-walk-run)			
	> Complete and accurate worked examples, along with explanations of why different elements of the procedure work to accomplish the objective.			
Elaborate	> Elaborate procedures segments chunked into groups of four to five new (to the learner) steps.			
	> Examples and explanations of the underlying principles, processes, and concepts of each group.			
	> An organized multimedia explanation with 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*.			