



**Washington State
Department of Transportation**

eLearning Design Guide

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Introduction

eLearning is a significant change to training delivery at WSDOT. While no single medium is best for every situation and every type of training, eLearning provides substantial advantages over other methods in several areas, including reduced cost and improved access to learning. Accordingly, WSDOT is moving aggressively to adopt and apply eLearning, ***where it is the best media for the training.***

This manual is a tool that will assist content developers in designing eLearning. It contains information on:

- Courseware Development Standards
- Instructional Design Standards
- Graphical User Interface - Menu and Navigation
- Media Standards
- Technical Standards
- Writing Standards
- Assessment Standards
- Section 508 Compliance
- Quality Assurance

Information in this guide has been drawn from many sources. It is intended to provide a path that identifies potential pitfalls and successful solutions. It is ***not*** intended to lay out the only acceptable techniques and procedures for eLearning design and development.

The following staff contributed to this document:

John Anderson

Vicki Frucci

Tim Moomaw

Kate Severson

Terry Whitney

Dave Acree

For questions or clarification on how to apply these standards, contact Talent Development at <http://wwwi.wsdot.wa.gov/HR/Employees/Training/default.htm>.

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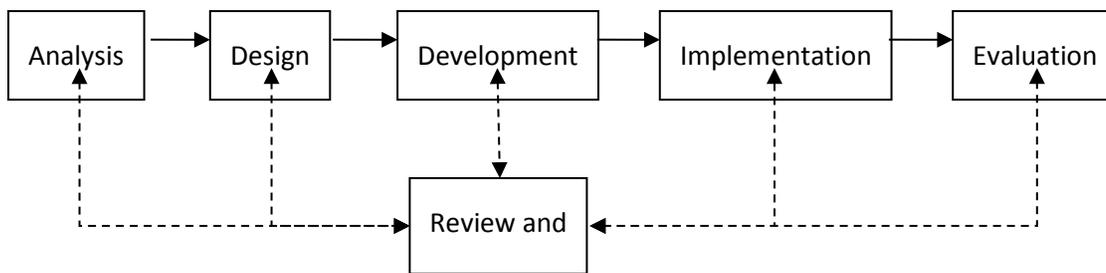
General Online Courseware Development Guidelines And Principles

Development Phases and Process

Develop eLearning courseware using the Instructional Systems Design (ISD) process, sometimes known as the ADDIE process. Phases of this process include:

1. Analysis
2. Design
3. Development
4. Implementation
5. Evaluation

The flow chart below illustrates the WSDOT eLearning content development process.



For a more detailed view of the ISD approach, refer to Appendix 02.

The developer should use established WSDOT design tools. Refer to Appendix 03 for a list of recommended authoring software.

Development Team

The development team may include the following disciplines:

- Subject Matter Expert(s) (SMEs)
- Content Reviewer(s) (Project Sponsors and SMEs)
- Graphic Artist
- Web Developer(s)/Programmer
- Audio/Video Producer
- Quality Assurance
- Instructional Systems Design
- LMS System Administration

Process and Deliverables

eLearning is can be expensive to develop. The payoff comes from efficient training delivery, which is less labor and travel-intensive than instructor-led delivery, and for some topics, may also be more effective by way of individual, self-paced interaction.

The use of the ADDIE process, together with certain deliverables along the way, will help ensure that the effort is productive. Produce training within the minimum timeframe and with low risk of rework.

Discuss the following deliverables with sponsors and agree on which ones will be used on a particular project.

PHASE	DELIVERABLE(s)
Planning	Project charter or Work plan (end goal, scope, major learning/performance objectives, resources, desired start/end dates, dependencies)
Analysis	Needs Analysis results
Design	High-level design plan (Final objectives and how they will be evaluated; instructional strategy) Template or prototype (course look and feel) Detailed design plan
Development	Storyboards and audio scripts All media Beta courseware
Implementation	Final courseware and source files
Evaluation	Test Items as submitted in storyboards, beta, and final courseware Level I and, if used, Levels II and III evaluation data

Adult Learning Principles

Our training is designed for professional adult learners. Thus, as described by adult learning pioneer Malcolm Knowles, the training must accommodate the following needs that characterize adult learners:

- Adults are self-directed and expect to take responsibility for decisions.
- Adults need to know how the material is relevant to their job – why should they learn it?
- Learning should occur within the context of tasks to be performed on the job, not just rote memorization.
- Learners may have a wide range of backgrounds and experience with the subject at hand; the learning should appeal to learners across this spectrum.
- Instruction should allow learners to discover things for themselves, with help and other aids to provide direction and explanation and recovery from mistakes.

Instructional Design Standards

Introduction

Complete a sound needs assessment before starting the actual course design. Follow the ADDIE model for all phases of course development, supplemented by any other useful templates and tools. Answer these questions before moving beyond the Analysis phase:

What is the performance gap?

What are the Human Performance & Training factors behind this gap?

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Why is eLearning the right approach?

What are the learning objectives? I.e., what must the learner be able to do at the end of this learning encounter?

What is a suitable design strategy to achieve those objectives?

What technical and schedule risks do the objectives and design strategy present?

How will we and the sponsor be assured the objectives are achieved, both at the individual level and organizational level?

What follow-on support should be provided in order for the training to 'stick'?

General Instructional Strategy

This Design Guide is intended to help course developers put adult learning principles into practical application by using the following general guidelines. Specific guidelines will follow.

Maximize meaningful INTERACTIVITY to hold learners' interest. Interactivity is the principal technique for maintaining the user's interest in eLearning. Don't just keep them busy, keep them engaged in decisions and application. Use a variety of instructional approaches.

Use an intuitive user interface that is designed to promote active learning, i.e., easy access to references, help, additional explanations, etc.

Give the learner adequate navigation control and progress information without getting lost.

Learners want to know where they stand, so provide ongoing self-assessment and feedback.

Use audio, video and animation where practical and feasible to engage more senses and improve retention.

Be mindful of the finding that people read 30% slower on screens than on paper. Therefore, each screen should:

- Look crisp and inviting.
- Be limited to one concept, procedure or idea
- Have good contrast between text and background, usually dark text on a very light background
- Use plenty of white space
- Use consistent navigation buttons throughout the course

NOTE: The research is mixed whether it is more effective to reduce page-turning by having learners scroll down longer pages, or limit the content on each screen so no scrolling is necessary.

Keep system response time quick through moderate file sizes and prudent use of streaming video. See specifics in the Technical Standards section.

Design for a hierarchy of course and module.

Keep modules and lessons relatively short. A guideline is about 30 minutes in duration. This equates to about 30-40 screens in an interactivity Level II lesson. (See description under Levels of Interactivity.)

Each course must have a theme or paradigm. Modules within a given course will be consistent with the overall course theme. Place the learner as close as feasible to the role of action agent or decision-maker in the context of the job or task.

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Be imaginative. For example, you could use these themes or make up your own:

- Lecture
- Game
- Scenario, either job-realistic or imaginary
- Explorer (encouraged to discover information rather than just repeating back the correct answer)

Be careful to avoid stereotyping by race, gender, ethnicity, or age. Model diversity. Also be careful with – and thoroughly test – humor, to avoid unintentionally offending someone.

Standard course layout: The following screen structure can be used with each course or module.

Title screen

This is the introduction or welcome screen. Begin each course with something compelling (e.g., startling statistic, powerful quote, gripping story) that will create a tension for learning. This screen provides the learner with the “what’s in it for me?”

An overview screen gives the learner a “picture” of the course: give the estimated completion time and main characteristics of the way the module works to include any unique navigation or resource features. Repeat this for any individual modules that differ from the overall course structure if they are not self-evident.

Specific learning objectives and outcomes state in behavioral terms (what will the learner know or be able to do at the end of this module?).

Content/presentation

Use second person, active sentences (example: you...do...this).

Use a friendly, conversational tone.

Keep the learner oriented with introductory statements, clear transitions, and summary statements as needed.

Limit each page to one concept, procedure or item of instruction, and try to do it in the space of one screen (i.e., without scrolling).

Use consistent navigation features throughout.

Learner interaction

For modules with a test at the end, include some kind of learner interaction, non-scored but with feedback, about every four screens. Learners should be given two chances to answer each question correctly, and then move on after being given remedial feedback. Put a **transition page** before end-of-course scored tests that gives the learner the option of reviewing any or all of the material before attempting the test. Use a **Module Test Summary** page to display test results.

For modules with embedded questions that must be answered correctly to proceed, include an appropriate number of questions at the end of each main point or objective.

Course wrap-up.

Summarize the content and tie it back to the terminal learning objective.

Be as concise as feasible. The main path through the course should present the information in the fewest steps and shortest time possible. Content does not have to all be ‘presented’. Sometimes learning is aided by giving learners decisions to make or challenges to explore and then introducing some of the content as resources and/or feedback.

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Include options for supplemental information via buttons and links. This could include:

- Additional examples
- Glossary
- 'show me'
- 'please explain'
- Links to relevant resources such as policy documents, a bibliography, or a list of relevant web resources

Design Options

Here are some additional, but not mandatory, options that should be considered during the design phase.

A variety of learning styles should be considered while developing course structure.

Some courses may require a linear flow. In other courses options to navigate directly to resources, sections or modules within the course may be allowed.

When narrating onscreen text, it should match. Give the learner the option of turning the audio off.

Make it easy for the learner to know what to do. In other words, provide rollover instructions on any non-standard button or hot spot. Insert bookmarks in the course before changing a thought stream and before beginning a scored test.

Use a variety of graphics, photographs, or custom illustrations to help with the teaching of complex concepts. Adhere to copyright laws: only use copyrighted material for which you have received written permission. Keep those permissions on file.

Levels of Interactivity

Establish the courseware's level of interactivity with the sponsor, document this in the work plan, and describe the interactivity in the analysis and design documents.

Here are examples of levels of interactivity:

Level I – Passive. The learner acts solely as a receiver of information. The learner progresses linearly through course reading text from the screen, viewing video or listening to audio. ***This level is highly discouraged.***

Level II – Limited Interaction. The learner makes simple responses to instructional cues. Examples are multiple choice or true/false questions. If this level is used, the learner should have an interaction every 4 to 6 screens as a rule of thumb.

Level III – Moderate Participation. The learner makes a variety of responses using varied techniques in response to instructional cues. Examples: assembling a model or diagram from available parts, drag-and-drop, or answering multiple-choice questions about realistic scenarios. This is our preferred level of interactivity because it optimizes the tradeoff between active learning and time to develop.

Level IV – Real-Time Participation. The learner is directly involved in a life-like set of complex cues and responses. Examples are simulation of software interactions or role-play interpersonal situations.

Decisions on the degree of interactivity in any eLearning product are based upon relative importance of the content, budget, timeline, shelf life, and audience size.

NOTE: It may be appropriate to design modules within the same course for different levels of interactivity (e.g., one module may focus on foundational principles and another module may use complex, branched case studies for application of those principle; the foundational module might be developed at Level I, whereas the application module might be developed at Level IV).

Use of Interactivity to Present Instruction

Engage the learner as frequently as possible through the use of interactive teaching strategies, for example an “Explore It” interaction where the learner clicks on several text labels, graphical elements, or photographs for further information.

Include a variety of screen (interaction) types to keep the learner engaged throughout the course. But avoid so much variety that it distracts the learner from the actual learning.

Develop and adhere to a standard set of instructions (learner prompts) for each screen (interaction) type.

Embedded Practice

Provide opportunities for un-scored practice after each concept or skill is taught.

Ensure that practice opportunities are directly linked to learning outcomes, in other words pay attention to the verbs and conditions in terminal or enabling objectives.

IMPORTANT: Here is the preferred sequence and content of feedback for embedded practice items (i.e., not part of the learners final course score). The idea is to give the learner ample practice along with instructional feedback if they don't understand a concept.

For correct answer feedback, use “Correct” or a conversational equivalent when the learner answers correctly, followed by a brief paraphrase of the correct answer and explanation why it's correct. The idea is to reinforce the correct choice and the rationale. Example: “Right on! The whippersnapple goes on first, then the hummersnoogle.” If the correct choice involved a subtle or crucial point, point out the factors that make this the correct choice.

For incorrect answer feedback, on the first attempt, incorrect answers should briefly explain why that choice is not correct. The objective is to instruct gently, even on wrong answer choices without giving away the correct answer. Example: “No, something else goes on first before the hummersnoogle. Please try again.” For the second attempt, use the same feedback techniques described above. Then usually finish with “Let's go on,” and then explain what the correct answer is and why.

Follow these standards for multiple choice questions:

- Use 3 to 5 answer choices.
- Avoid giving cues to the correct answer based on structure of the question itself, for example, the choice with conditions is often the correct answer.
- The longest choice is often the correct answer.
- Use radio buttons when only one selection can be made.
- Use check boxes when multiple selections can be made.
- For matching items, use a list with one or two more choices than there are answer spaces.

Learner Feedback and Remediation

These additional standards can be used to write feedback for embedded practice exercises:

The tone of feedback should be supportive and instructive. Check it carefully to avoid any hint of condescension.

Consider providing the learner with a hint if the learner answers incorrectly on the first try. Encourage the learner to try again.

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Avoid using pointed phrases such as “You are incorrect” or “That’s wrong.” Instead, use phrases like:

- Incorrect
- No, that’s not it
- Nope
- We disagree

Visual cues are encouraged (such as a green “✓” and red “✗”).

Screen Standardization

All course content developed by WSDOT should be identified as such, using standard WSDOT logos.

Graphical User Interface - Menu and Navigation

Menus and navigational elements help learners move through the courseware. Menus guide the learner to modules, lessons and topics while navigational elements allow for maneuvering through the courseware. This section addresses the suggestions for menu organization and navigational elements.

Menu Organization

Place menus on the top or left side of the screen; navigation buttons should be on the right side or bottom.

Provide clear instructions on how to use the menu if is not self evident.

Create the shortest module and lesson titles needed to convey meaning.

Use descriptive headings such as “Module 1: Introduction and Overview”.

Navigation

Learners should spend time mastering the course objectives, not the course navigation. Navigation must be learner-friendly and must comply with the following standards:

Provide learners with the ability to control all navigational activities.

Provide clear instructions or cues for all required learner activities.

Use the term “click” for mouse responses and “press” for specific key responses.

Navigational elements should be formatted as buttons and should include the following functions:

- Forward (or Next)
- Back (or Previous)
- First (or something like Go to Start)
- Exit
- Menu
- Glossary
- Tools (when applicable)
- Help (when applicable)

NOTE: Other navigational buttons may be added as appropriate.

The buttons (e.g., Submit, Play, Replay) should be consistent within each course; all buttons and icons should have a consistent and unique appearance.

Visual cues such as mouse cursor changes and rollover highlights used on all buttons should be consistent.

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Navigation through the modules and lessons should be primarily learner controlled; however, a suggested sequence may be provided.

All buttons are labeled with text or have rollover text that clearly and succinctly describes what the learner needs to do. Examples: plain button vs. “Next” and “Click Here To Exit”.

Buttons should ‘gray out’ or disappear when they are inactive.

All non-button graphics should have design properties distinct from that of buttons.

Navigation buttons should be displayed in exactly the same position every time they appear in a course or module.

Buttons are grouped logically and located where the learner is likely to be looking.

Learners should have one-click access to Help, Glossary, Resources, Exit.

Modules and lessons may be completed in any order, unless the instructional design requires sequential accomplishment. If this is required, instructions to the learners should be provided.

Apply module and lesson title identification measures, as well as page numbers sequenced, such as Page 1 of 20. Learners should be able to identify where they are within the courseware via a ‘breadcrumb’.

The program should track which modules and lessons have been completed and provide a visual reference to the learner of the completion status in the courseware.

The LMS should bookmark the progress in a session.

There should be three or fewer levels of menus (i.e., module, lesson, topic).

Menu items should be listed in sequential or logical order.

Media Standards

This section defines the standard look and feel for WBT (web based training) and CBT (computer based training) courseware. These standards are used to maintain style consistency within the following areas:

- Screen Design
- Text
- Graphics
- Animation
- Audio
- Video

Screen Design

Use the following standards for general page design:

Design for a screen size/resolution of 780X440 pixels, which is the default in the LCMS. This will prevent the student from having to scroll to see a full screen display.

Establish specific location for the presentation of instructions and prompts.

Provide recurring information in consistent locations.

Provide generous white space to separate blocks of text.

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Avoid scrolling to the extent feasible.

Text

Text Layout:

Present instructional information in a top down, left to right format.

Limit the amount of text on each page; use a PDF format or link to an external document to display long text segments.

Use short lines of 40 – 60 characters; maximum of 60 characters per line.

Design text layout in short segments or phrases.

Use bullets, numbered lists, tables and charts to break up lengthy sentences.

If bulleted text wraps to a second line, left-align both lines on the text (not the bullet).

Do not indent paragraphs.

Left justify text. Do not right justify.

Text Appearance:

Use consistent color for text and graphics throughout a course.

Arial and Verdana sans serif fonts are preferred.

Use consistent font style and size throughout the course.

Break up blocks of text to make it easier for the learner to scan the content.

Underline hyperlinks only; glossary words should be hyperlinks.

Use **bold** font to emphasize a word or phrase.

AVOID USING ALL CAPITAL LETTERS or underlining to emphasize words or phrases (the latter is reserved for hyperlinks).

Use standard Web conventions for hyperlinks (not yet selected, currently being selected, already been accessed).

Do not use blinking text or repetitive animation.

Graphics

Illustrations And Photographs:

Use colors that accommodate color-blind learners. Refer to Appendix 01 for additional information.

Establish and maintain a convention for the use of colors to denote meaning.

Maintain a constant perspective in a series of visuals.

Avoid graphics that may become outdated in a short time.

All text within the graphic such as tables and charts must be readable .

If the graphic needs to be scaled down, then there should be a “click to enlarge” feature.

Be consistent with all graphics with the use of borders, effects and quality.

Animation

Allow user to control the start of the animation, for example “click to continue”.

Avoid timed effects. If one or more events are to launch on a page, the learner should trigger the event. Events should not be timed to launch.

Do not use blinking graphics or text.

Use special effects only when required for emphasis or transition.

Do not use any special effects that detract from learning.

Use animation when motion is needed to help convey concepts that would otherwise be difficult to describe in words alone.

Audio

MP3 file format is preferred, as it optimizes file size and audio quality.

Use audio appropriately.

We recommend that audio be created for onscreen text. When narrating on screen text, it should match. Give the learner the option of turning the audio off.

Ensure that audio volume levels are consistent throughout the course.

Provide an audio “Replay” button as a minimum, with a full control panel preferred.

Use voices that are clearly understood. Test a sample recording with an audience.

Use professional quality audio equipment when recording or editing audio.

Video

Use video to reinforce, clarify or emphasize a specific behavior or performance objective that cannot be effectively taught using graphics, stills, photographs or animation.

Minimize using continuous video clips (more than 15-20 seconds in length) because of file size.

Provide a “Replay” button at a minimum, with a full control panel preferred.

Because buffering problems tend to hinder streaming media performance, where possible, avoid traditional techniques such as zooming, panning, transitional wipes, dissolves, and fast motion subjects. File compression is poor when there is rapid change to the video.

Use professional quality video equipment when recording or editing video.

Technical Standards

This section describes standards for specific technical issues related to the courseware, and includes the following topics:

- Hardware
- Authoring tools
- Data file structure
- SCORM

In addition to these standards, all web development and computer security standards specified by WSDOT must be followed.

Hardware

The courseware must be designed to perform on the least capable standard hardware configuration in use at the time of development. When time and resources permit, courseware may also be designed to perform on higher performance hardware as long as a version for the least capable hardware is also provided. Hardware configurations change with updated operating systems and applications. Check with the Information Technology support staff for the latest specifications.

The current WSDOT minimum configuration includes the following specifications:

- Operating system: Windows 7
- Minimum processor speed: 1.0 GHz
- Standard screen resolution and color depth 1280x720/1024, 32 bit

Browser Specification

Internet Explorer 8.0 or newer

Authoring Tools

See Appendix 03 for a list of supported or recommended tools.

Data File Structure

Storage formats shown below are examples of the file types.

Audio

- mp3 format
- wav format

Video

When selecting a video format for eLearning consider the decoder that will be necessary for play back. Will the students have Flash, Quick Time and of what version.

- Compressed digital files – AVI, Flash video (FLV)
- MPEG

The following tool is helpful when calculating the bit rate of your audio visual files:

http://www.adobe.com/devnet/flash/apps/flv_bitrate_calculator/index.html

Graphics and Photos

Compressed, processed files with ALT text descriptions for Section 508 – JPEG, GIF – are acceptable for web delivery or CD-ROM.

SCORM and AICC Standards

SCORM stands for “Sharable Content Object Reference Model”. It is a standard developed by ADL and the United States Department of Defense. SCORM is a set of technical standards for eLearning software products. SCORM tells programmers how to write their code so that it can collaborate with other eLearning software. Specifically, SCORM governs how online learning content and Learning Management Systems (LMSs) communicate with each other.

SCORM does not speak to instructional design or any other pedagogical concern; it is purely a technical standard. The SCORM version our LMS uses does change over time. The current SCORM version the LMS is using is 2004 3rd Edition, however this version is not 100 percent implemented. Always test your content using the LMS Sandbox to insure functionality if you are using the most recently released SCORM standard; the LMS may not have been updated to match the code. There is a lot of SCORM documentation. For more information on the standard, or to research SCORM, refer to the following website:

<http://www.adlnet.gov/Technologies/scorm/default.aspx>

AICC, The Aviation Industry CBT (Computer-Based Training) Committee (AICC) is an international association of technology-based training professionals. The AICC develops guidelines for aviation industry in the development, delivery, and evaluation of CBT and related training technologies. For the purposes of this guide, just know that it somewhat mirrors the SCORM standards, and more information on the standard can be found here.

<http://www.aicc.org/>

Bookmarking

Bookmarking with SCORM is handled through a client-side API. The communication portion of SCORM was borrowed from AICC, so this should be the same for either format. In general, there is an API call (something like lesson location) that communicates back to the LMS where in the course the student is upon exit. When the learner reopens the content, it should return the learner to the spot where he/she left off. The exception is that once a learner has completed a course or module, they should be taken to the start of that course or module if they go back to review it later.

Learning Management System (LMS)

WSDOT’s eLearning LMS is a GeoLearning domain associated with the Department of Enterprise Services SumTotal System’s domain.

Passing Test Scores to the LMS

When the course is lock-stepped so the student must complete all exercises in a module and complete all modules prior to completing the course the pass/fail may be based upon the successful completion of the final review section of the course.

In some cases it may be mandated that the student take a final exam for certification. In this case a percentage grade may be appropriate.

Writing Guidelines

Introduction

Use the *Gregg Reference Manual* and *The Elements of Style* by William Strunk as the primary guides for grammar, usage and formatting.

Specific Writing Guidelines

The section provides guidelines to be used for technology-based training courseware. The following standards are set for text language:

Use active voice, second person (you), present tense, and a friendly, conversational tone. In other words, it will sound mildly directive: “You...do...this.” Vs. “X...is done by...Y”.

Keep language simple, concise and consistent.

Write to an 8th Grade reading level.

Do not use hyphens to break words.

Use jargon and slang judiciously – only when needed for effect or to suggest realism such as in scenarios.

Use examples that fit the context of WSDOT culture and jobs.

Avoid phrases and references that learners with English as a second language might have difficulty understanding.

Occasional use of contractions is permitted if it’s consistent with the conversational style.

As much as feasible, avoid language and examples that will reduce the shelf life of the courseware (e.g., dates, references to current events).

Use mixed-case letters. Learners may perceive all-cap type as being yelled at.

Italic should only be used for titles of published works and words that are borrowed from other languages and have not become standard English (e.g., *détente*).

Use **bold** to emphasize; underline only for hyperlinks.

Acronyms and Abbreviations

To introduce an acronym for the first time on a page, write out the full name of the entity, followed by its acronym in parentheses.

Acronyms do not include spaces or periods.

Abbreviations should be used when using titles before and after names (e.g., Mr., Mrs., PhD).

Abbreviations should be used when the acronym for a corporation, institution or country is more familiar than the full name (e.g., USA, IBM, FBI).

Abbreviations should be used for mathematical measurements (e.g., lb., kg.).

Punctuation

Punctuation Type	Standard
Spaces after punctuation	Use one space after periods and colons
Commas	Use commas sparingly. They break the thought track. Use shorter, single-thought sentences instead. Do not use serial commas immediately preceding “and” or “or” (a serial comma is the last comma in a series of items)
Hyphens	Use a hyphen to connect words in a sequence (e.g., 2003-2004, pp. 28-72) Do not use hyphens to separate syllables within a word
Quotation Marks	All punctuation goes inside the quotation marks
Bullets - symbols	Establish and adhere to a standard symbol for first and second level bullets which you will follow throughout a course
En Dash	Use an En Dash to connect related parts of a sentence (e.g.: Ensure – through thorough quality testing – compliance to this Guide, SCORM/AICC and Section 508.) Use a space before and after an En Dash (as shown in example above) An en dash is the same length as the small letter “n.” In html, an En dash is: –

Bullets

Maintain parallel construction in a bullet list (e.g., start all bulleted items with a verb).

Bulleted or numbered lists in a training module should be no more than two levels deep.

Use numbered bullets where sequence is important (e.g., the five sequential steps of the ADDIE model); use symbols for bullets when order is not important.

Use a colon at the end of the introductory sentence.

Capitalize the first word in each bulleted phrase or sentence.

Begin phrases (bulleted items that are not complete sentences) with caps and end without punctuation.

Do not use “and” or “or” in bulleted sequences.

Do not use a comma after each bulleted item.

Do not put a period at the end of the last bullet in a list of bulleted items.

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Do not use a bullet (number or symbol) when there is only one item; there must be at least two items to make a bullet list.

Numbers

Use figures to express the numbers 10 and above, all numbers representing mathematical functions or quantities, dates, ages, time, money, and numbers as part of a series.

Spell out the numbers nine and below unless they represent precise measurement (e.g., 8.2578) or are covered by the bullet above.

Spell out any number that begins a sentence, title, or heading.

Date and Time

Write out the date in full (e.g., July 4, 1776).

Use a colon to separate hours and minutes (e.g., 9:00 a.m.).

Capitalization

The proper capitalization of our Agency's name is WSDOT.

In headlines, capitalize all words except definite/indefinite articles, prepositions and conjunctions that are shorter than four letters.

When using bullets, capitalize the first word contained in each bullet.

Capitalize the word "State" whenever referring to one of the 50 States.

Emphasis

Use of bolding for headings and infrequently to emphasize words (bold or color are the only two ways to emphasize words, and bold is preferred in case the learner prints the lesson).

Use italics only to denote citations and not to emphasize words (italics are hard to read on screen).

Use quotation marks only for direct quotes and non-English phrases.

Do not underline (it can be confused with a hyperlink).

Use headings and subheadings to draw attention to specific concepts.

Assessment Standards

This section provides general guidance on the assessment of learner mastery of course content.

Level One Evaluation (did they like it?)

Upon completion of a course, learners will be encouraged to complete a Level 1 Course Evaluation, on line, using the standard WSDOT Course Evaluation:

http://www.surveymonkey.com/s.aspx?sm=3KrUb9iuv6QLHj6LvmhH6A_3d_3d

Level Two Evaluation (did they learn it?)

A Level 2 learning check (exam) is recommended for all technical training. Consequently, all course design documents should state:

- A course goal
- Learning outcomes (terminal learning objectives)
- Enabling learning objectives

Generally speaking, the course goal appears on the Course Intro Page; the learning outcomes are paraphrased on the Module Welcome Page; the enabling objectives are stated on the Lesson Welcome Pages.

All learning objectives should be tested.

The threshold for mastery has been established at 70% for each module test.

Learners may take the test as many times as they wish. Determine what score is sent to the LMS for repeated attempts.

Whenever a learner returns to the course menu, any modules associated with tests that were successfully passed will be clearly marked as being completed. This will allow learners to better track their progress in the course.

Levels Three and Four Evaluation (III: Do they use it? IV: Did the training impact business results?)

Though not required, WSDOT welcomes discussion of performance evaluation at levels three and four.

Section 508 Compliance

WSDOT is committed to providing equal access to its eLearning curriculum for persons with disabilities in accordance with Section 508 of The Rehabilitation Act.

For more information on accessibility considerations for eLearning, contact the WSDOT ADA Compliance Office at <http://www.wsdot.wa.gov/Accessibility/Coordinators.htm>.

This section provides information relevant to Section 508. All NHI technology-based training products must be in compliance with these standards.

The following statement summarizes Section 508, Part 1194.21 regarding software applications and operating systems:

Most of the specifications for software pertain to usability for people with vision impairments. For example, on provision requires alternative keyboard navigation, which is essential for people with vision impairments who cannot rely on pointing devices, such as a mouse. Other provisions address animated displays, color, and contrast settings, flash rate, and electronic forms, among others.

508 Compliance Standards

Courses must be accessible to persons with disabilities in accordance with section 508 of the Rehabilitation Act Amendments of 1998. Course plans should address whether the target audience includes anyone covered by this Act and, if so, how the course will meet its requirements.

See Appendix 01 for more specific information about Section 508 Compliance.

Quality Assurance

This section describes WSDOTs expectations for quality assurance efforts performed by development teams.

Talent Development, Content Designer, Sponsor, and OIT normally will conduct quality assurance testing on all courses prior to full implementation.

This testing is intended to ensure that:

- Teaching and testing strategies comply with the standards provided in this Guide
- Text complies with the standards provided in this Guide
- Media conform with the standards provided in this Guide
- Supported operating systems and browsers are compatible with the product.
- The lesson is compatible with the LMS/LCMS
- The lesson meets SCORM /AICC, and Section 508 standards.

Appendixes

Appendix 01 [Section 508](#)

Appendix 02 [Detailed ISD Process](#)

Appendix 03 [Recommended Development Tools](#)

Appendix 01 Section 508

508 Compliance Standards

The Final Rule, Electronic and Information Technology Accessibility Standards, published in the Federal Register on December 21, 2000, provides guidance on how to meet these requirements (see, 36 CFR Part 1194 [Docket no. 2000-01] RIN 3014-AA25). There are also a number of readily available resources on the Rehabilitation Act including several web sites. See, for example, www.section508.gov and www.access-board.gov. Additionally, a number of organizations provide technical information on making websites accessible for the disabled. Such organizations include but are certainly not limited to:

- The Web Consortium (www.w3.org)
- The HTML Writers Guild (www.hwg.org)
- The Rochester Institute of Technology's Equal Access to Software and Information website (www.rit.edu/~easi/)
- The University of Wisconsin-Madison's Trace Research and Development Center (www.trace.wisc.edu)

See also:

Janet L. Balas. Online Resources for Adaptive Information Technologies, Computers in Libraries (June 1, 1999).

Marilyn J. Cohodas. Does Barrier-Free Compute?, Governing Magazine (April, 2000).

The requirements for Web-based applications as described in § 1194.22 the December 21, 2000 Final Rule, e.g.:

- (a) A text equivalent for every non-text element shall be provided (e.g., via "alt", or in element content).
- (b) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.
- (c) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.
- (d) Documents shall be organized so they are readable without requiring an associated style sheet.
- (e) Redundant text links shall be provided for each active region of a server-side image map.
- (f) Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.
- (g) Row and column headers shall be identified for data tables.
- (h) Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers.
- (i) Frames shall be titled with text that facilitates frame identification and navigation.
- (j) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.
- (k) A text-only page, with equivalent information or functionality, shall be provided to make a Web site comply with the provisions of this part, when compliance cannot be accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes.
- (l) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology.
- (m) When a Web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with § 1194.21 (a) through (1).
- (n) Whenever electronic forms are to be completed online, the forms shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.

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- (o) A method shall be provided that permits users to skip repetitive navigation links.
- (p) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

Note to § 1194.22: 1. The Board interprets paragraphs (a) through (k) of this section as consistent with the following priority 1 Checkpoints of the Web Content Accessibility Guidelines 1.0 (WCAG 1.0) (May 5, 1999) published by the Web Accessibility Initiative of the World Wide Web Consortium:

Section 1194.22 Paragraph	WCAG 1.0 Checkpoint
(a)	1.1
(b)	1.4
(c)	2.1
(d)	6.1
(e)	1.2
(f)	9.1
(g)	5.1
(h)	5.2
(i)	12.1
(j)	7.1
(k)	11.4

2. Paragraphs (l), (m), (n), (o), and (p) of this section are different from WCAG 1.0. Web pages that conform to WCAG 1.0, level A (i.e., all priority 1 checkpoints) must also meet paragraphs (l), (m), (n), (o), and (p) of this section to comply with this section. WCAG 1.0 is available at:

<http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505>

These websites provide Section 508 compliance information:

<http://www.epa.gov/inter508/basic-info.htm>

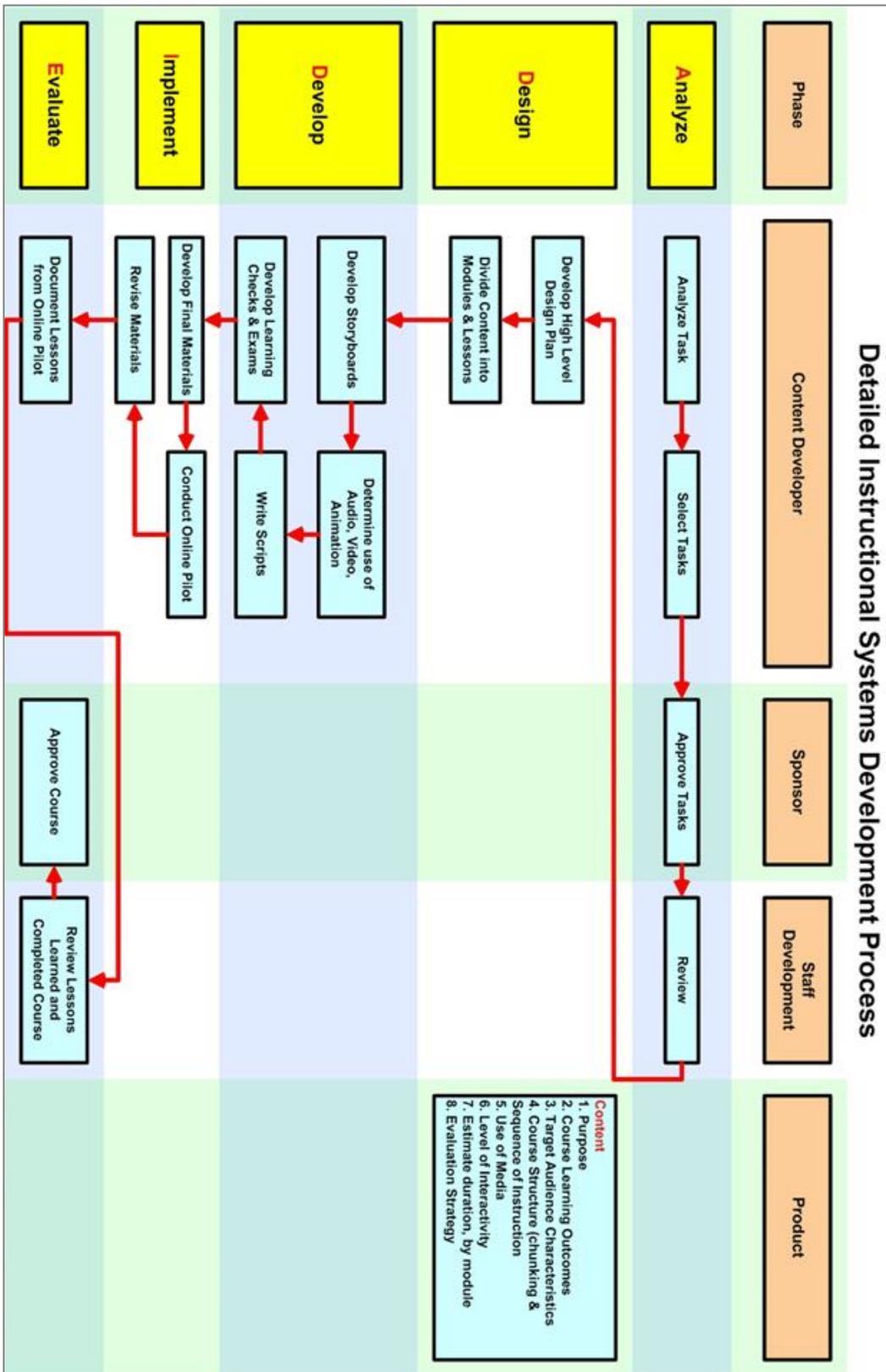
http://en.wikipedia.org/wiki/Section_508_Amendment_to_the_Rehabilitation_Act_of_1973

<http://www.learningsolutionsmag.com/articles/249/>

<http://www.uspto.gov/about/offices/cio/section508/06elearning.jsp>

<http://www.ehealth.va.gov/508/>

Appendix 02 Detailed ISD Process



Appendix 03 Recommended Development Tools

Vendor	Application	Features	Price	Address
Articulate	Storyline	Creates flash-based eLearning content from PowerPoint. Creates interactive content, quizzes, assessments, animation, flash video and surveys. Outputs to LMS, web and mobile IOS devices.	\$1400	http://www.articulate.com/
Articulate	Studio 13	Creates interactions inside of PowerPoint.	\$1400	http://www.articulate.com/
Adobe	eLearning Suite	Includes Captivate (screen capture), Flash, Dreamweaver (webpage authoring tool), Photoshop (image manipulation), Acrobat, Presenter (PowerPoint conversion) and Audition (audio editing and creation tool).	\$1799	http://www.adobe.com/products/elearningsuite.html
Dominic Mazzoni	Audacity	Open source recording and audio editing	Free	http://audacity.sourceforge.net/
TechSmith	Camtasia Studio	Screen recording and video editing	\$299	http://www.techsmith.com/camtasia.html