

October 2011
Version 2.0

National Highway Institute Web-based Standards Guide (WBT)



NATIONAL HIGHWAY INSTITUTE

U.S. Department of Transportation
Federal Highway Administration



Table of Contents

1. Introduction 3

 1.1...Taxonomy and Course Structure..... 3

 1.2...General WBT Development Information..... 4

 1.3...Development Tools 5

 1.4...Courseware Testing 5

2. Standards for Design Plans..... 8

3. Standards for Storyboards 10

4. Standards for Prototypes..... 11

5. Standards for Using the WBT PowerPoint Template..... 12

 5.1...Screen Layout Standards..... 12

6. Standards for Media 15

 6.1...Graphics..... 15

 6.2...Audio 15

 6.3...Video 16

 6.4...Animation 16

7. Standards for Interactivity..... 17

8. Standards for Assessments 18

 8.1...Traditional Test Methods..... 18

 8.2...Standards for Knowledge Checks 19

 8.3...Adobe Presenter Settings for Knowledge Checks..... 20

 8.4...Standards for a Knowledge Check Debrief 34

 8.5...Standards for End-of-Course Assessments 36

 8.6...Adobe Presenter Settings for End-of-Course Assessments..... 36

 Standards for Course Evaluations 40

9. Standards for Publishing 42

 9.1...Presentation Settings 42

10. Delivery Formats 53

 10.1. CD-ROM Labels 53

11. Standards for Electronic File Submissions 55

 11.1. Source Files Folder 55

 11.2. PDF Files folder..... 55

 11.3. Readme File 55

11.4. File Naming Conventions 55

1. Introduction

The National Highway Institute (NHI) Web-based Training (WBT) Standards Guide provides specific guidance to the development of WBT courseware.

Refer to your RFP for specific guidance on your specific project. Please refer any deviations from this document to your COTR.

1.1. Taxonomy and Course Structure

NHI WBT courseware is developed using the following structure: **Course, Module, or Lesson.**

Web-based Training

Module A	Module B
Lesson 1	Lesson 1
Lesson 2	Lesson 2
Lesson 3	Lesson 3
Lesson 4	Lesson 4

All courses will include modules; lessons are optional. For purposes of the Sharable Content Object Reusability Model (SCORM), a sharable content object (SCO) is defined at the module level.

1.2. General WBT Development Information

This section covers general development guidance for NHI Web-based training. For additional resources, templates, and examples, refer to the NHI WBT Developer Toolkit at www.nhi.fhwa.dot.gov/resources/wbt_developer.aspx.

Use the following general standards.

- Provide learners with information in the fewest steps and shortest time possible. The duration is measured by the amount of time it takes an average learner to read all the presented material, access provided options, and listen to all included audio.
- Convey the content in simple and direct language using simple terms.
- Maintain module and lesson consistency.
 - Develop module and lesson welcome screens that illustrate the relevance of the content to the learner.
 - End each lesson with a summary that recaps the content and ties it to the learning outcomes.
- Create a desire to learn by beginning each module and lesson with something compelling.
- Include transitions to ensure coherent flow between screens.
- Address one concept, procedure, or item of instruction on each page.
- Correlate information on the screen to the slide title.

1.1.1. Platform Standards

Because NHI does not have control over consumers' training platforms, the following standards were developed internally and represent the baseline for online courseware. All courseware must be designed for use on the minimum platform configurations.

1.1.2. Hardware

Minimum hardware configurations for development are shown below.

- Minimum operating system: Windows 7 or higher
- Minimum processor speed: Intel Pentium III or higher
- Standard screen resolution: 1024x768
- Video card: 32 bit

1.1.3. Browser Specification

Design courseware for optimal viewing using the standard FHWA configuration browser.

- Internet Explorer 6.0

- Flash Player 8 or higher

To compare the settings listed above with those established by Adobe, please visit www.adobe.com/products/adobeconnect/tech-specs.html.

1.1.4. Hosting

All NHI WBT courseware resides on the FHWA server at <http://fhwa.adobeconnect.com>.

1.3. Development Tools

All WBT developed for NHI **must** use Adobe Presenter 7, a PowerPoint to Flash conversion tool. Developers must purchase a developer's license for Adobe Presenter 7 and the Presenter plug-in.

Be sure that all developed products use the latest version of the NHI WBT template, which is available on the NHI Web site

www.nhi.fhwa.dot.gov/resources/wbt_developer.aspx.

Other non-proprietary development tools that may be used in conjunction with Adobe Connect are:

- Adobe Flash (version 8 or later).
- JavaScript.
- Adobe Photoshop.
- Adobe Premiere.
- Adobe Captivate.
- Adobe Acrobat.

Any other development tools require approval from the COTR. The developer should verify that they have the correct version of the NHI template with the NHI TPM prior to beginning courseware development.

1.4. Courseware Testing

The developer must ensure compliance with NHI standards, SCORM, and Section 508 when possible. To support compliance and confirm an acceptable product, NHI developed the following testing process. Among other things, the testing process requires:

- Alpha tests all supported operating systems and browsers.
- LMS integration testing.
- Quality control testing on published versions of alpha, beta, and final courseware.

The duties assigned to the contracted developer are listed. Developers should refer to the task order for any specific testing requirements or modifications to this process.

Prior to beginning courseware development, the developer should contact the NHI TPM in order to obtain a folder on the NHI Adobe Connect server. The NHI TPM will provide the necessary information on how to complete this process.

Developers are assigned a folder on the NHI Adobe Connect server in order to complete the testing process outlined by NHI.

This folder is to be used for development and testing purposes only.

1.1.5. Developer Duties During Testing Processes

Stage	Stage 1 Alpha	Stage 2 Pilot	Stage 3 Soft Launch	Stage 4 Public Offering
<p>Developer (Contractor) Duties</p>	<ul style="list-style-type: none"> • Publishes WBT courseware to developer folder on the NHI server as shared content and conducts quality control. • Notifies NHI when courseware is ready for review and provides links for accessing courseware. • Reviews comments submitted by Tech Panel lead. • Implements changes and documents final resolution of all comments. • Submits “Final Resolution of Comments” form to NHI and Tech Panel lead. • Obtains session ID from NHI for formatting PTG link Provides NHI with all ancillary source files, which are published by NHI to course folder, and receives hyperlinks to embed in WBT.¹ 	<ul style="list-style-type: none"> • Publishes revised courseware to vendor folder on NHI server as shared content and retests to make sure materials are pilot-ready. • Notifies NHI TPM with a written, signed report that the product complies with NHI’s “pilot-ready” criteria and documents their testing process. • Reviews comments submitted by Tech Panel lead following pilot. • Implements pilot recommendations and documents final resolution of all pilot comments. • Submits “Final Resolution of Pilot Comments” form to NHI and Tech Panel lead. 	<ul style="list-style-type: none"> • Publishes post-pilot revised courseware to vendor folder on NHI server and retests. • Notifies NHI TPM & ISD that courseware is ready for internal NHI testing. • Reviews comments submitted by NHI Systems Support. • Implements Systems Support recommendations and documents final resolution of all soft launch recommendations. • Submits “Final Resolution of Soft Launch Comments” form to NHI TPM, ISD, and Systems Support. 	<ul style="list-style-type: none"> • If changes were necessary from Stage 3 Soft Launch, republishes revised courseware, maintaining original links, and submits source files to NHI TPM & ISD following guidelines provides in the NHI WBT Standards Guide.² • Removes all draft materials published to vendor folder on the NHI server.

¹ This step should be guided by NHI. NHI may choose to have vendor publish all courseware in vendor folder and only move ancillary files from vendor folder to course folder at the end of the development when all courseware is final.

² It is possible that following the Stage 3 review by Systems Support that no changes would need to be made by the vendor and that the materials would be accepted as final at that point.

2. Standards for Design Plans

Design plans contain the findings and recommendations that are usually the result of a needs analysis. Design plans ensure the course is instructionally sound, which means it is job-relevant, task-based, problem-centered, interactive, engaging, and well organized.

Depending on the project, the design plan may be completed in a series of iterations, beginning with a high-level design plan (HDP) that details basic course content and a course overview. It is then expanded to a more detailed-level design plan (DDP) that may include an extensive content outline, explanation of instructional activities, information on graphics and resources to be used, and an overview of the assessment. Refer to the development contract and the NHI TPM for additional clarification on what should be included in design plans.

Design plans typically contain the following information.

- Introduction and background
- Statement of business need
- Target audience characteristics
- Course goal(s)
- Course learning outcomes (terminal learning objectives, required; enabling objectives, optional)
- Overarching instructional approach, i.e., theme, metaphor
- Delivery method(s)
- Course structure (diagrams of modules that show chunking and sequence of instruction)
- Use of media (animation, audio, video), if recommended
- Description of instructional strategies
- Estimated course duration, by module
- Content and exercises mapped to each course learning outcome (in bulleted or outline format)
- Description of graphics designated to enhance content
- Proposed use of narration, if applicable
- Identification of prototype content
- Projected timelines for tasks and milestones, if not already provided in a project management plan or other documentation
- Evaluation strategy and traceability document
 - The traceability document supports the end-of-course assessment as a Level 2 evaluation.

- The traceability document will allow NHI to quickly and easily determine validity of the Level 2 instrument, as well as facilitate later updates of content. It will identify, by objective, that the assessment item effectively tests learner mastery of an objective and the location in the courseware of supporting content.
- The traceability document is required for SCORM compliance. It may be collected as a separate final document or revised as part of an update to the overall design plan. Confirm with the NHI TPM as to how this document is to be delivered.

3. Standards for Storyboards

A storyboard is a draft version of Web-based courseware created for the purpose of review. A storyboard presents content sequentially, segmented in accordance with the detailed-level design plan (DDP). The storyboard allows reviewers to confirm technically accurate and sufficient content is being presented via text, narration, on-screen graphics, or another medium. It also allows NHI to confirm that the developer is correctly applying 508 guidance and Adobe Presenter Quiz settings to the courseware.

The development of storyboards is project dependent. The development contract will dictate whether storyboards are required as part of courseware development.

The designer or developer will create draft storyboards for each module that can include:

- On-screen text.
- Visuals, such as royalty-free photos, diagrams, or descriptions of planned Flash animation.
- Narration script.
- Video.
- Script for new video.
- Captivate demonstrations.
- Knowledge checks and debrief slides.
- Embedded links.
- Rough cut (scratch) audio.
- End-of-course assessment questions and answers.

Storyboards are delivered as unpublished content, typically as a PowerPoint file. The developer should confirm with the NHI TPM that this is the preferred delivery method for this deliverable.

4. Standards for Prototypes

The prototype provides a functional sample of the content designed and developed in accordance with the WBT standards and instructional strategies identified in the detailed-level design plan (DDP). A prototype of a lesson, module, or content segment allows reviewers an opportunity to verify that the presentation of the content coincides with the detailed-level design plan (DDP). Changes at this stage are considerably less time, and cost intensive than later in the development process.

Developers will designate a specific lesson as the prototype in the detailed-level design plan (DDP). A prototype usually contains an average of 15-20 screens. Rationale for selection of prototype content may include:

- Content for the section is the most stable or best documented in the material.
- All functionality to be included in the project is included in the section.
- The content is the foundation for other content in the project, and its development will facilitate the development of other content.

The prototype must be delivered to NHI as a published file. The purpose of the prototype is to illustrate the presence of the following.

- Creativity
- Level of interactivity
- Opportunities for practice
- Writing style
- Understanding of adult learning principles
- Adherence to standards
- Accuracy of content
- Treatment of content
- Resources, such as:
 - Cited documents
 - A bibliography
 - Relevant web resources
 - Similar items

Depending on the project, a series of prototypes may be appropriate. Examples include courses that contain simulations or the use of virtual world technology.

5. Standards for Using the WBT PowerPoint Template

The NHI template establishes the graphical user interface (GUI) for WBT courseware. Use the NHI template to develop a WBT.

Retrieve the template from the WBT Developer Toolkit at www.nhi.fhwa.dot.gov/resources/wbt_developer.aspx. Developers should verify that they are using the preferred template before any development work begins.

General style and standards guidance on the development of PowerPoint slides exists in the *NHI Style and General Standards Guide*, and should be followed when using the NHI template.

All screen layout standards are already incorporated into the templates. Any requests for modification to the template must be provided in writing to the NHI point of contact for the course, and must be approved by the COTR.

5.1. Screen Layout Standards

Media standards are used to maintain style consistency within the following areas.

5.1.1. Screen Design

- Establish a specific location for the presentation of instructions, completion times, and prompts.
- Provide recurring information in consistent locations.
- Use white space to separate blocks of text.
- Create the shortest module and lesson titles needed to convey meaning.

5.1.2. Text Layout

- Present information in a top down, left to right instructional format.
- Layout content so a screen reader will read the text and alt tags in the correct order.
- Design text layout in short segments or phrases.
- Break up blocks of text to make it easier for the learner to scan the content.
- Use bullets, numbered lists, tables and charts to break up lengthy sentences.

5.1.3. Navigation

Use consistent navigation standards to promote learner satisfaction and retention. The following standards apply to all Web-based courseware.

- Ensure intuitive, learner controlled navigation.

- Buttons should have text description labels (alt tags) that include the URL or slide number.
- Navigation buttons must display in the same position on every page.
- Mouse cursor changes and rollover highlights must be consistent within a course.
- Other navigational buttons may be added, as appropriate. However, the location of navigational buttons is specified in the template. Make buttons, such as Submit, Play, and Replay, consistent within each course.
- Navigation elements provide one-click access to learners. Examples include Resources, Help, and Glossary.
- Provide clear instructions or cues for all required learner activities.
- Allow modules and lessons to be completed in any order unless the instructional design requires sequential accomplishment. If sequential accomplishment is required, provide instructions to the learners.
- Document links to other pages within the course or to external Web pages or other sites.
 - Describe internal links in the narration. For example: “For more information, please navigate to slide 38.”
 - Otherwise, place linked slides directly after the slide that references it so that a user navigating with only the keyboard can access the information in a logical way.
 - Document external links in the outline and include the link description in the narration.
- External links should be used sparingly as to not distract from existing content.

5.1.4. 508 Considerations

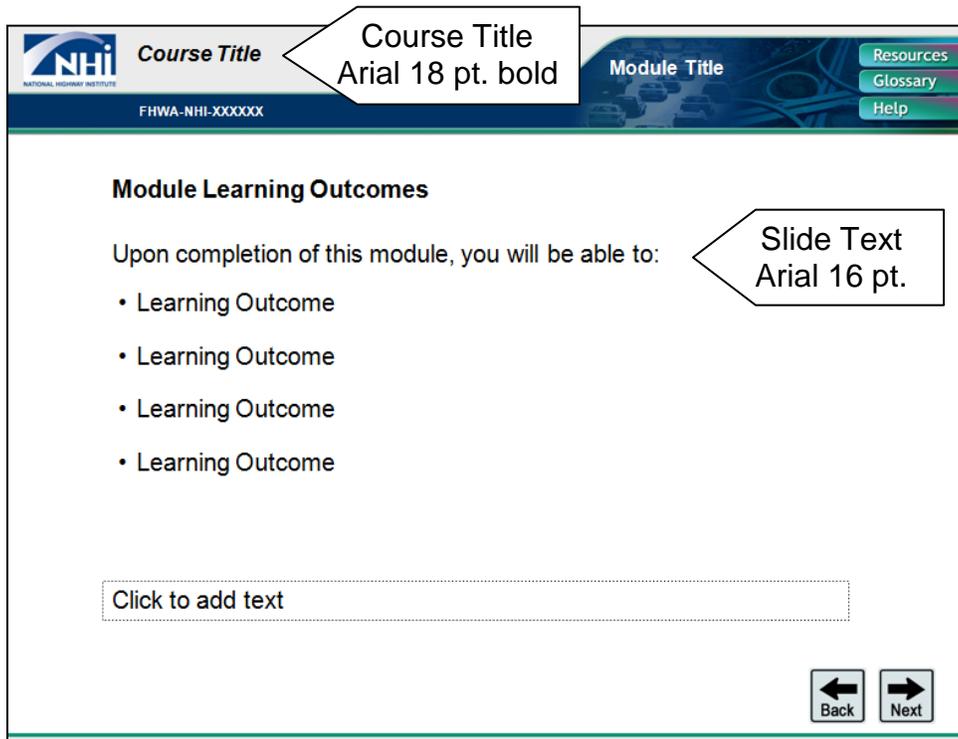
- Creating a 508-compliant WBT requires production of a compliant PowerPoint product.
- It is ultimately the job of the development team to ensure that all 508 compliant checkpoints are met and that the materials are developed in compliance with the law. The following sites provide the most current government guidance:
 - www.section508.gov
 - www.webaim.org.

5.1.5. Font

The following font sizes should be applied when using the WBT PowerPoint slide template.

Content Type	Font Size
Headings on PowerPoint slides (course title, lesson title, screen title)	Arial 16-18 pt. bold
Text on PowerPoint slides	Arial 16-18 pt.

Follow NHI general standards on readability as found in the *NHI Style and General Standards Guide*. The PowerPoint template for WBTs is preset with approved colors and styles. Use of other font type, size, or color must be approved by the NHI TPM.



6. Standards for Media

Media standards provide a consistent look and feel to courses. They also increase the likelihood that the media will function as intended on the training platform.

For each lesson, utilize the most suitable medium to support and reinforce the subject material or interactive components. Media include computer graphics, photographs, video, animation, and graphs or tables.

6.1. Graphics

Refer to the *NHI Style and General Standards Guide* for general graphics requirements.

- Use custom illustrations and interactions to teach complex concepts.
- Recreate tables and graphs wherever possible instead of inserting as an image. Scanned graphics should be avoided entirely.
- Use the most modern technology generally available to generate visuals, including computer-generated graphics.
 - Be aware that any computer software required for the visual aids must be readily available to any facilitator; do not use proprietary software.
- Alt tags for charts and other complex graphics should reflect their complexity. A sentence or two will not always be sufficient.
- Data presented in tables must be included in the general narration or provided as a table description.
 - The information or data must make sense when presented in a narrative format. Redundant or repeated information should be presented logically and not simply repeated.

6.2. Audio

- Avoid phrases that are not meaningful on their own or apply only to a select group of users.
- Include a semi-colon after each item in a narrated list, add the word “and” after the penultimate item, and place a period after the last item. This ensures that a screen reader can identify the items as a list.
- Avoid special characters in the narration (notes) section; they will not publish properly in Adobe Presenter.
- Ensure audio volume levels are consistent throughout the course.
- Use one audio talent to narrate all modules within the same course. If presenting a role-play scenario, multiple voice talent may be used, but roles must be consistent.

- Include the following audio edits.
 - Place 1 second of silence at the beginning of every slide.
 - Place 1 second of silence at the end of every slide.

6.3. Video

- Avoid techniques such as zooming, panning, transitional wipes, dissolves, and fast motion subjects.

6.4. Animation

- Allow user to control the animation to include start, stop, and replay.

7. Standards for Interactivity

Exercises, calculations, skill practice, and other experiential work provide an opportunity to test understanding and relate training content to work-related scenarios.

Depending on the goals or needs of the project, it may be appropriate to design modules within the same course to include varying levels of interactivity. For example, supplement foundational principles with complex, branched case studies for application of those principles.

NHI's stance on levels of interactivity is as follows:

Level of Interactivity	Description
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.
Level II – Limited Interaction	The learner makes simple responses to instructional cues. The responses may include answering multiple choice or true/false questions. Example: Knowledge Checks
Level III – Complex Participation	The learner makes a variety of responses using varied techniques in response to instructional cues. Example: Building a model/diagram from available parts.

8. Standards for Assessments

Informal and formal assessments are developed and administered as part of Web-based training. NHI uses knowledge checks and course evaluations as part of its informal assessment process. Formal assessments are referred to as end-of-course assessments.

Knowledge checks provide practice opportunities to reinforce each concept or skill. Practice exercises are evaluated but the scores are usually not sent to the learning management system.

Course evaluation data measures the participants' training experience. The course evaluation is made available via an external link at the end of the training.

Some WBTs also include end-of-course assessments that evaluate participants' mastery of the content. End-of-course assessments are loaded to the online curriculum. Participants are instructed to complete the exam at the end of the training. Instructions on completion requirements can be provided in the final training module as needed.

If an end-of-course assessment is required, use Adobe Presenter Quiz Manager to create the exam as one quiz with multiple questions in a separate PowerPoint file. The end-of-course exam template can be found at:

www.nhi.fhwa.dot.gov/resources/wbt_developer.aspx

8.1. Traditional Test Methods

Assessment instruments could include objective measures, e.g., multiple choice questions, matching questions. Other acceptable testing types include performance testing (skill demonstrations) and critical thinking (case studies).

Some acceptable test types are described in the table below.

Test Item Type	Characteristics
Multiple-choice	<ul style="list-style-type: none"> ▪ Useful for testing knowledge and cognitive abilities. ▪ Consists of a stem and a selection of possible responses. (Answer scan sheets accept up to five possible responses.)
Matching	<ul style="list-style-type: none"> ▪ Useful for testing terms and labels. ▪ Consists of two columns of related words, phrases, or symbols to be matched by the student.
True/False	<ul style="list-style-type: none"> ▪ Useful for testing knowledge. ▪ Consists of a single statement.

Test Item Type	Characteristics
	<ul style="list-style-type: none"> ▪ Note: Use no more than 10% true/false questions.
Completion or “fill in the blank”	<ul style="list-style-type: none"> ▪ Useful for testing recall of knowledge committed to memory. ▪ Consists of a statement from which a word(s) or short phrase has been omitted. The student must supply the missing word(s) or phrase in the blank(s) provided.
Performance	<ul style="list-style-type: none"> ▪ Useful for testing job tasks and skills. ▪ Consists of a simulated or actual environment with certain conditions of performance and certain expected outcomes.

8.2. Standards for Knowledge Checks

When establishing a knowledge check:

- Provide a “hint” if the learner answers incorrectly on the first try.
- Provide corrective feedback to help enable learning if the learner answers incorrectly the second time.

Example of a Knowledge Check with generic feedback

The screenshot shows a web-based interface for a knowledge check. At the top, there is a header with the NHI logo, 'Course Title', 'Module Title', and navigation links for 'Resources', 'Glossary', and 'Help'. Below the header, the course ID 'FHWA-NHI-XXXXXX' is displayed. The main content area contains a question: 'This is an example of the proper formatting for font sizes and styles.' with two radio button options: 'a) Yes' (selected) and 'b) No'. At the bottom left, there is a 'Knowledge Check' button with a checkmark icon. At the bottom right, there is a feedback box with the text: 'You have provided an incomplete answer. Select anywhere to try again.' and two buttons: 'Submit' and 'Clear'.

8.3. Adobe Presenter Settings for Knowledge Checks

Knowledge checks are created using the Adobe Presenter Quiz Manager.

Each knowledge check is created as a separate quiz with one question. A WBT with five knowledge checks will reflect five separate quizzes in the quiz manager with one question assigned to each.

8.3.1. Quiz Manager Settings

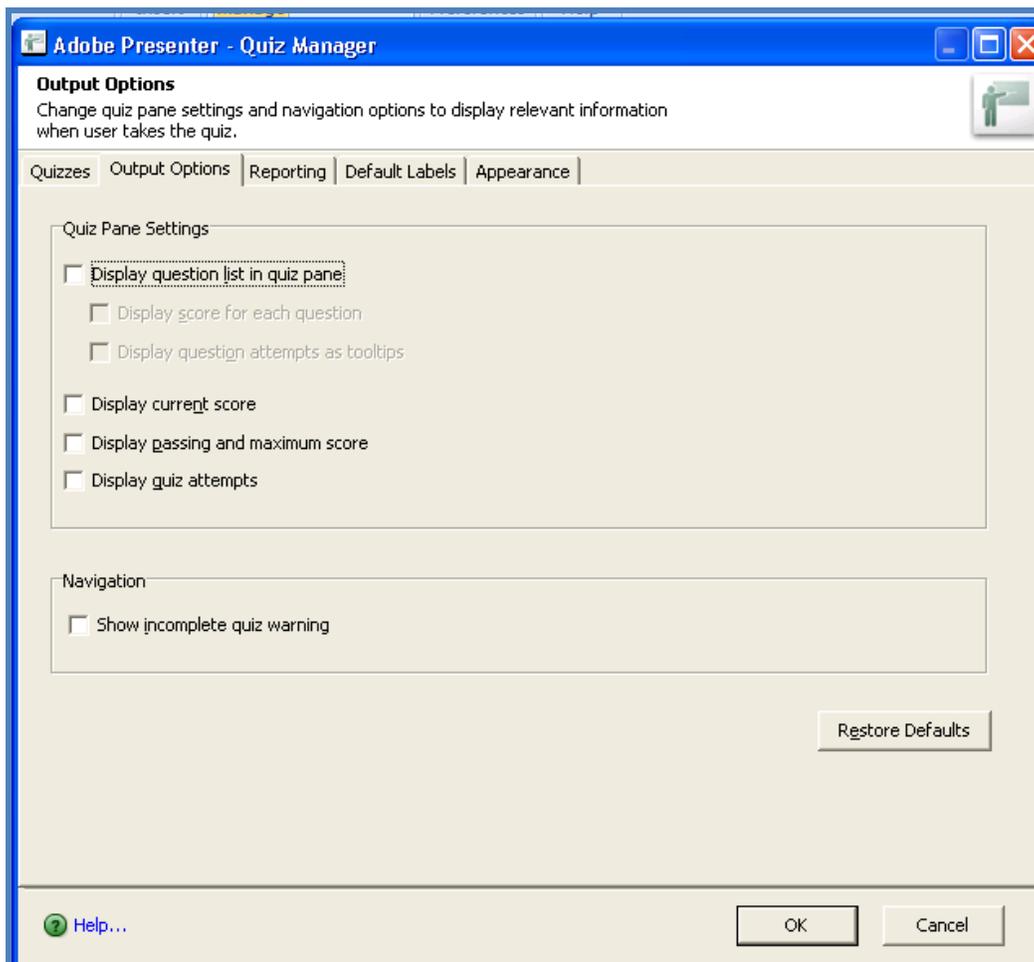
Use the following steps to set up a knowledge check.

Note that you must set up a quiz before you can enter the questions.

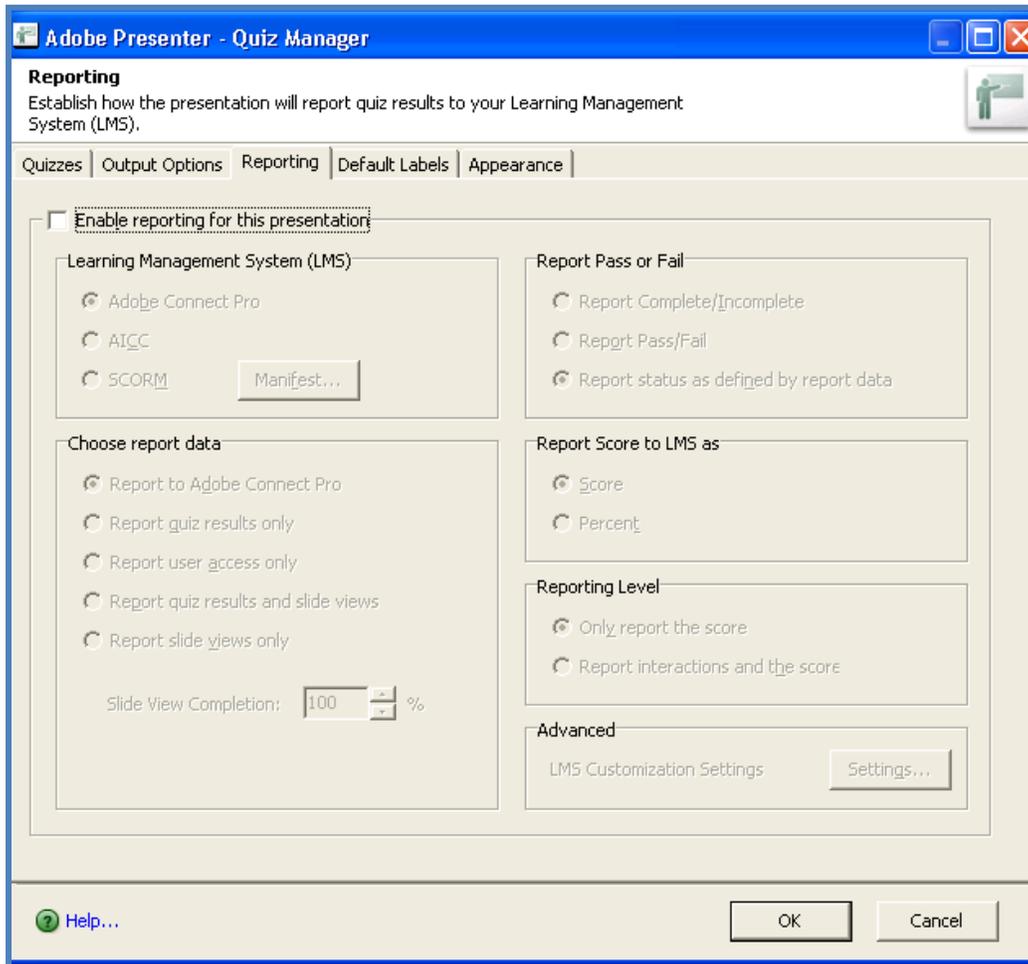
1. Open the **Quiz Manager** window by selecting **Adobe Presenter → Manage**.



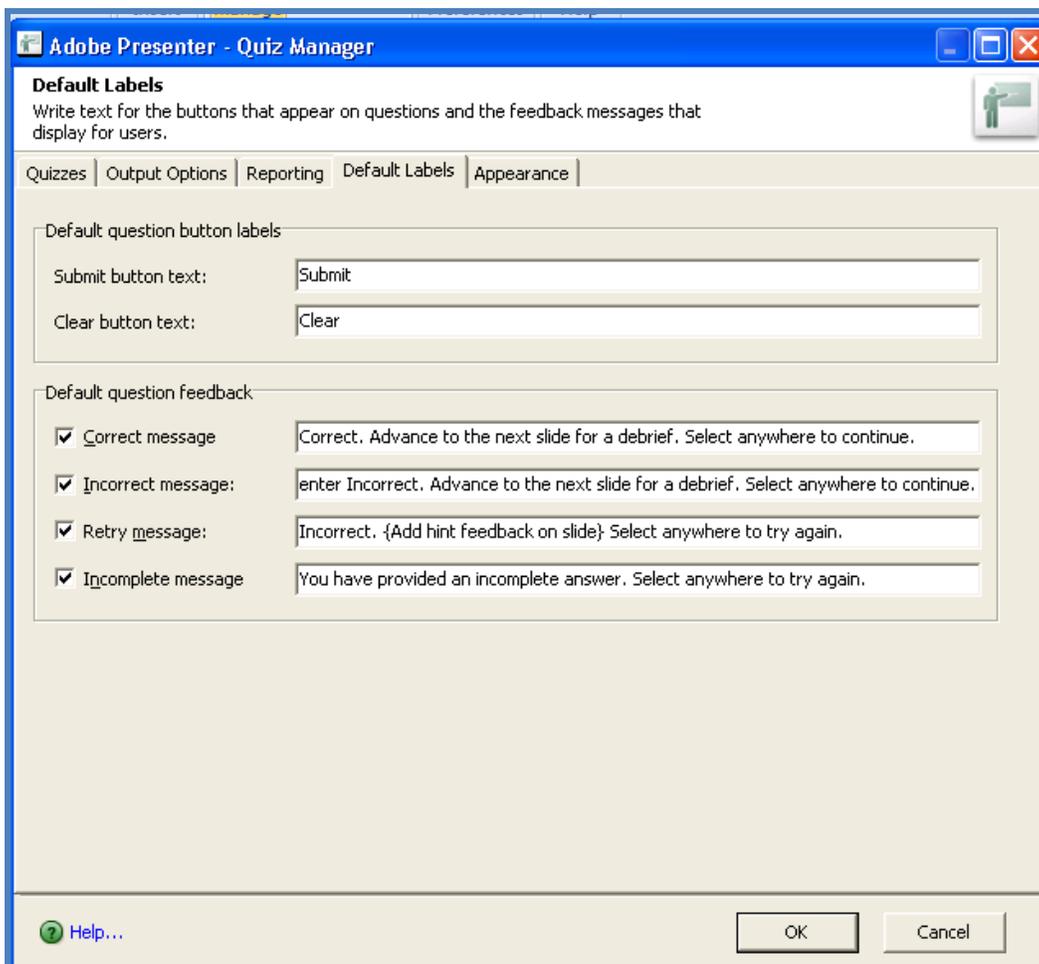
2. Select the **Output Options** tab. All boxes should be deselected.



3. Select the **Reporting** tab.
4. Deselect **Enable reporting for this presentation**.

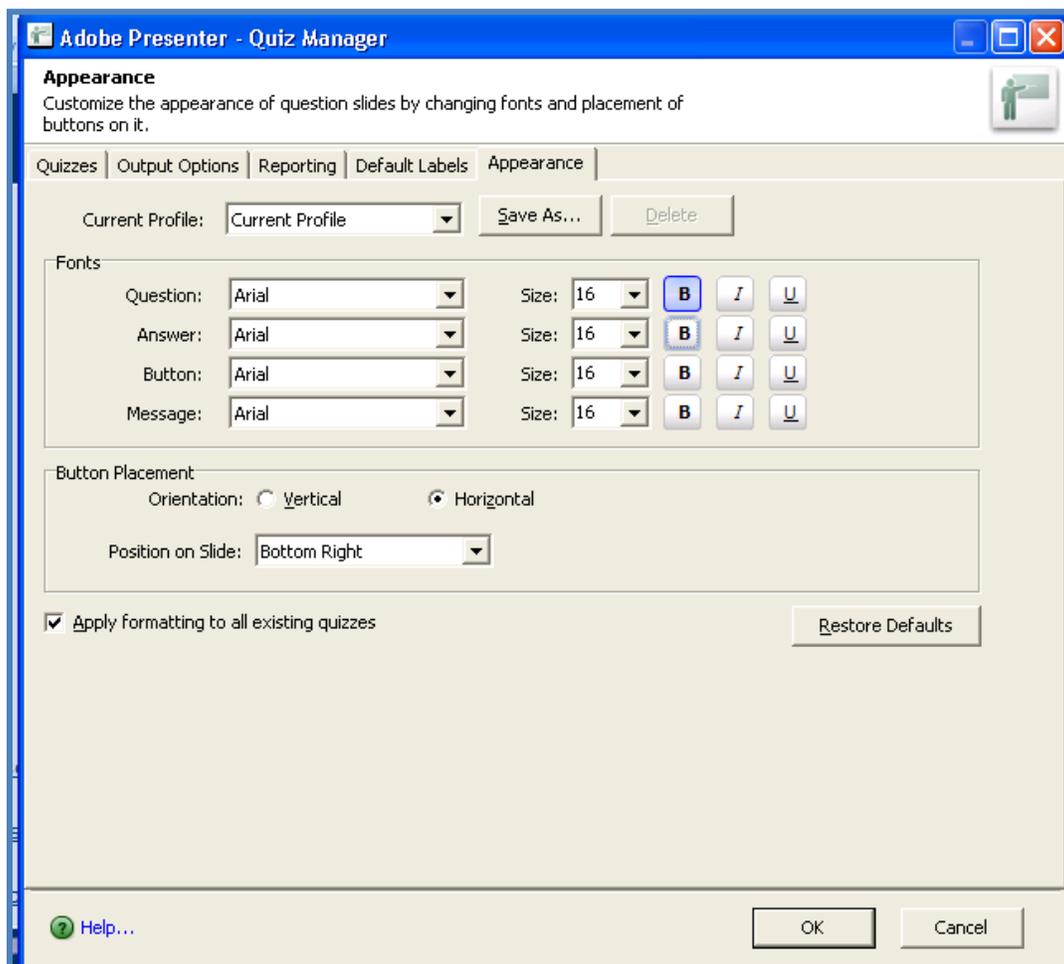


5. Select the **Default Labels** tab.
6. Select all boxes under **Default question feedback**.
7. Enter the following text:
 - **Correct message** field “Correct. Advance to the next slide for a debrief. Select anywhere to continue.”
 - **Incorrect message** field “Incorrect. Advance to the next slide for a debrief. Select anywhere to continue.”
 - **Retry message** field “Incorrect. {Add hint feedback on slide} Select anywhere to try again.”
 - **Incomplete message** field “You have provided an incomplete answer. Select anywhere to try again.”



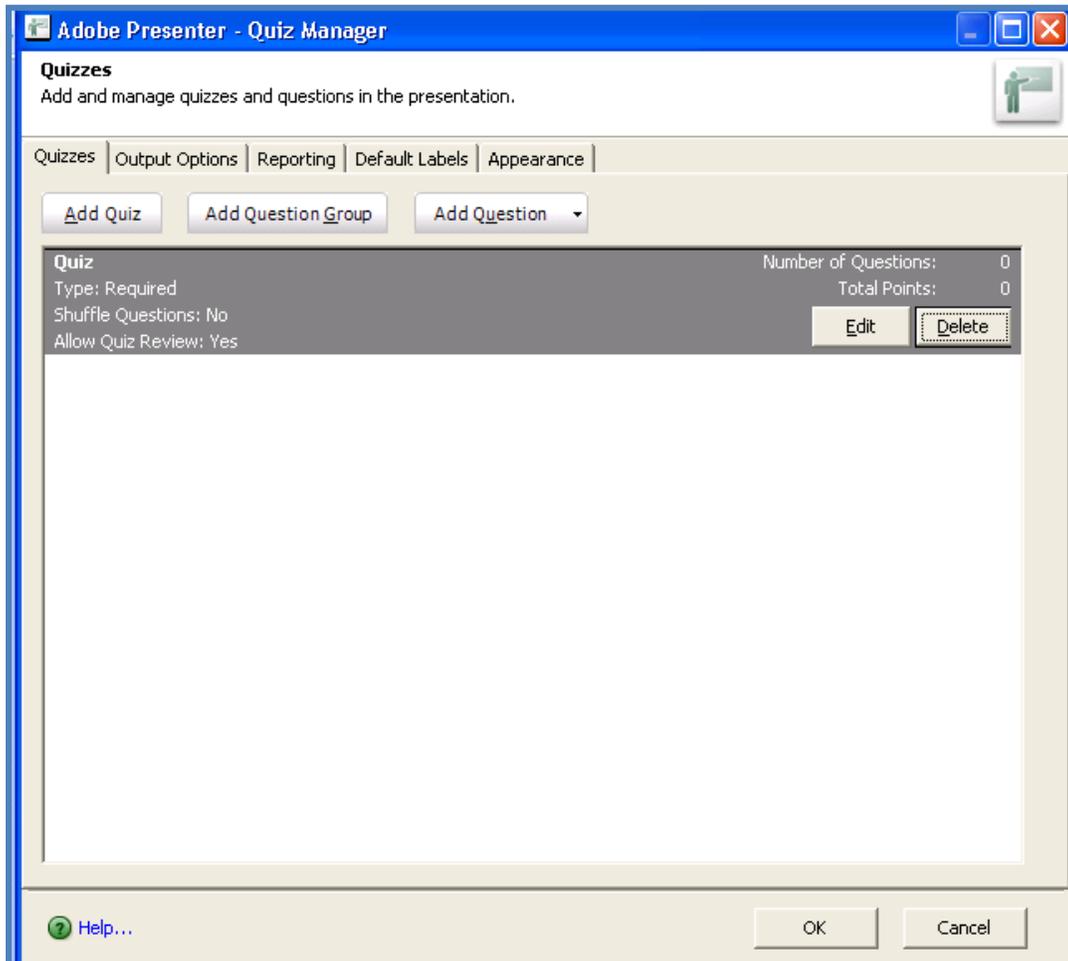
The screenshot shows the 'Adobe Presenter - Quiz Manager' dialog box with the 'Default Labels' tab selected. The dialog box has a blue title bar and standard window controls. Below the title bar, the 'Default Labels' section is active, with a subtitle: 'Write text for the buttons that appear on questions and the feedback messages that display for users.' The 'Default Labels' tab is highlighted in the navigation bar, which also includes 'Quizzes', 'Output Options', 'Reporting', and 'Appearance'. The 'Default question button labels' section contains two text input fields: 'Submit button text:' with the value 'Submit' and 'Clear button text:' with the value 'Clear'. The 'Default question feedback' section contains four checked checkboxes and their corresponding text input fields: 'Correct message' with the text 'Correct. Advance to the next slide for a debrief. Select anywhere to continue.', 'Incorrect message:' with the text 'enter Incorrect. Advance to the next slide for a debrief. Select anywhere to continue.', 'Retry message:' with the text 'Incorrect. {Add hint feedback on slide} Select anywhere to try again.', and 'Incomplete message' with the text 'You have provided an incomplete answer. Select anywhere to try again.'. At the bottom of the dialog box, there is a 'Help...' button with a question mark icon, and 'OK' and 'Cancel' buttons.

8. Select the **Appearance** tab.
9. Apply the following settings to **Fonts**.
 - Question: Arial 16, bold
 - Answer: Arial 16
 - Button: Arial 16
 - Message: Arial 16
10. Apply the following settings to **Button placement**.
 - Orientation: Horizontal
 - Position on slide: Bottom right
11. Select **Apply formatting to all existing quizzes**.

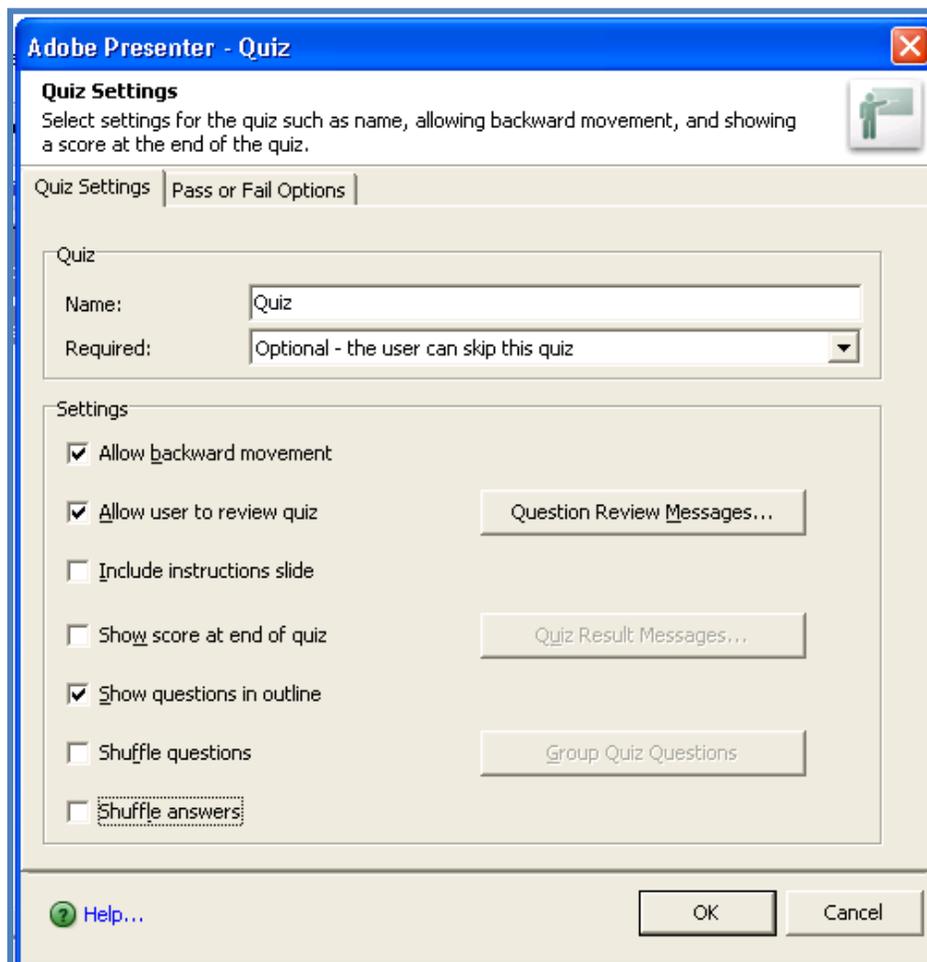


12. Select the **Quizzes** tab.

13. Select **Edit** in the **Quiz** to open the **Quiz** window.



14. Select the **Quiz Settings** tab.
15. Enter “Quiz” in the **Name** field.
16. Select “Optional – the user can skip this quiz” from the **Required** dropdown field.
17. Apply the following to **Settings**.
 - Select **Allow backward movement**
 - Select **Allow user to review quiz**
 - Deselect **Include instructions slide**
 - Deselect **Show score at end of quiz**
 - Select **Show questions in outline**
 - Deselect **Shuffle questions**
 - Deselect **Shuffle answers**

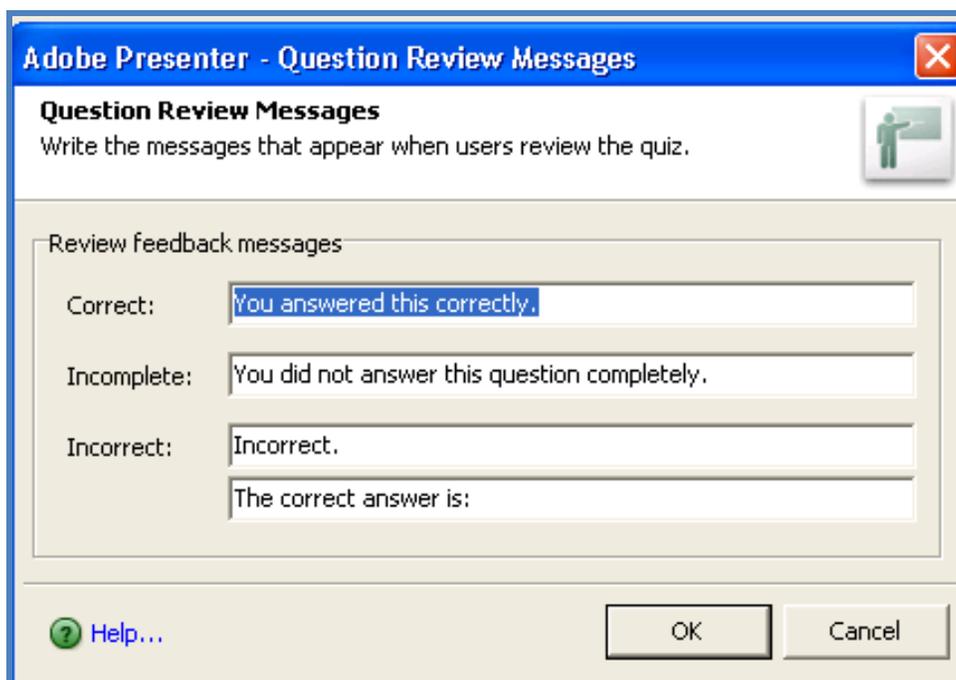


18. Select **Question Review Messages...** button to open the window.

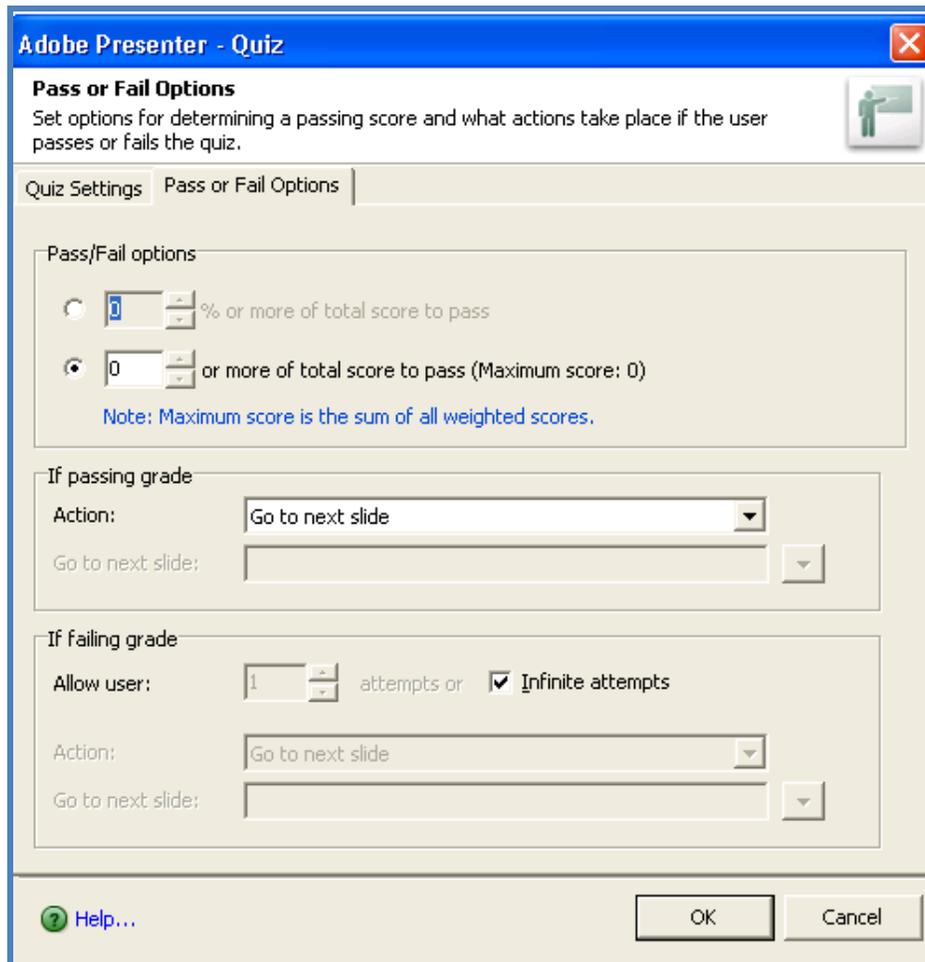
19. Enter the following text:

- **Correct** field “You answered this question correctly.”
- **Incomplete** field “You did not answer this question completely.”
- **Incorrect** field “Incorrect. The correct answer is:...”

20. Select **OK** to close the **Question Review Messages...** window.



21. Select **Pass/Fail Options** tab.
22. Select **0% or more of total score to pass**.
23. Select “Go to next slide” from the **Action** dropdown field under **If passing grade**.
24. Select “Infinite Attempts” under **If failing grade**.
25. Select **OK** to close the **Quiz** window and return to the **Quiz Manager** window.



8.3.2. Question Settings

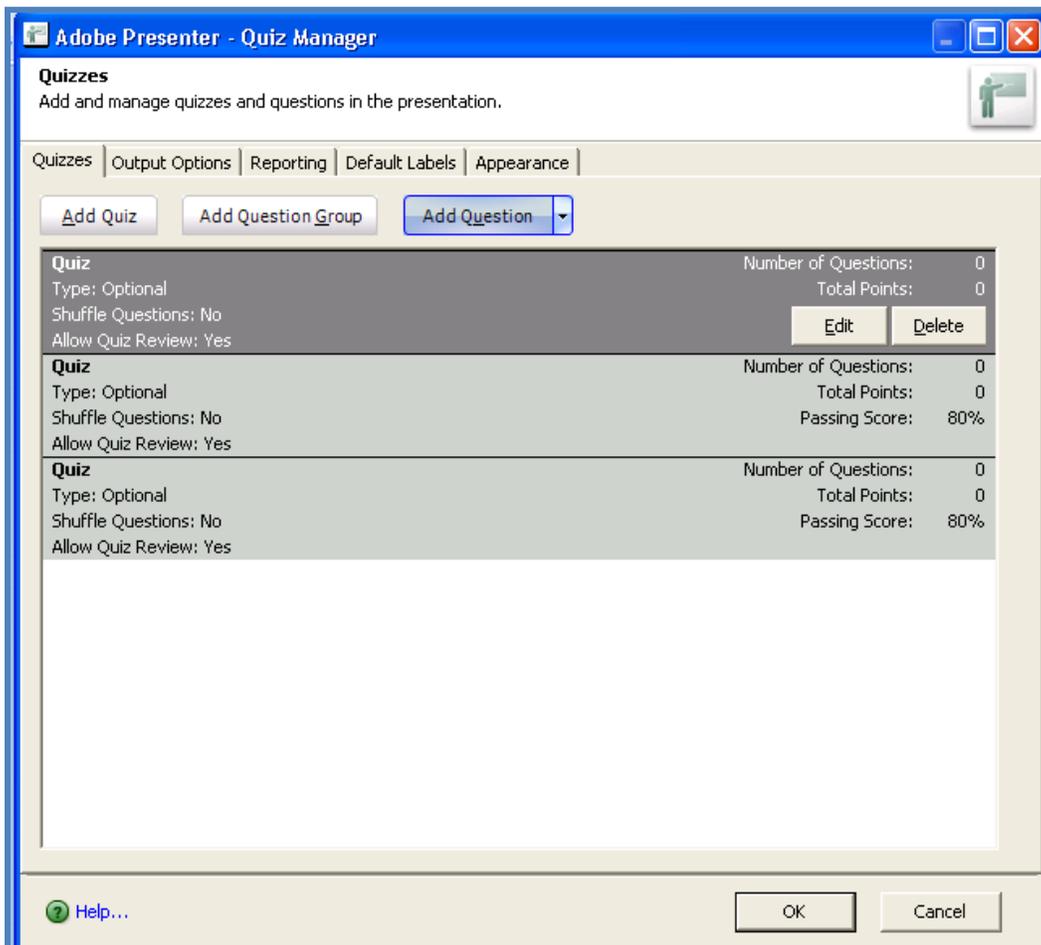
After you have set up the quiz, you can create the question(s) for the quiz.

Remember that for each knowledge check you need set up one quiz and one question.

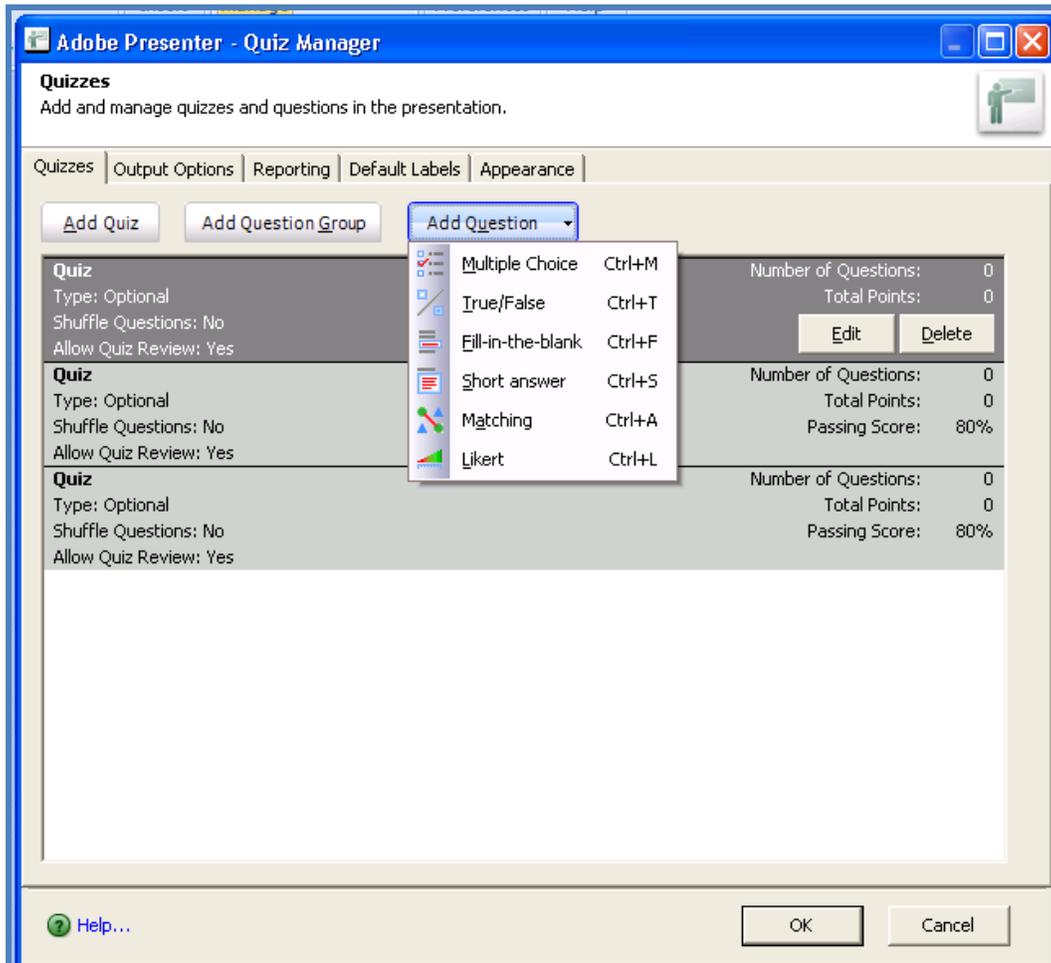
1. Open the **Quiz Manager** window by selecting **Adobe Presenter** → **Manage**.



2. Select the **Quiz** to which you are adding a question.
3. Select the drop down arrow next to **Add Question**.



4. Select the type of question indicated in the dropdown menu.



Note: The remaining steps and settings described in this section can be universally applied to all of the question types. This guide will use the multiple choice question type to illustrate each step.

5. Select **Question** tab.
6. Enter the following text in the **Name** field “Learning Outcome {x}.” Indicate which Learning Objective the question addresses.
7. Enter the following text in the **Question** field “Knowledge Check.”
8. Enter the following text in the **Score** field “0.”

Adobe Presenter - New multiple choice question

Question
Design a multiple choice question by writing a question, writing a list of possible answers, and choosing a numbering option.

Question | Options | Reporting

Question

Name: Learning Outcome {x}

Question: Knowledge Check

Score: 0

Answers

Select correct answer here Shuffle Answers

Add

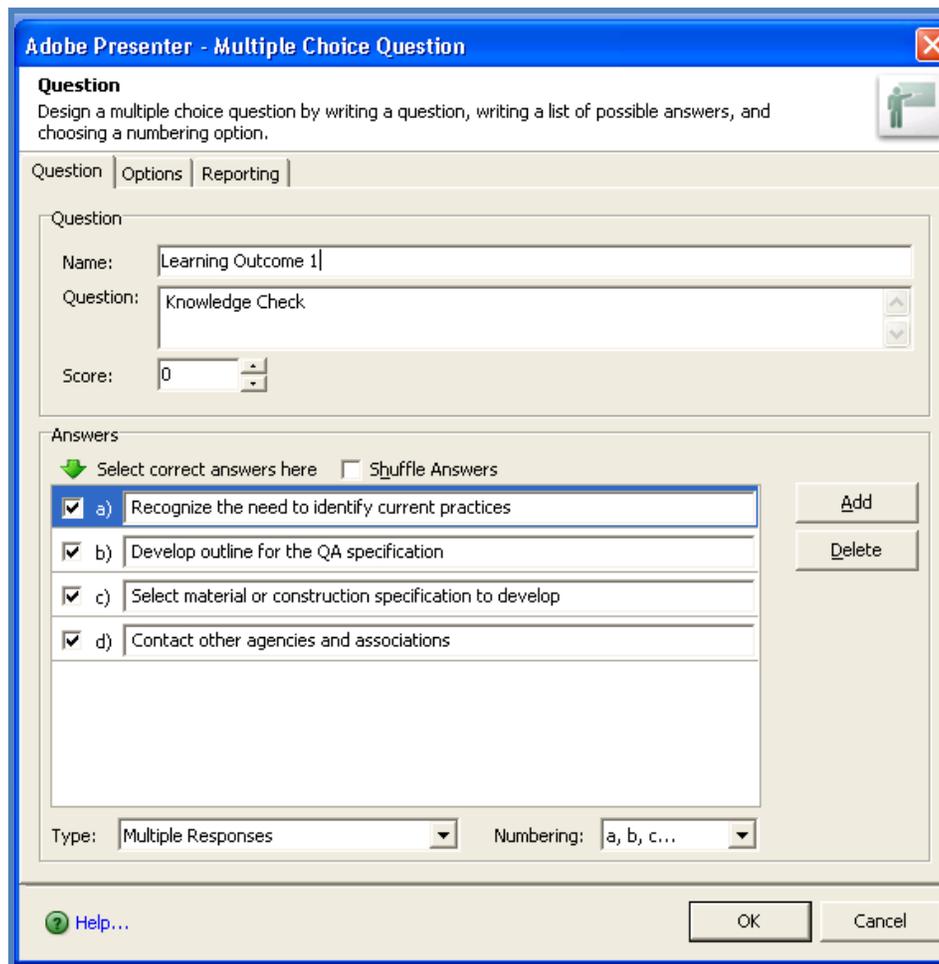
Delete

Type: Single Response

Numbering: A, B, C...

Help... OK Cancel

9. Select the **Add** button under **Answers**.
 - Enter, or copy and paste, the text for the answer options.
 - Select the correct answer(s).
10. Select either “Single response” or “Multiple response” from **Type** dropdown.
11. Select the lower case characters (a, b, c, . . .) from the **Numbering** dropdown.



7	<p>Select the Options tab, and set the following:</p> <ul style="list-style-type: none"> ▪ In the Type section: <ul style="list-style-type: none"> – Select Graded – there are right and wrong answers from the – Select Show clear button ▪ In the If correct answer section: <ul style="list-style-type: none"> – Select Go to next slide from the Action dropdown – Select Show correct message ▪ In the If wrong answer section:
---	---

	<ul style="list-style-type: none"> - Enter 2 in the Allow user field (Set to 1 for True/False or Yes/No questions.) - Select Go to next slide from the Action dropdown - Select Show error message - Select Show retry message - Select Show incomplete message
8	Select the Reporting tab and deselect Report answers
9	In the Question window, select OK .
10	In the Quiz Manager window, select OK .
11	Repeat for each knowledge check.

8.3.3. Question Formatting on PowerPoint slides

After a Quiz is created in the Adobe Presenter Quiz Manager, the text will not use the same size font or color as the master slide so the font and color must be altered manually.*

Step	Action
1	<ul style="list-style-type: none"> ▪ Add the Question to the slide in a separate text box ▪ Set font to Verdana 22 pt Bold ▪ Align to top-left of grid ▪ Set color to BLACK ▪ Set RGB color 0, 0, 0
2	<ul style="list-style-type: none"> ▪ Set answer font to Verdana 20 pt ▪ Set RGB color 0, 0, 0
3	<p>Format answers if needed.</p> <ul style="list-style-type: none"> ▪ Select all answers by holding the SHIFT key and clicking each text box. ▪ Select Format > Object ▪ On the TEXT BOX tab, un-check "<i>word wrap text in auto-shape</i>". This will cause the text to continue off the page ▪ Select the spot after the last word that fits within the grid and select the ENTER key while holding SHIFT. Complete for every line of text
4	<p>Format response boxes</p> <ul style="list-style-type: none"> • Manually adjust the font and color of the response boxes • Set font to Verdana 20 pt and RGB color 0, 0, 0 • Set box fill color to RGB 202, 212, 209 or the same color as the sub-navigation bar • Arrange the boxes so no answers are covered
5	Format Submit and Clear buttons

- | |
|--|
| <ul style="list-style-type: none">• Set font to Trebuchet 14 pt and white color• Set box fill color to RGB 0, 51, 102• Place boxes in the lower-right corner of the screen |
|--|

*To avoid this extra step, create a separate master slide for quizzes to accommodate the different font sizes and colors.

8.4. Standards for a Knowledge Check Debrief

Knowledge check debrief slides allow Adobe Presenter knowledge checks to meet Section 508 compliance. Debrief slides are required after each knowledge check in order for Section 508 compliance to be met.

In addition, the debrief slide provides an opportunity for documenting structured feedback on the correct and incorrect answers.

Apply the following guidance when creating debrief slides:

- Insert a debrief slide after every knowledge check.
- Apply the Knowledge Check Debrief layout from the WBT template to format the slide correctly.
- Match the knowledge check slide to the debrief slide in all content with the exception of:
 - Slide title.
 - Answer option buttons or boxes.
 - Question feedback buttons.
 - Navigation buttons.
- Format answer options so incorrect answers are grayed-out. Suggested color formatting for incorrect answers is **Gray, RGB color 150, 150, 150**.
- Provide feedback on the answer options.
- Record the correct answer in the narration at a minimum.

Example of Knowledge Check Debrief slides



Earthwork Series:
Earth Materials as Engineering Materials

FHWA-NHI-132089

Resources

Glossary

Help

Organic soil has which of the following properties. Select all that apply.

- a) Low shear strength
- b) Highly compressible
- c) Difficult to compact
- d) All of the above



Knowledge
Check Debrief

←
Back

→
Next



Earthwork Series:
Earth Materials as Engineering Materials

FHWA-NHI-132089

Resources

Glossary

Help

Match soil terminology with appropriate grain size.

Terminology	Grain Size
<input type="checkbox"/> e Boulder	a. 0.00008" to 0.003"
<input type="checkbox"/> b Cobble	b. 3" to 12"
<input type="checkbox"/> d Gravel	c. < 0.00008"
<input type="checkbox"/> f Sand	d. 0.079" to 3"
<input type="checkbox"/> a Silt	e. ≥12"
<input type="checkbox"/> c Clay	f. 0.003" to 0.079"



Knowledge
Check Debrief

←
Back

→
Next

8.5. Standards for End-of-Course Assessments

An end-of-course assessment is created using the Adobe Presenter Quiz Manager.

In order for students to qualify for Continuing Education Credits (CEU), the exams must have the following settings:

- Every question is required.
- There is no feedback.
- Each answer is communicated back to the LMS and tallied.
- The final score must be given to the student, who must score better than 70% to pass.

Given these constraints, this exam is not Section 508 compliant. Any learner who cannot complete the exam should contact NHI Training (NHITraining@dot.gov) and an NHI representative will proctor the exam for the student verbally.

This version is not Section 508 compliant for several reasons.

- A learner using the keyboard to navigate cannot select the different multiple choice options and the Submit button (the mouse must be used.)
- A learner using a screen reader will not know what option has been selected.
- Learners using either a screen reader or the keyboard to navigate (or both) will not be able to obtain a score.

8.6. Adobe Presenter Settings for End-of-Course Assessments

The end-of-course assessment should be created as one quiz with multiple questions in a separate PowerPoint file.

You must set up a quiz before you can enter the questions.

8.6.1. Quiz Manager Settings

Step	Action
1	Open the Quiz Manager window by selecting Adobe Presenter → Quiz → Manage .
2	In the Quiz Manager window, select the Output Options tab: <ul style="list-style-type: none"> ▪ Deselect Display question list in quiz pane ▪ Deselect Show incomplete quiz warning
3	In the Quiz Manager window, select the Reporting tab, then select

Step	Action
	<p>Enable reporting for this presentation. Set the following:</p> <ul style="list-style-type: none"> ▪ Learning Management System: <i>Adobe Connect Pro</i> ▪ Report Pass or Fail: <i>Report status as defined by report data</i> ▪ Choose report data: <i>Report to Adobe Connect Pro</i> ▪ Report score to LMS as: <i>Score</i> ▪ Reporting level: <i>Only report the score</i> <p>Select OK</p>
4	<p>In the Quiz Manager window, select the Default Labels tab, and set:</p> <p>26. In the Default question button labels section:</p> <ul style="list-style-type: none"> – Submit button text: Submit – Clear button text: Clear <p>27. In the Default question feedback section:</p> <ul style="list-style-type: none"> – Deselect Correct message. – Deselect Incorrect message. – Deselect Retry message. – Select Incomplete message, and enter: “You must answer the question before continuing.”
5	<p>In the Quiz Manager window, select the Appearance tab, and set:</p> <p>28. Fonts</p> <ul style="list-style-type: none"> – Question: Arial 16 – Answer: Arial 16 – Button: Arial 16 – Message: Arial 16 <p>29. Button placement</p> <ul style="list-style-type: none"> – Orientation: Horizontal – Position on slide: Bottom right <p>30. Select Apply formatting to all existing quizzes</p>
6	<p>In the Quiz Manager window, select the Quizzes tab.</p>
7	<p>Select Add New Quiz to open the New Quiz window.</p>
8	<p>Select the Quiz Settings tab.</p>
9	<p>In the Name field, enter {Course Name}.</p>
10	<p>From the Required dropdown, select Answer all – the user must answer every question to continue</p>

Step	Action
11	<p>In the Settings section:</p> <p>31. Deselect <i>Allow backward movement</i></p> <p>32. Deselect <i>Allow user to review quiz</i></p> <p>33. Deselect <i>Include instructions slide</i></p> <p>34. Select <i>Show score at end of quiz</i></p> <p>35. Deselect <i>Show questions in outline</i></p> <p>36. Deselect <i>Shuffle questions</i></p> <p>37. Deselect <i>Shuffle answers</i></p>
12	<p>Select Pass/Fail Options tab and:</p> <ul style="list-style-type: none"> ▪ In the Pass/Fail options section, set <i>70% or more of total score to pass</i> ▪ In the If passing grade section, select <i>Go to next slide</i> from the Action dropdown ▪ In the If failing grade section: <ul style="list-style-type: none"> – Set Allow user to <i>1 attempts</i> – Select <i>Go to next slide</i> from the Action dropdown
13	<p>Select OK to close the New Quiz window</p>

8.6.2. Question Settings

After you have set up the quiz, you can create the questions. For the end-of-course assessment, there is one quiz for the assessment, with multiple questions in the quiz.

Use the step/action chart below to set up the quiz questions.

Step	Action
1	In the Quiz Manager window, select the quiz to which you are adding a question, then select the drop down arrow next to Add Question .
2	Select the type of question indicated in the storyboards, then select Create Graded Question . NOTE: The type of question used in this example is Multiple Choice. The inputs are similar for other types of questions, unless noted.
3	In the {Type} Question window, the question section is similar for all questions types. Set the following: <ul style="list-style-type: none"> ▪ Name field: Enter “Learning Outcome {x}” Note: Indicate which Learning Outcome/Objective the question addresses. ▪ Question field: Enter assessment question, i.e. “What color is the banana?” ▪ Score field: Enter the number of points for the question. Note: The total number of points for an end-of-course assessment should be 100. Distribute points as evenly as possible through all questions on the assessment, but only include 1 question per learning outcome.
4	From the Type dropdown, select either single response or multiple responses, based on the storyboard.
5	From the Numbering dropdown, select the lower case characters (a, b, c, . . .)
6	In the Answers section, select Add , then enter the text for the answer options. Select the correct answer(s).
7	Select the Options tab, and set the following: <ul style="list-style-type: none"> ▪ In the Type section: <ul style="list-style-type: none"> – Select Graded – there are right and wrong answers from the – Deselect Show clear button ▪ In the If correct answer section:

Step	Action
	<ul style="list-style-type: none"> – Select Go to next slide from the Action dropdown – Deselect Show correct message ▪ In the If wrong answer section: <ul style="list-style-type: none"> – Enter “1” in the Allow user field <ul style="list-style-type: none"> ○ Note: Set to 1 for all question types in the end-of-course assessment. – Select Go to next slide from the Action dropdown – Deselect Show error message – Select Show incomplete message
8	Select the Reporting tab and select Report answers , then: <ul style="list-style-type: none"> ▪ Select the {Course Name} from the Name dropdown. ▪ Do not change the Interaction ID.
9	In the Question window, select OK .
10	In the Quiz Manager window, select OK .

Standards for Course Evaluations

NHI assesses the participant’s overall training experience using a standardized, online evaluation.

The course evaluation is

- Accessed by participants via an external link on one of the final screens of the training module (if no end-of-course assessment is included in the curriculum or is optional.)
- Accessed by participants via an external link on the report screen of the end-of-course assessment.

NHI will manage the collection and analysis of course evaluation data. The developer can request copies of this data from NHI.

Evaluation links are generated from the course number and the session number that are assigned by NHI. Please contact NHI for this information.

The evaluation link should be formatted in the following manner:

[www.nhies.info/online-eval.html?coursenumber=\[CMTS course number\]&sessionnumber=\[CMTS session number\]](http://www.nhies.info/online-eval.html?coursenumber=[CMTS course number]&sessionnumber=[CMTS session number])

Here is an example:

<https://www.nhies.info/online-eval.html?coursenumber=134095&sessionnumber=20090601>

If a course number incorporates a letter, e.g. 134095A, that letter needs to be capitalized in the PTG link in order to work correctly.

9. Standards for Publishing

Use this section when preparing to publish WBT courseware. The settings established in this section, in conjunction with the NHI WBT template, establish a consistent graphical user interface (GUI) for the courseware.

Prior to publishing any WBT courseware, information in the “Settings” and “Slide Manager” of Adobe Presenter needs to be preset. Publish WBT courseware after this information has been correctly inputted and saved.

Courseware may be published locally or to an Adobe Connect Pro external server. Where the courseware is published depends on what the developer is trying to accomplish. See Section 1.4 of this guide for more specific guidance on where to publish content during the WBT development process.

Published courseware is referred to in the Adobe Presenter environment as “Content.”

9.1. Presentation Settings

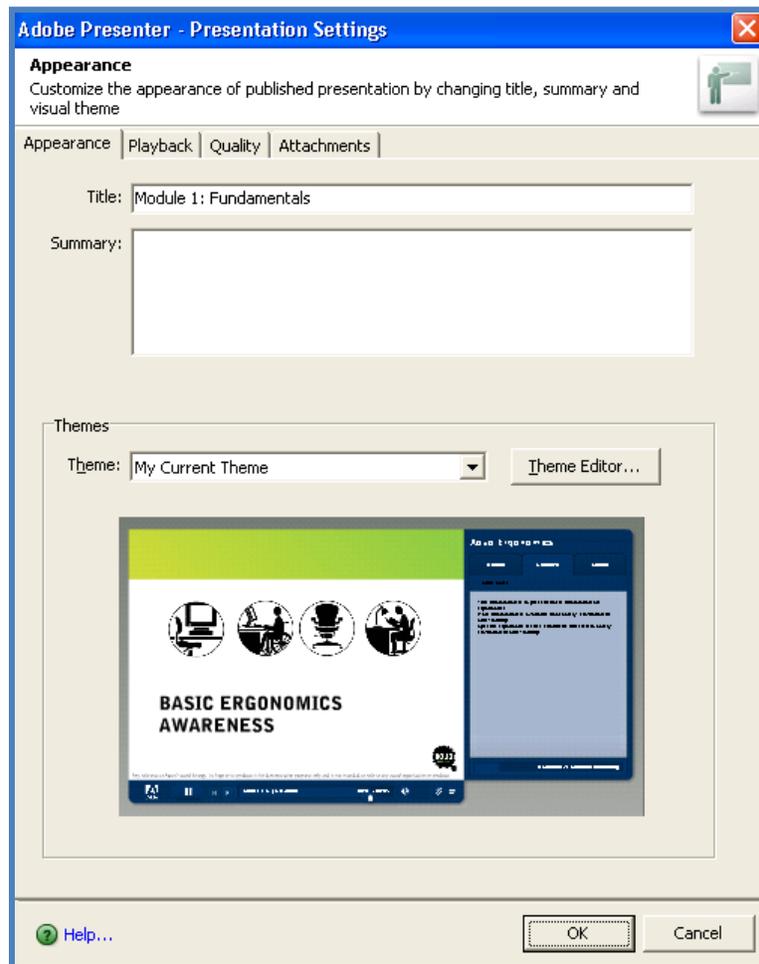
9.1.1. Theme Editor Settings

Theme editor settings should be set prior to publishing courseware. The settings can be saved and reapplied to the same product or new products as needed.

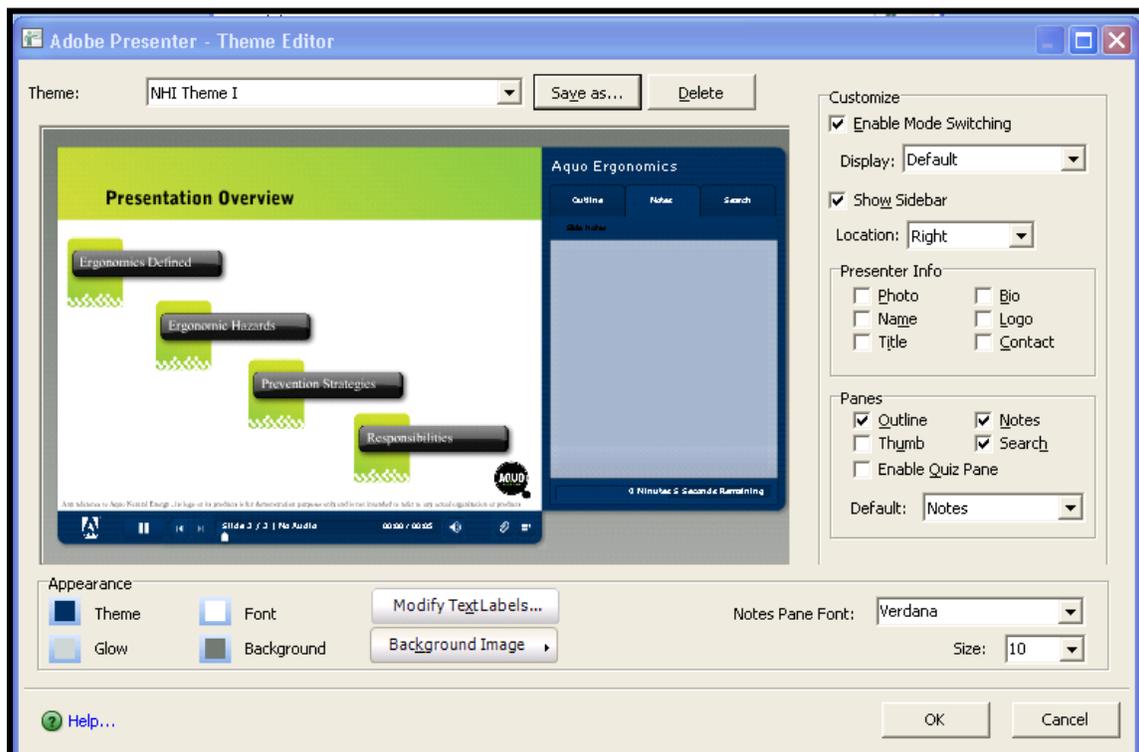
1. Open the **Presentation Settings** window by selecting **Adobe Presenter** → **Settings**.



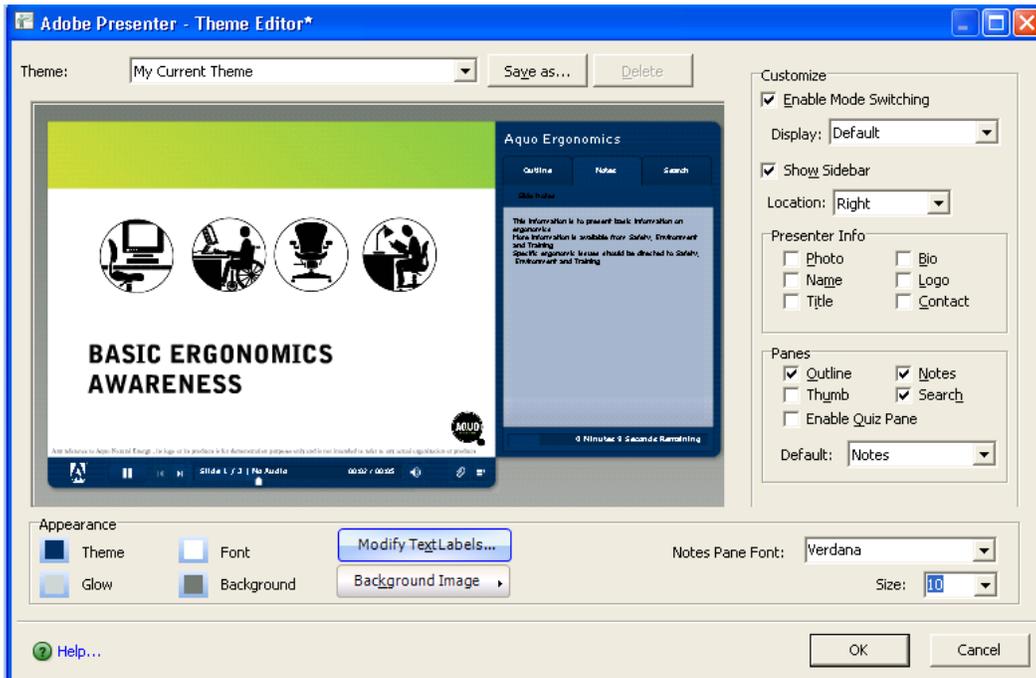
2. Select **Appearance** tab.
3. Enter “Module {title}” in the **Title** field.
4. Select **Theme Editor** button under **Themes** to open the **Theme Editor** window.



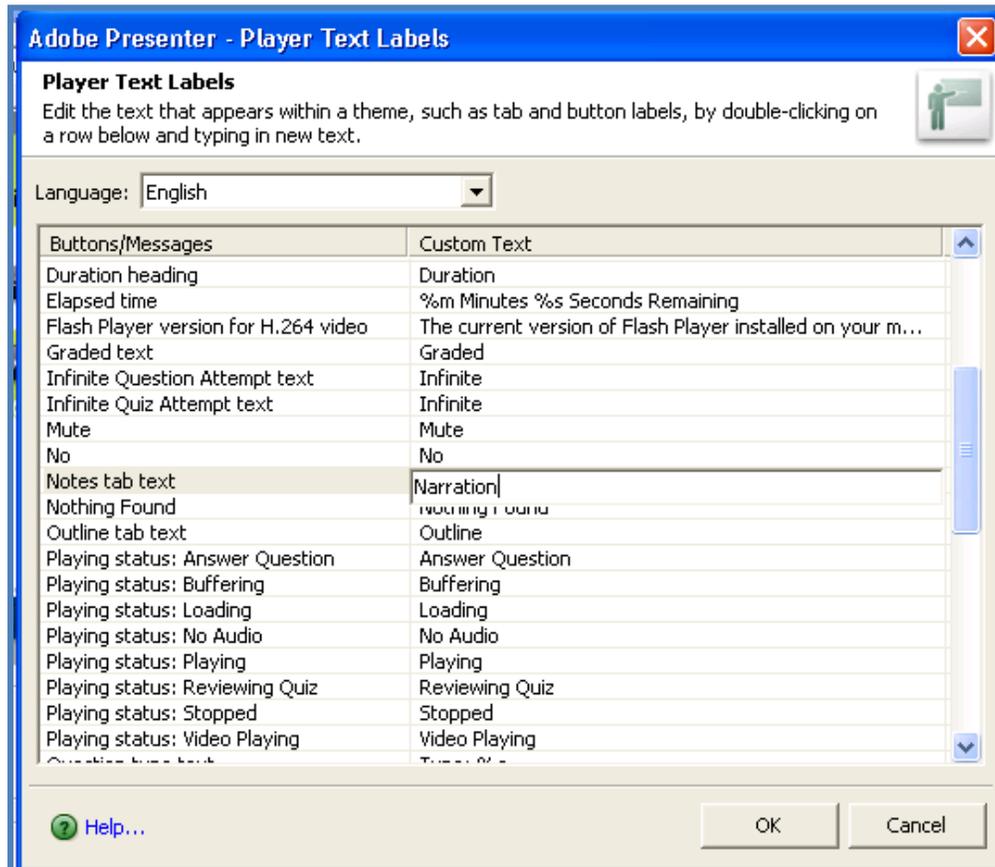
5. Select **Save as...** button and enter “NHI Theme I”.
6. Select **Enable Mode Switching** the following under **Customize**.
 - Select “Default” from the **Display** dropdown.
5. Select **Show Sidebar**.
 - Select “Right” from the Location dropdown.
6. Deselect all boxes under **Presenter Info**.
 - Select the **Outline Pane** Checkbox
7. Select **Outline, Notes, and Search** under **Panes**.
8. Select “Notes” from the **Default** dropdown.
9. Select “Verdana” from the **Notes Pane Font** dropdown.
10. Select “10” from the **Size** dropdown.



11. Select **Modify Text Labels** button under **Appearances**.



12. Enter "Narration" for **Notes tab text** in **Custom Text** column.
13. Select **Okay** to return to *Theme Editor* window.

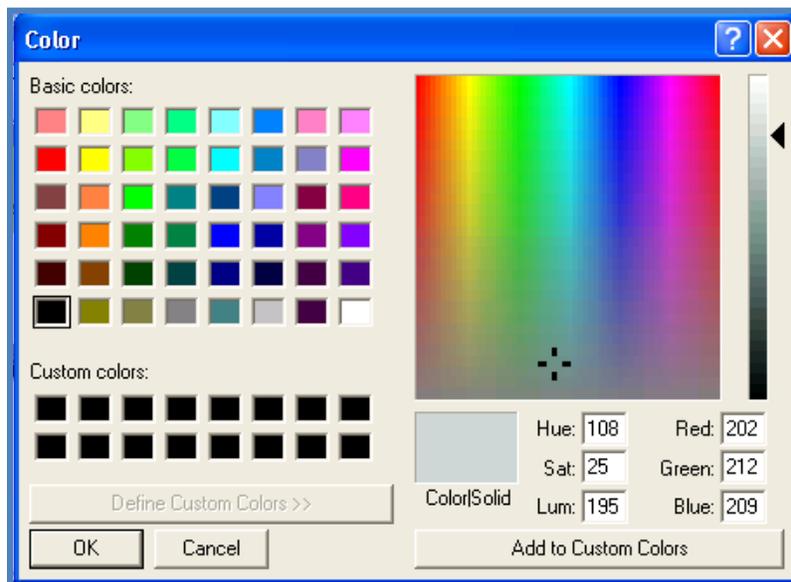
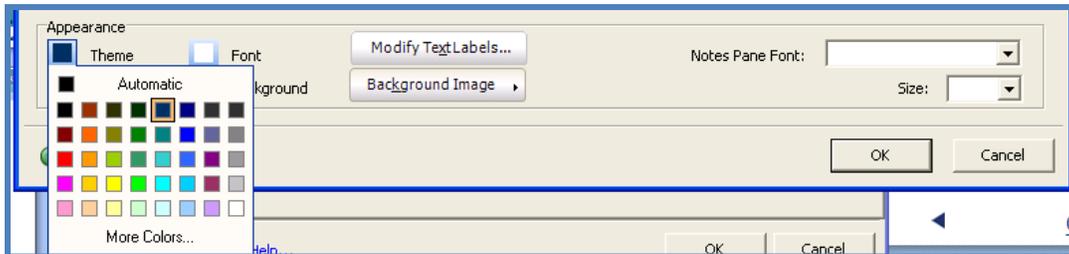


14. Select each colored box under **Appearance**.

15. Enter the following settings under **More Colors** or select the color indicated.

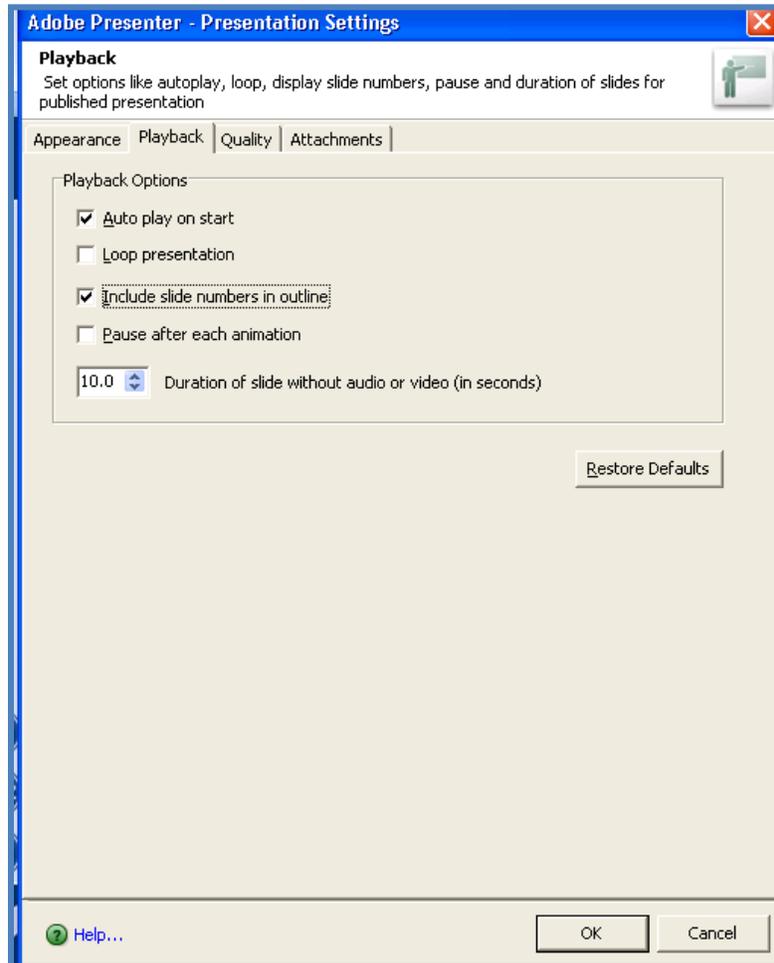
- **Theme:** Hue: “140”, Sat: “240”, Lum: “48”, Red: “0”, Green: “51”, Blue: “102”
- **Glow:** Hue: “108”, Sat: “25”, Lum: “195”, Red: “202”, Green: “212”, Blue: “209”
- **Font:** “White”
- **Background:** Hue: “75”, Sat: “8”, Lum: “110”, Red: “114”, Green: “121”, Blue: “113”

16. Select **OK** to return to the *Theme Editor* window after adjusting each color setting.

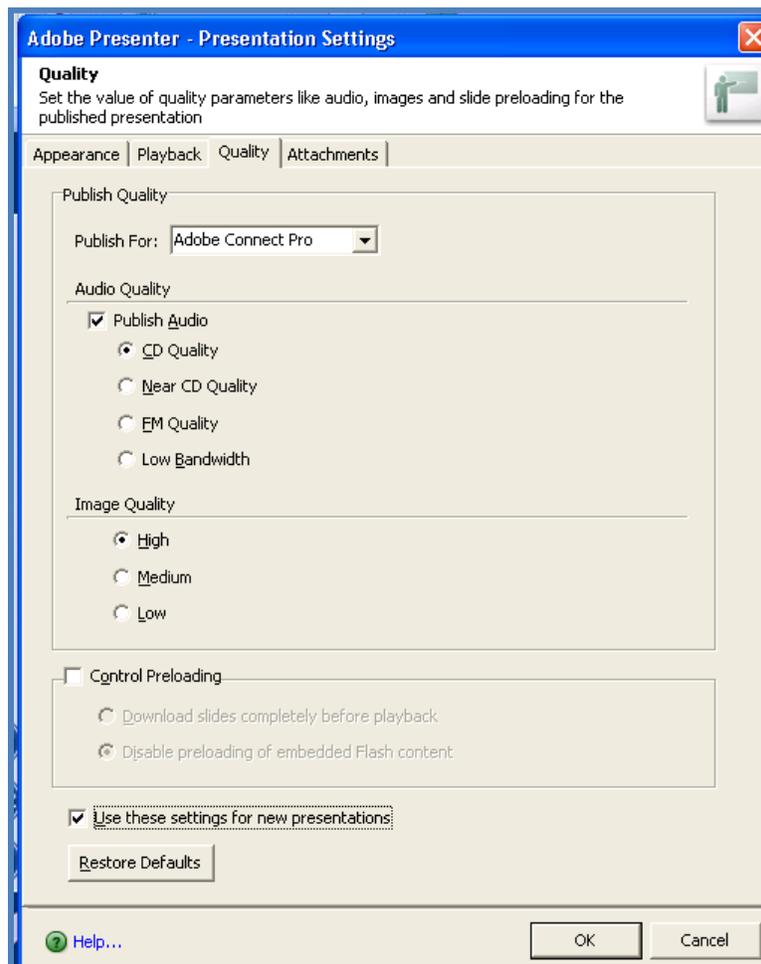


9.1.2. Additional Presentation Settings

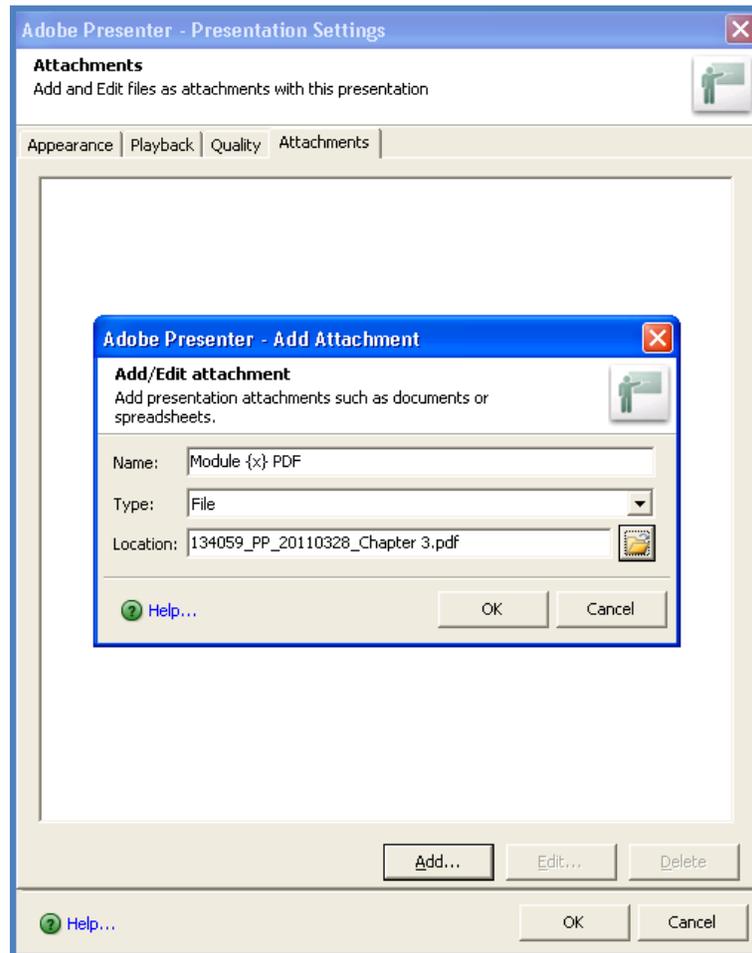
17. Select **Playback** tab.
18. Select **Auto play on start** and **Include slide numbers in outline**.



19. Select the **Quality** tab.
20. Select “Adobe Connect Pro” in the **Publish for** dropdown.
21. Select **Publish Audio** and **CD Quality** under **Audio Quality**.
22. Select **High** under **Image Quality**.
23. Deselect **Control Preloading**.
24. Select **Use these settings for new presentations**.



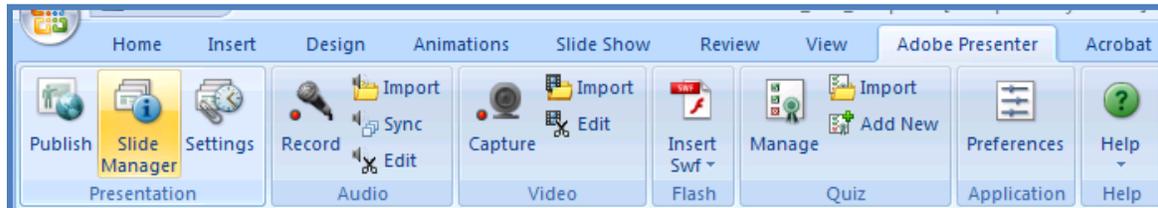
25. Select the **Attachments** tab. Here you will attach a PDF version of the presentation. If you have not done so already, create a print-ready PDF version of the presentation in notes view.
 - Ensure all text in the notes will fit on the slide in notes view.
26. Select the **Add** button.
27. Enter “Module {x} PDF” in the **Name** field.
28. Select “File” in the **Type** field.
29. Select the file folder icon.
 - Navigate to the PDF and select it.
 - Choose the **Open** button to select the PDF.
 - Select **OK** to save the attachment in the **Location** field.
30. Select **OK** to save your settings and exit the Presentation Settings.



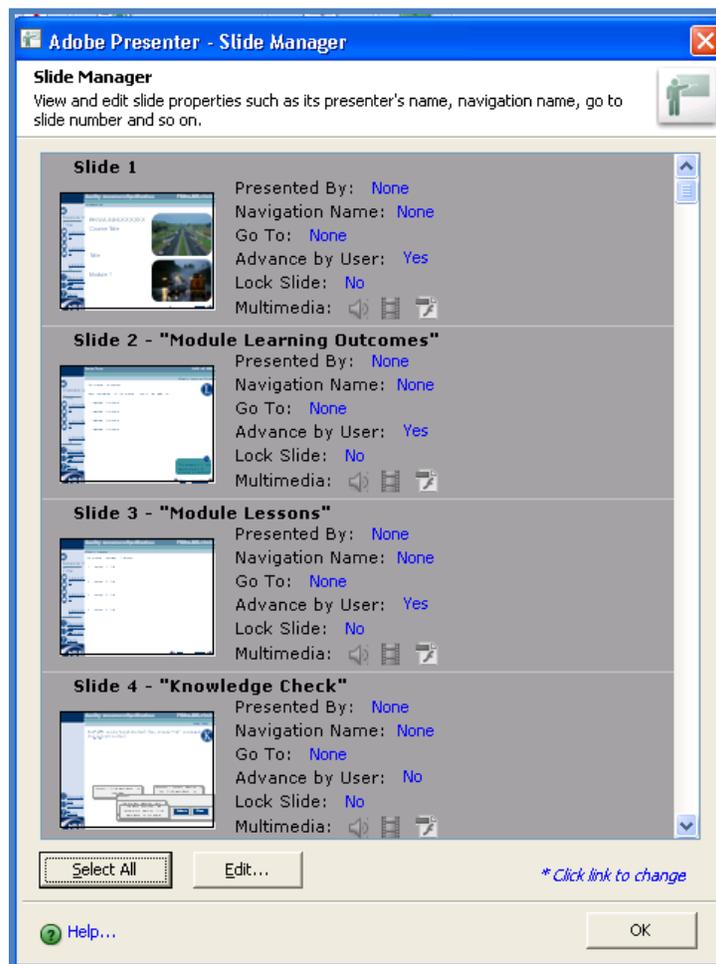
9.1.3. Slide Manager Settings

Before publishing the PowerPoint file, modify the Slide Manger settings as follows.

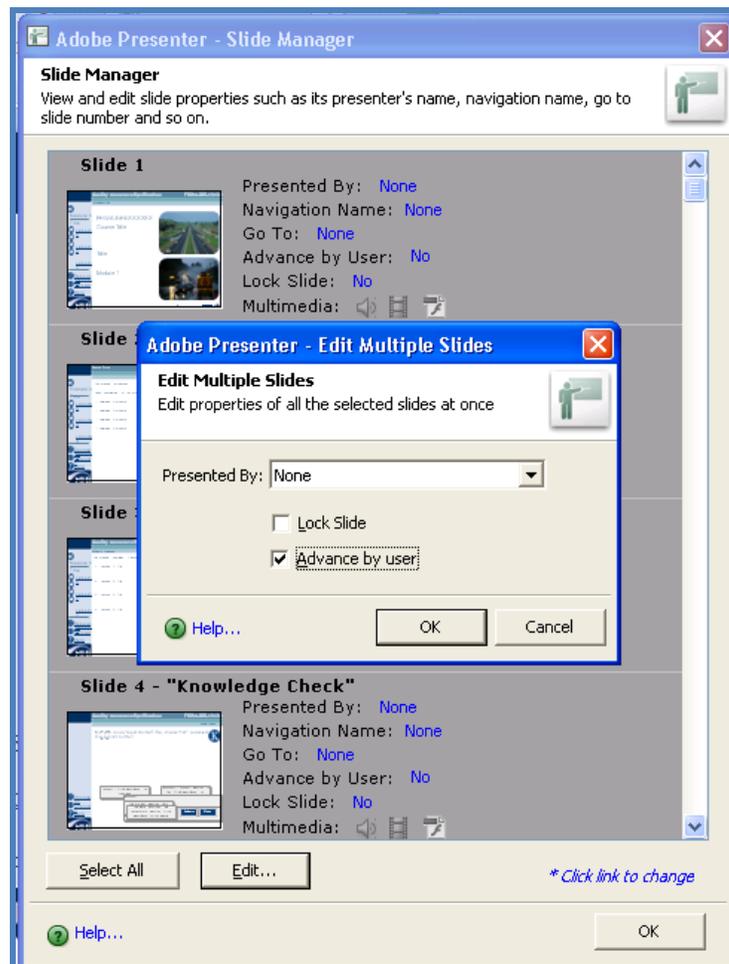
1. Open the **Slide Manager** window by selecting **Adobe Presenter → Slide Manager**.



2. Choose the **Select All** button.



3. Select the **Edit** button.
4. Select **Advance by User**.
5. Select the **OK** button.
 - All of the slides should now say “yes” next to **Advance by User**.
6. Select **OK** to save the settings and exit **Slide Manager**.



10. Delivery Formats

NHI shall hold ownership of the final courseware (source files), including the PowerPoint files and all final and raw audio, video, Flash (.FLA), and graphic files.

Deliverables for WBT courses are electronic files. Deliver the products required by the contract as final deliverables in the following formats.

- CD-ROM of all source files, including
 - Presentation and exam in Microsoft PowerPoint 2007 or later format (may be segmented by module or lesson if files are large)
 - Adobe .ppc files or raw audio files, such as .wav or mp3
 - Video as compressed digital files in .flv or .avi
 - Animation in Flash as .fla
 - Other resource materials, such as spreadsheets or tables, that are accessed via external links
 - Graphics as compressed, processed files and .psd with layers preserved
- CD-ROM in .PDF format (marked with “P” on the CD label)
 - Presentation materials (provided print-ready as separate files for each module-this file should also be attached to published file)
 - Reference manual (provided print-ready as one complete document)
 - Other materials required for course delivery
- Published files
 - Adobe .ppx files (published presentation)
 - Adobe .ppc files (published audio)
- Copies of all copyright releases and letters granting permission for use from the authors or artist, if applicable
- Any written approvals for modifications

10.1. CD-ROM Labels

- U. S. Department of Transportation/Federal Highway Administration logo
- NHI logo
- Publication number
- Date (month and year)

- NHI course number
- NHI course title
- Type of document (e.g., facilitator guide, participant workbook, reference manual)
- IACET logo (if applicable)

The publication number is specific to each course deliverable and provided to the contractor by the NHI TPM or ISD.

10.1.1. Use of Logos and Company References

- Company logos will not be included on any deliverable to NHI.
- References to the company and/or persons developing, designing, and/or delivering the course will not be included in any PW, IG, RM, or visual aids (exceptions must be documented on Technical Report Documentation Page).

11. Standards for Electronic File Submissions

The U.S. Department of Transportation (DOT) Standard indicates that all printed materials, including visual aids, must be developed using Microsoft Office 2007 (or later) format. This requirement allows NHI to edit all documents delivered by the developer.

- Note that NHI currently accepts Microsoft Office 2007 or later versions.
- Documents should not be delivered in read only, presentation- only, or password protected format.
- The use of macros and other complex formatting should be kept to a minimum.

Use the requirements below to create folders for files delivered to NHI.

11.1. Source Files Folder

- Presentation Materials
- Reference Manual
- Test Materials
- Supplemental Materials

11.2. PDF Files folder

- Presentation Materials
- Reference Manual
- Supplemental Materials

11.3. Readme File

- If a course shares materials with another course, document that need in the readme file.
- Additional information on use of materials or printing requirements is included in this file, as well.

11.4. File Naming Conventions

Following are file naming conventions for each deliverable. Separate each item in the file name with an underscore (_).

- Course number
- Publication Type

- RM (reference manual)
- PP (PowerPoint presentation)
- EX (exam, test, assessment, evaluation instrument, answer key)
- SM (simulation)
- VD (video)
- AU (audio)
- BK (book)
- OM (other materials)
- Publication number (if applicable)
 - Obtain from NHI (XX-XXX)
- Revision date formatted in a two-digit month and year
 - 0511
- File Description (short description of the file, if necessary)
 - ExamA
 - ExamB
- Application Extension
 - PDF (Adobe Acrobat)
 - DOC (Microsoft Word)
 - PPT (Microsoft PowerPoint)
 - PPC (Auto-generated audio file by Adobe Presenter)
 - WAV or MP3 (Audio file)
 - .FLV or .AVI (Video file)
 - If use of other software has been approved, use standard application extensions

Following are two examples of file names using the convention *Course Number_Type_Pub #_Date_Desc.*

- 130053_PW_09-116_0511.pdf
- 141031_EX_0702_TestA.doc (an example where no publication number will be assigned)

References

Gagne R, Driscoll M. Essentials of learning for instruction (2nd ed.). 1998. Boston: Allyn & Bacon.

Kirkpatrick D, Kirkpatrick J. Evaluating training programs: the four levels (3rd ed.). 2006. San Francisco: Berrett-Koehler.

Knowles, M. S., Holton, E. F., & Swanson, R. A. The adult learner (6th ed.). 2005. Burlington, MA: Elsevier Butterworth-Heinemann. (Original work published 1973.)

Mager, Robert. Making instruction work. 1988. Belmont, CA: Lake Publishing Co.