

INSTRUCTIONAL SYSTEMS DESIGN

The Course Development Process

Analysis Phase

During the Analysis Phase of course development, an NHI instructional systems designer works closely with subject matter experts and members of the target audience to identify job requirements, as well as the knowledge and skills needed to meet those requirements (i.e., what the target learners do to meet performance expectations). Business drivers are discussed. Target audience characteristics are identified. Collaboratively, technical experts and instructional design experts identify a course goal and course learning outcomes, based on organizational needs and job requirements of the target audience.

With the framework established, a panel of technical experts then determines what the target audience needs to know in order to perform successfully on the job. For every learning outcome, supporting knowledge is identified. The panel then brainstorms instructional strategies for presenting and practicing content, as well as for evaluating a learner's mastery of the course content.

Given business drivers, a target audience profile and learning outcomes, an instructional systems designer helps a technical panel decide how to best deliver the course. Possibilities are classroom training, Web conference training, Web-based training, video tele-training or a blend of delivery approaches.

The technical panel, with assistance from an instructional systems designer, chunks content into smaller segments (i.e., lessons or modules) and estimates the total course duration.

All decisions made by a technical panel are documented in a Project Definition Document, which is used to create a Statement of Work for the course development team.

Design Phase

During the Design Phase of course development, the course development team (an instructional systems designer and subject matter expert) creates a draft design plan (i.e., draft preliminary lesson plan). In this plan, the following are specified:

- Draft Lesson/Module Number
- Draft Lesson/Module Titles
- Draft Lesson/Module Learning Outcomes
- Draft Lesson/Module Instructional Strategy
- Draft Lesson/Module Evaluation Strategy
- Estimated Time Allocation
- References (sources of content)

The draft design plan (i.e., preliminary lesson plan) is presented to a technical panel for review and comment – typically, in a project team meeting. An NHI instructional systems designer participates in the review to help ensure the integrity of the course design plan. Subsequent to the review, the course developer incorporates change are incorporated into a final design plan (i.e., lesson plan).

An NHI Training Program Manager approves the final design plan. The approved design plan (i.e., set of lesson plans) serves as a blueprint during the Development Phase of the project.

For self-paced Web-based courses, the course development team also creates a prototype lesson during the Design Phase. The purpose of the prototype is to demonstrate how the course development team intends to implement the design (e.g., writing style, visual treatment, and level of interactivity). A technical panel and NHI instructional design staff review to the prototype and provide feedback. The course development team incorporates changes and submits a final prototype lesson for approval by an NHI Training Program Manager.

Development Phase

During the course Development Phase, an instructional systems designer works closely with subject matter experts to create draft course materials, using NHI-provided templates, in accordance with NHI standards.

A panel of technical experts reviews the draft lessons/modules for technical accuracy. An NHI instructional systems designer participates in this review to help ensure that the course developer has adhered to adult learning principles and that the course content supports learning outcomes. The course developer updates the course materials, which are submitted to NHI for approval.

Next, a technical review is held. A small number of expert reviewers carefully inspect all draft course materials and identifies any technical errors or inconsistencies. The course development team completes a second round of changes to the draft course materials.

The course development team facilitates a technical walk-through of the final draft course materials. The process changes slightly for each delivery method, as shown in this table:

Delivery Method	Course Materials	Review Process
Instructor-led Classroom	<ul style="list-style-type: none"> Final Draft Instructor Guide Final Draft Participant Guide Final Draft Visuals Final Draft Reference Materials Final Draft of any other ancillary materials 	Typically, a technical walk-through is held as an in-person session. A member of the course development team presents three lessons/modules of the course (if instructor-led materials). A review panel provides real-time feedback that is captured by the course development team.

Web-conference Training	<ul style="list-style-type: none"> • Final Draft Facilitator's Guide • Final Draft Participant's Guide • Final Draft Visuals • Final Draft Reference Materials • Final Drafts of any other ancillary materials • Proposed meeting room layout 	<p>A technical walk-through is held as a Web conference. A member of the course development team facilitates three lessons/modules of the course (if instructor-led materials). A review panel provides real-time feedback that is captured by the course development team.</p>
Web-based Training	<ul style="list-style-type: none"> • Beta courseware 	<p>A technical walk-through is held as an online Beta courseware review. A panel of experts provides feedback that is collected by the course development team.</p>

The course development team incorporates in-scope changes to the final draft course materials. The resultant version of the course is used during the course pilot. An NHI Training Program Manager approves the pilot-ready course materials.

An NHI Training Program Manager, NHI client (e.g., program office), and the course development team collaboratively plan a pilot offering of the course. The panel of technical experts may also participate in pilot planning.

Participants in a pilot are members of the intended target audience. The purpose of the pilot is to test the course instructional strategies and content to ensure that the course works as envisioned. Participants are asked to provide evaluative feedback. Observers (i.e., members of the technical team) are also given an opportunity to give their impressions.

An NHI Training Program Manager facilitates a feedback session with participants and the technical panel of experts. An NHI Training Program Manager submits comments to the course development team. Changes are discussed and either accepted, rejected or modified.

The course developer incorporates all mutually agreed-upon changes to the course materials and submits final copies of all deliverables. An NHI Training Program Manager approves all final project deliverables.

Final course materials are reproduced and distributed (or posted to a server). The NHI course catalog is updated. NHI markets the course to the highway community.

Implementation Phase

Instructor-led and Web-conference Training

NHI lists courses in its course catalog, which is available on the NHI web site. The following content from the final design plan (lesson plan) is included in the course catalog: course title, course description, duration, target audience, learning outcomes, delivery method and pre-requisites (if any).

NHI courses are typically requested by a course host, such as a State department of transportation or an engineering firm. A course host submits a course request to NHI with tentative session dates/times and location (if classroom). The NHI scheduler contacts a pre-qualified instructor to inform him or her of the course request. The instructor contacts the host to confirm the session dates/times and location, as well as to discuss any State-specific requirements. The NHI scheduler then completes the process and the scheduled session appears on the NHI web site.

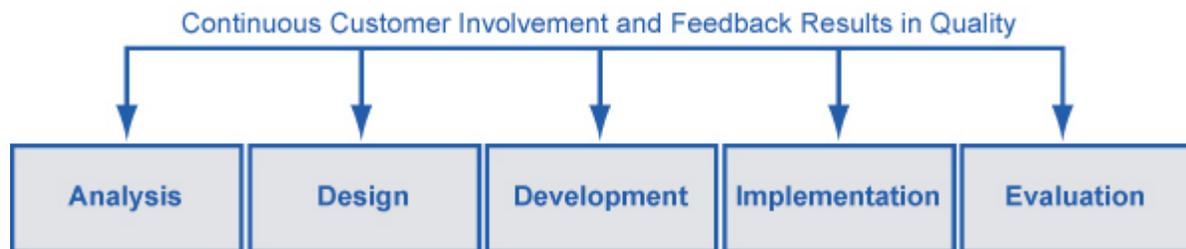
NHI may act as a course host itself. NHI-sponsored courses are occasionally held at the NHI Learning Center in Arlington, VA.

Web-based Training

NHI also provides descriptions of all online, self-paced courses in its course catalog. Individuals may create an NHI account through the web site and register for courses online.

Evaluation Phase

Instructional systems design, by its very nature, is an iterative process of create–review–revise. The client and technical experts are involved at every phase of the project development lifecycle as shown in the diagram below.



ANALYSIS, DESIGN AND DEVELOPMENT PHASES

Each phase of the process results in a deliverable. Each deliverable is submitted to NHI in draft form, evaluated by technical experts and NHI instructional design staff, and revised by the course development team. Using this iterative process, the client is not surprised at the technical walk-through (or Beta review, if the delivery format is Web-based training) or at the pilot. In fact, the client is an integral part of the project team through the entire project lifecycle.

IMPLEMENTATION PHASE

NHI is required to collect reaction and learning data in order to maintain its affiliation with the International Association for Continuing Education and Training (IACET). Once a course is in the Implementation Phase (i.e., delivery phase), NHI applies Levels 1 and 2 of the Kirkpatrick Model as prescribed during the Analysis Phase.

Level of Evaluation	Completed By	Data Collection Method
1 – Reaction	Each Web-conference Training Facilitator	Online evaluation form to gauge satisfaction with web-conferencing customer service and technology
1 – Reaction	Each Participant	For Instructor-led Training: Scan form (e.g. paper Scantron)
2 – Learning	Each Participant	Methods vary, but may include paper and pencil test, performance observation, or online tests

INSTRUCTOR EVALUATION

NHI has a rigorous program for evaluating the effectiveness of instructors. Most instructors complete an NHI-sponsored instructor development course that covers basic platform delivery skills. The assessment for this course requires participants to teach a segment of an NHI course to the rest of the class. Individuals who successfully complete this course are candidates for NHI Instructor Certification.

In order to become a Certified NHI Instructor, a candidate is observed during an actual NHI course delivery. An NHI master instructor observes and provides feedback and either (a) certifies the instructor, (b) requires the instructor to take additional steps to close performance gaps, or (c) denies certification. NHI's end customers – its course participants – also evaluate the effective of their instructors by completing the Instructor Evaluation section of the NHI course evaluation form.

RESPONSE TO PARTICIPANT FEEDBACK

Should aggregate data reveal that NHI courses, instructors, processes or tools are deficient in any way, NHI initiates an analysis to determine the cause of those deficiencies and how they can be corrected. NHI applies the instructional systems design model for course revisions, as well as initial course development.

Contact Us

Lastly, NHI encourages clients, hosts, instructors and end customers (i.e., course participants) to submit feedback so that it can continuously improve it service and products. Feedback may be submitted to nhicustomerservice@dot.gov.