DEPARTMENT OF THE NAVY
COMMANDER
NAVAL EDUCATION AND TRAINING COMMAND
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**LETTER OF PROMULGATION FOR NAVEDTRA 136**

1. This guidance manual has been extensively revised. Most of the revisions are in response to user comments and reflect a continuing effort to increase the manual's utility to the training field.

2. The procedures in this manual follow a Integrated Learning Environment Course Development and Life-Cycle Maintenance method. This manual is intended for use by military, civil service, and contractor personnel engaged in Navy training materials development and modification.

3. Procedural guidance for development of training materials following a Task based method is published in NAVEDTRA 130 (series).

4. This publication is available electronically at: Navy Knowledge Online (NKO) - NETC N74 Learning Standards Homepage; and Navy Marine Corps Intranet's (NMCI) Total Records and Information Management (TRIM).

5. Corrections and comments concerning this manual are invited and should be addressed to the Naval Education and Training Command, attention: N7.

6. Reviewed and approved.

J. F. KILKENNY

Naval Education and Training Command

NAVEDTRA 136
November 2010

# NAVAL EDUCATION AND TRAINING COMMAND INTEGRATED LEARNING ENVIRONMENT COURSE DEVELOPMENT AND LIFE-CYCLE MAINTENANCE

## NOTICE TO ONLINE USERS OF THIS MATERIAL

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Only printed pages are contained online.

## RECORD OF CHANGES

| Number and Description of Change | Entered By | Date |
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## FOREWORD

**NAVEDTRA SERIES MANUALS:**

- NAVEDTRA 130: Task Based Curriculum Development Manual
- NAVEDTRA 131: Personnel Performance Profile Based Curriculum Development Manual
- NAVEDTRA 132: Navy School House Testing Management Manual
- NAVEDTRA 134: Navy Instructor Manual
- NAVEDTRA 135: Navy School Management Manual
- NAVEDTRA 136: Naval Education and Training Command Integrated Learning Environment Course Development and Life-Cycle Maintenance Manual

The NAVEDTRA 130 series of manuals provide fundamental direction, within the Naval Education and Training Command (NETC), for the development of curricula, the delivery of instruction, and the management and evaluation of training programs.

These manuals do not supersede the directive policy established by Commander, NETC in these subject areas. Rather, they supplement these instructions in two important ways. First, they reflect the philosophical principles underlying NETC policy for curriculum, instruction, and evaluation; second, they provide procedures for carrying out that policy.

Each of the NAVEDTRA 130 series of manuals is designed as a stand-alone document to serve a specific user group such as curriculum developers, instructors, training managers, or evaluators of training. The manuals are, however, interrelated and cross-referenced to one another.

**SCOPE:**

**NAVEDTRA 136 (series)**: NETC Integrated Learning Environment Course Development and Life-Cycle Maintenance Manual provides direction for developing and maintaining instructor-led training, interactive multimedia instruction, and blended training materials for delivery using current technologies and best practices to enhance institutional and individual learning and performance support for the Navy's Total Force at home, schoolhouse, or afloat. This manual replaces:

- MPT&ECIOSWIT-ILE-GUID-1B, Navy ILE Instructional Systems Design and Instructional Design Process
- MPT&ECIOSWIT-ILE-GUID-2B, Navy ILE Guidance on Assessment Development
- MPT&ECIOSWIT-ILE-GUID-2B, Navy ILE Guidance on Assessment Development
- MPT&ECIOSWIT-ILE-GUID-3B, Navy ILE Instructional Content Style Guide, Interactive Multimedia Instruction & Instructor-Led Training
- MPT&ECIOSWIT-ILE-HDBK-1C, Navy ILE Content Developer's Handbook
- MPT&ECIOSWIT-ILE-INTR-1B, Navy ILE Introduction
- MPT&ECIOSWIT-ILE-SPC-1B, Navy ILE Learning Objective Statements: Specifications and Guidance
- MPT&ECIOSWIT-ILE-SPEC-4D, Navy ILE Technical Specifications and Guidelines
- MPT&ECIOSWIT-ILE-STD-1B, Navy ILE Presentation Standards

The Integrated Learning Environment (ILE) is a collection of automated information systems that use information technology to streamline training processes, automate learning management functions, and deliver training using electronic means to the total force in the schoolhouse, while deployed, or at home.

The ILE supports readiness by enhancing institutional and individual learning for the Navy’s Total Force. The system provides both a near and long-term infrastructure to enhance human performance and learning specifically in the areas of Rate, Rating, and Navy Enlisted Classification (NEC). The infrastructure includes the hardware, software, communications, information technologies, and associated networks. ILE is an integral component of the Department of Defense (DoD) Advanced Distributed Learning (ADL) initiative and the strategic plan for transforming DoD training, which calls for the full exploitation of technologies to support quality education and training. ILE supports DoD and Navy business transformation priorities and strategy by enabling the intra-Navy sharing of learning data, adopting commercial practices and products to reduce operating costs, and using the web to provide increased access to course materials.

The following graphic depicts key aspects of the ILE environment (see FIGURE 1).

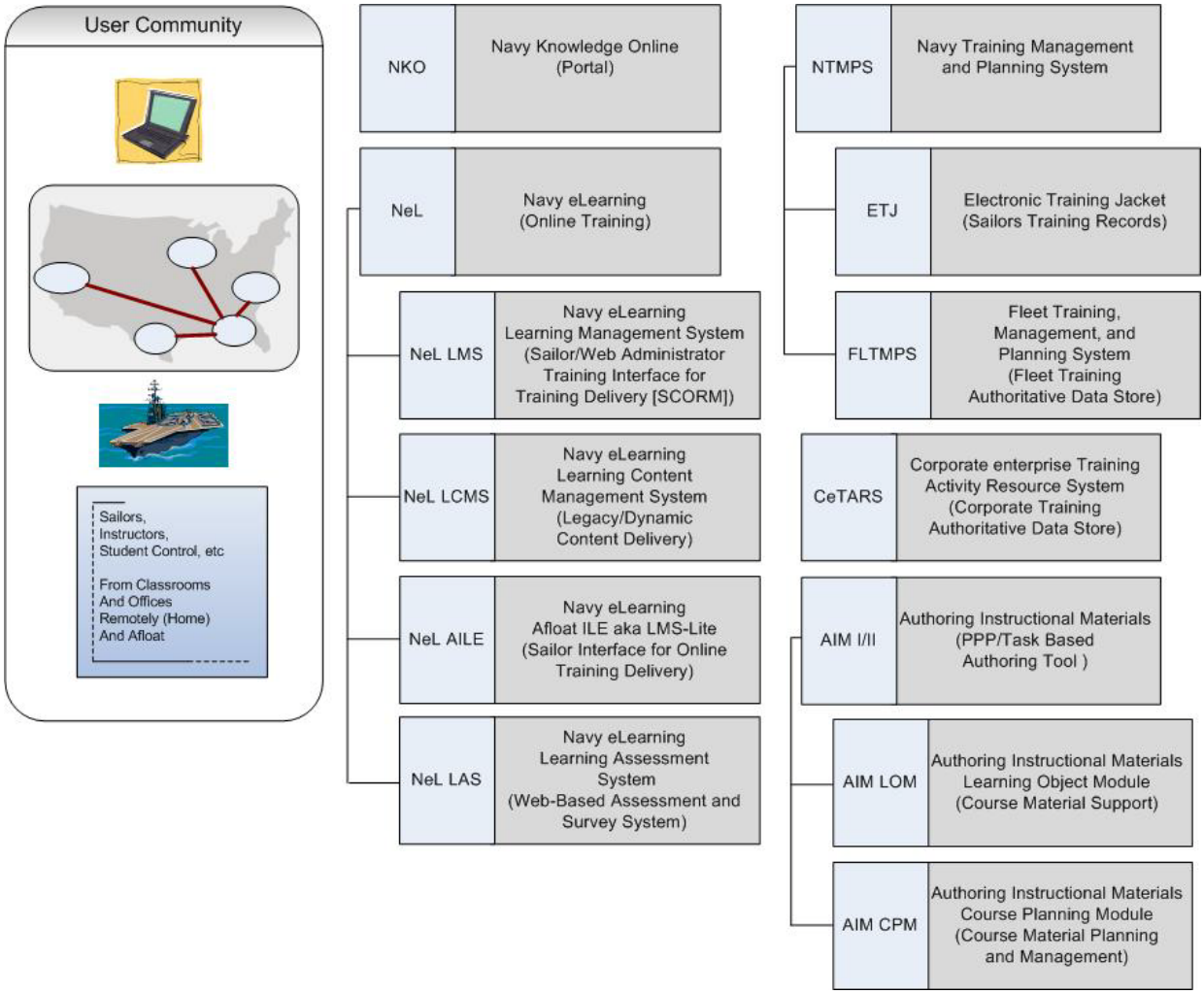


**FIGURE 1: ILE HIGH-LEVEL OVERVIEW**

While the overall process of course development and life cycle maintenance remains unchanged, this manual incorporates changes and updates based on the experience and feedback from NETC training activities. The processes and illustrations found in NAVEDTRA 136 reflect the experience of Subject Matter Experts (SME), course developers and decision makers who approve Navy training material developed by Navy personnel, government employees, and contractors. NAVEDTRA 136 describes and illustrates all facets of planning, analysis, design, development, implementation, evaluation, and life-cycle maintenance of ILE training materials.

**CONTRACTUAL USE OF MANUAL:** Throughout NAVEDTRA 136, examples are provided to illustrate and clarify the points being discussed. It is important to note that in the case of any item identified as an "example," this item is not intended to be copied exactly in all situations, but rather is provided to help clarify the information being discussed. In most cases, the items shown as examples require tailoring to individual situations.

Within this manual, the following terms are used to mean the following:

| TERM | MEANING |
|---|---|
| shall, must ... | This action/behavior/construct is required by the guidelines. |
| will ... | Refers to an action to be done by the Navy (i.e., Course Curriculum Authority (CCA)), or more general descriptive wording in examples, rather than a requirement under the guidelines. |
| may ... | This action/behavior/construct is allowed (i.e., permitted), but not required. |
| can ... | Refers to the inherent behavior of software and/or computer languages, rather than to an issue of permission or allowance under the guidelines. |
| shall not, must not, may not ... | This action/behavior/construct is prohibited by the guidelines. |

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# CHAPTER 1

# COURSE DEVELOPMENT AND MAINTENANCE

## SECTION 1 - INTRODUCTION

The procedures for developing and maintaining curricula are divided into seven interrelated phases: Planning, Analysis, Design, Development, Implementation, Evaluation, and Life-Cycle Maintenance (PADDIE+M).

- ***P****LANNING PHASE* identifies resource requirements and the sequence of events in the development process.
- ***A****NALYSIS PHASE* produces the job tasks, task sequence, level of performance, and the skills and knowledge to be taught.
- ***D****ESIGN PHASE* produces the learning objectives and an instructional sequence.
- ***D****EVELOPMENT PHASE* produces the instructional materials for the instructor and the learner (i.e., student and trainee).
- ***I****MPLEMENTATION PHASE* begins when the Curriculum Control Authority (CCA) has approved a course.
- ***E****VALUATION PHASE* consists of the evaluation and revision of the training materials based on assessment of the materials and the performance of the graduates in the fleet.
- **+** *LIFE-CYCLE* ***M****AINTENANCE PHASE* is the surveillance phase. The purpose of this phase is to identify changes to approved training materials, to manage those changes, and to track changes using a configuration management process.

This manual covers the PADDIE+M phases. Each phase, including the steps required to complete the phase along with their approval points, is addressed within the chapters of this manual. The overall course development and life-cycle maintenance process is illustrated in FIGURE 2.

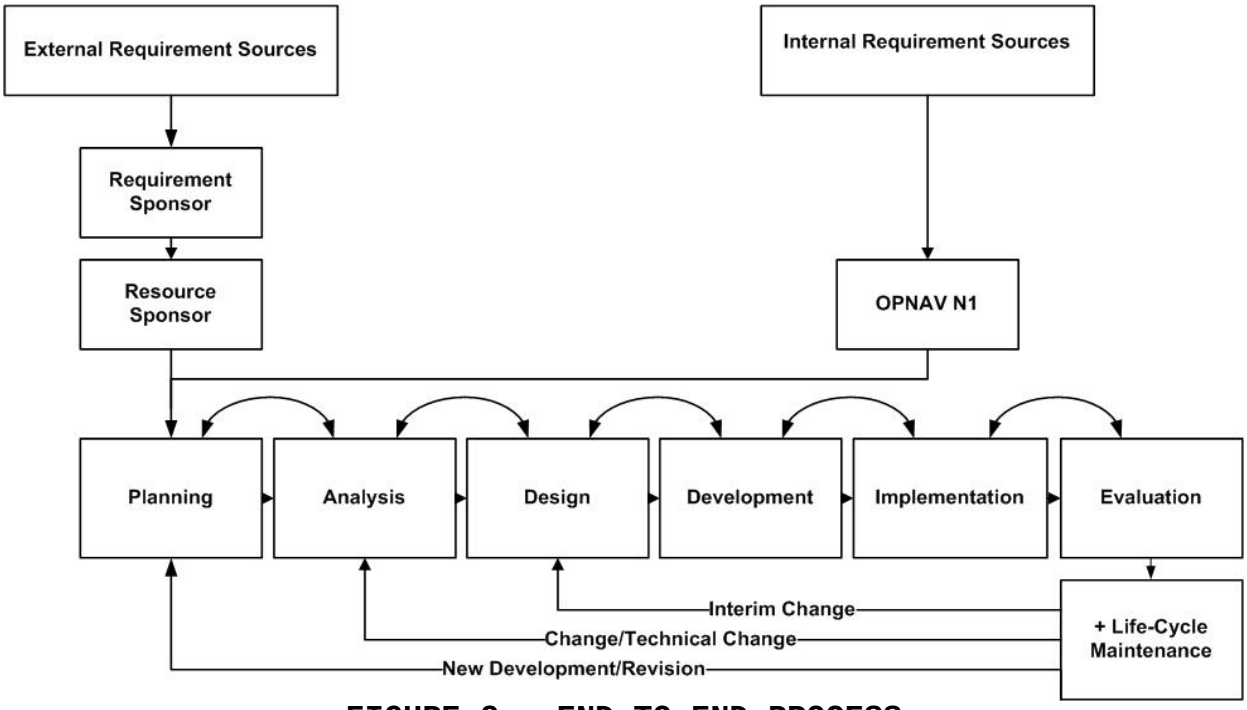



**FIGURE 2: END-TO-END PROCESS**

**NOTE**

A Statement of Work (SOW) can be used to support any of the phases. The SOW shall ensure adherence to the guidelines provided in this manual. The SOW defines the instructional, operational, and administrative tasks required by a contractor to develop content meeting the requirements and project deliverables within a specific timeframe.

**1.1. INTEGRATED LEARNING ENVIRONMENT (ILE).** NAVEDTRA 136: Naval Education and Training Command (NETC) ILE course development and life-cycle maintenance manual is designed to guide Navy personnel, government employees, contractors, and contracting officers in the development and life-cycle maintenance of ILE training materials. This manual:

- Specifies task requirements
- Establishes the sequence of task performance
- Assigns task performance responsibilities

**1.2. AUTHORING INSTRUCTIONAL MATERIALS (AIM).** AIM is a government-owned application suite developed by the Navy to support NAVEDTRA 130 series of manuals. NETC Learning Centers (LCs), or others as designated, shall use the AIM Content Planning Module (CPM)[1] for the Planning, Analysis and Design

Phases. AIM CPM is a course material planning and management tool. In the Development Phase, the AIM Learning Object Module (LOM) shall be used for Instructor-Led Training (ILT) course materials, and may be used in conjunction with other authoring tools for Interactive Multimedia Instruction (IMI) course materials development. AIM LOM is a course material support tool.

## SECTION 2 - ILE TRAINING MATERIALS

ILE training materials include management materials, course materials, and support materials.

**2.1. Management Materials.** Management materials define training requirements and provide an overall plan for the accomplishment of these requirements. The chapters of this manual provide guidelines for the development of management materials.

**2.2. Course Materials.** Course materials include all materials required for the presentation of information and the development of skills delivered using ILE applications. Under this definition, ILE course materials include IMI. See Military-Handbook (MIL-HDBK) 29612-3A, Section 4 for a definition of IMI.

Other course materials that may be delivered using ILE applications (see FIGURE 1) include:

- ILT
- Lesson Plan
- Trainee Guide (or instruction sheets)
- Test/Administrative Materials

**2.3. Support Materials.** Support materials include instructional materials and other devices used in support of formal instruction, informal instruction, or for independent study. Under this definition, ILE support materials include:

- Interactive Electronic Technical Manuals (IETM)
- Technical publications

**NOTE**

Other support materials that may be delivered using ILE applications include:

- Training devices (e.g., simulations and emulations)

## SECTION 3 - TRAINING MATERIALS SUPPORT

All training materials are maintained current and accurate by surveillance and change efforts.

**3.1. Surveillance.** Surveillance is required to detect changes in documentation, equipment, or procedures that impact training materials. Procedures for identifying training material deficiencies, for recommending changes, and for coordinating recommended changes are given in this manual and NAVEDTRA 130 (series). Some triggers that may direct a surveillance action to be taken are:

- Change in Navy Mission Essential Task List (NMETLS)
- Change in technical directives
- Change to existing operating procedures or policy
- Hardware and software changes
- Job Duty Task Analysis (JDTA)
- Naval Training System Plan (NTSP) revisions
- Rating disestablishments
- Rating mergers/consolidations
- Requirements sponsor changes
- Updated Occupational Standards (OCCSTDS)

**3.2. Training Materials Modifications.** There are four categories of training materials modifications:

- Interim Change
- Change
- Technical Change
- Revision

**NOTE**

Refer to NAVEDTRA 130 (series) for the definitions.

## SECTION 4 - PROGRAM PARTICIPANTS

Several major manpower claimants conduct training to support the fleet with the largest amount of training being conducted by NETC.

NAVEDTRA 135C, Chapter 1, provides an overview of NETC course management policy and the structure of the training organization that implements and executes the policy.

**NOTE**

The Course Curriculum Authority (CCA) is the approval authority for training materials. This is typically a LC function (for the purpose of this manual, the term learning center is defined as any command functioning as a CCA) but may also be assigned to training activities that develop and deliver their own curriculum to meet stakeholder interests.

## SECTION 5 - APPLICABLE DOCUMENTS

The documents listed in Sections 6 and 7 are the primary resources to be used by activity developers in the design and development of training materials. Use of documents and manuals in effect on the date stated in the project plan is assumed. Later issues of these specifications, standards, documents, and publications, or new specifications, standards, documents, and publications may be used subject to agreement between the CCA and course developers.

## SECTION 6 - STANDARDS, GENERAL

In June 1994 the Secretary of Defense (SECDEF) directed that "Performance specifications will be used when purchasing new systems, major modifications, upgrades to current systems, and non-developmental and commercial items for programs in any acquisition category (in lieu of Military Specifications and Standards)." Source (SECDEF Memo, Subject: Specifications and standards, A New Way of Doing Business, dated 29 June 1994. Consequently, references to Military Standards (MIL-STDS) have been deleted.

## SECTION 7 - PUBLICATIONS

**7.1. Department of Defense**:

- DoDI 1322.26, Development, Management, and Delivery of Distributed Learning
- DoDI 8500.2, Information Assurance (IA) Implementation
- Sharable Content Object Reference Model (SCORM) 2004, Documentation Suite (SCORM 2004 4th Ed.)

- MIL-HDBK-29612/1A, Guidance for Acquisition of Training Data Products and Services (Part 1 of 5 Parts)
- MIL-HDBK-29612/2A, Instructional Systems Development/Systems Approach to Training and Education (Part 2 of 5 Parts)
- MIL-HDBK-29612/3A, Development of Interactive Multimedia Instruction (IMI) Part 3 of 5 Parts)
- MIL-HDBK-29612/4A, Glossary for Training (Part 4 of 5 Parts)
- MIL-HDBK-29612/5, Advanced Distributed Learning (ADL) Products and Systems (Part 5 of 5 Parts)

**7.2. Secretary of the Navy:**

- SECNAVINST 5870.4 (series), Permission to Copy Material Subject to Copyright
- SECNAVINST 5510.30 (series), Department of the Navy Personnel Security Program Instruction
- SECNAV M-5510.36 (series), Department of the Navy Information Security Program

**7.3. Chief of Naval Operations:**

- CNO Washington DC 302126Z Apr 10, Navy Integrated Learning Environment Content Policy and Guidance
- NAVPERS 18068 (series) VOL I and VOL II, Manual of Navy Enlisted Manpower and Personnel Classifications and Occupational Standards (NEOCS)
- OPNAVINST 11102.2 (series), Training System Installation and Transfer
- OPNAVINST 1500.27 (series), Inter-service Training
- OPNAVINST 1500.47 (series), Navy Training Quota Management
- OPNAVINST 1500.74 (series), Utilization of Enlisted Occupational Standards for Training and Career Development
- OPNAVINST 1500.75 (series), Safety Policy and Procedures for Conducting High Risk Training
- OPNAVINST 1500.76 (series), Navy Training System Requirements, Acquisition, and Management
- OPNAVINST 3104.1 (series), Navy Visual Information (VI) Production, Replication, Distribution and Management Information System Policy, Responsibilities, and Procedures

- OPNAVINST 3500.34 (series), Personnel Qualification Standards (PQS) Program
- OPNAVINST 3500.39 (series), Operational Risk Management (ORM)
- OPNAVINST 5100.19 (series), Navy Occupational Safety and Health Program Manual for Forces Afloat
- OPNAVINST 5100.23 (series), Navy Occupational Safety and Health Program Manual
- OPNAVINST 1510.10 (series), Corporate enterprise Training Activity Resource System (CeTARS) Catalog of Navy Training Courses and Student Reporting Requirements
- OPNAVINST 5513.1 (series), Department of the Navy Security Classification Guide

**7.4. Commander, Naval Education and Training Command:**

- NAVEDTRA 10052-AJ (series), Bibliography for Advancement Study
- NAVEDTRA 10500 (series), Catalog of Navy Training Courses (CANTRAC)
- NAVEDTRA 130 (series), Task Based Curriculum Development Manual
- NAVEDTRA 131 (series), Personnel Performance Profile Based Curriculum Development Manual
- NAVEDTRA 132 (series), Navy Schoolhouse Testing Management Manual
- NAVEDTRA 134 (series), Navy Instructor Manual
- NAVEDTRA 135 (series), Navy School Management Manual
- NETCINST 1500.3 (series), Institutional Accreditation
- NETCINST 1500.4 (series), Interservice Training Review Organization (ITRO)
- NETCINST 1500.6 (series), Front End Analysis User Guide
- NETCINST 1500.8 (series), Human Performance Requirements Review (HPRR)
- NETCINST 1510.1 (series), Navy Training Management
- NETCINST 1510.3 (series), Business Case Analysis Policy
- NETCINST 1510.4 (series), Job Duty Task Analysis Policy
- NETCINST 3104.1 (series), Naval Education and Training Command (NETC) Visual Information (VI) Program Management
- NETCINST 4200.2 (series), Acquisition Management
- NETCINST 4950.2 (series), International Education and Training
- NETCINST 5100.1 (series), Safety and Occupational Health, and High-Risk Training Safety Program Manual

- NETCINST 5510.1 (series), Information Protection Policy for Navy Integrated Learning Environment (ILE) and Navy Knowledge Online-SIPRNET (NKO-S)
- NETC Guide to Copyright Law, Naval Education & Training Office of General Counsel, 10-20-09
- Training Requirements Data Base Annual Report: Naval Education and Training Program Management Support Activity

**7.5. Other:**

- Accessing Navy eLearning: A Guide for International Student Management Office (ISMO) and the Foreign National Community
- DI-IPSC-81443A, Data Item Description, Software User Manual (SUM) (11 JAN 2000)
- DI-SESS-81520B, Data Item Description, Instructional Media Design Package
- DI-SESS-81520B, Data Item Description, Instructional Media Design Package
- DI-SESS-81524B, Data Item Description, Training Evaluation Document
- DI-SESS-81527B, Data Item Description, Training System Support Document
- MIL-PRF-29612 (series), Performance Specification, Training Data Products
- NAVSEAINST 4790.8 (series), Ships Maintenance and Material Management (3-M) Manual (VOL 1-3)
- NIST Special Publication 800-34, Contingency Planning Guide for Information Technology Systems Recommendations of the National Institute of Standards and Technology
- 29 U.S.C. §794d, Section 508, Rehabilitation Act

## SECTION 8 - SECURITY REQUIREMENTS

Classified information will be handled per the Department of the Navy Information Security Program, SECNAV M-5510.36 (series).

## SECTION 9 - SAFETY REQUIREMENTS

Safety, occupational health, and hazard awareness information must be incorporated into training courses as prescribed by NETCINST 5100.1 (series) and NAVEDTRA 135 (series).

## SECTION 10 - NON-FORMAL SCHOOLHOUSE TRAINING

Development of follow-on, in-service, or other training that does not fall under the purview of formal schoolhouse training must follow the PADDIE+M model and be based on a validated training requirement. However, not all of the development documents for this type of training will be the same. For the most part, training outside of the formal schoolhouse does not require a Training Project Plan (TPP), Course Identification Number (CIN), or Training Course Control Document (TCCD). Additionally, this type of training may not require a course pilot. The CCA will specify the required deliverables for non-formal schoolhouse training.

## SECTION 11 - SUMMARY

This chapter presented an overview of the ILE course development and life-cycle maintenance method. The method involves seven interrelated phases – PADDIE+M. The following chapters provide guidelines for the PADDIE+M phases.

# CHAPTER 2

# PLANNING PHASE

## SECTION 1 - INTRODUCTION

Integrated Learning Environment (ILE) training materials development is a complex undertaking, bringing together a wide range of human and material resources for the goal of creating quality training. ILE course development and life-cycle maintenance consists of seven phases, beginning with the Planning Phase. The learning centers, warfare enterprises, and acquisition activities will be responsible for doing some of the preliminary planning activities in collaboration with Naval Education and Training Command (NETC), Office of the Chief of Naval Operations (OPNAV), and the resource sponsors. Effective and cost-efficient training systems do not just happen – they must be planned. Planning is a key element in the management of the overall training system. FIGURE 3 illustrates the Planning Phase process.

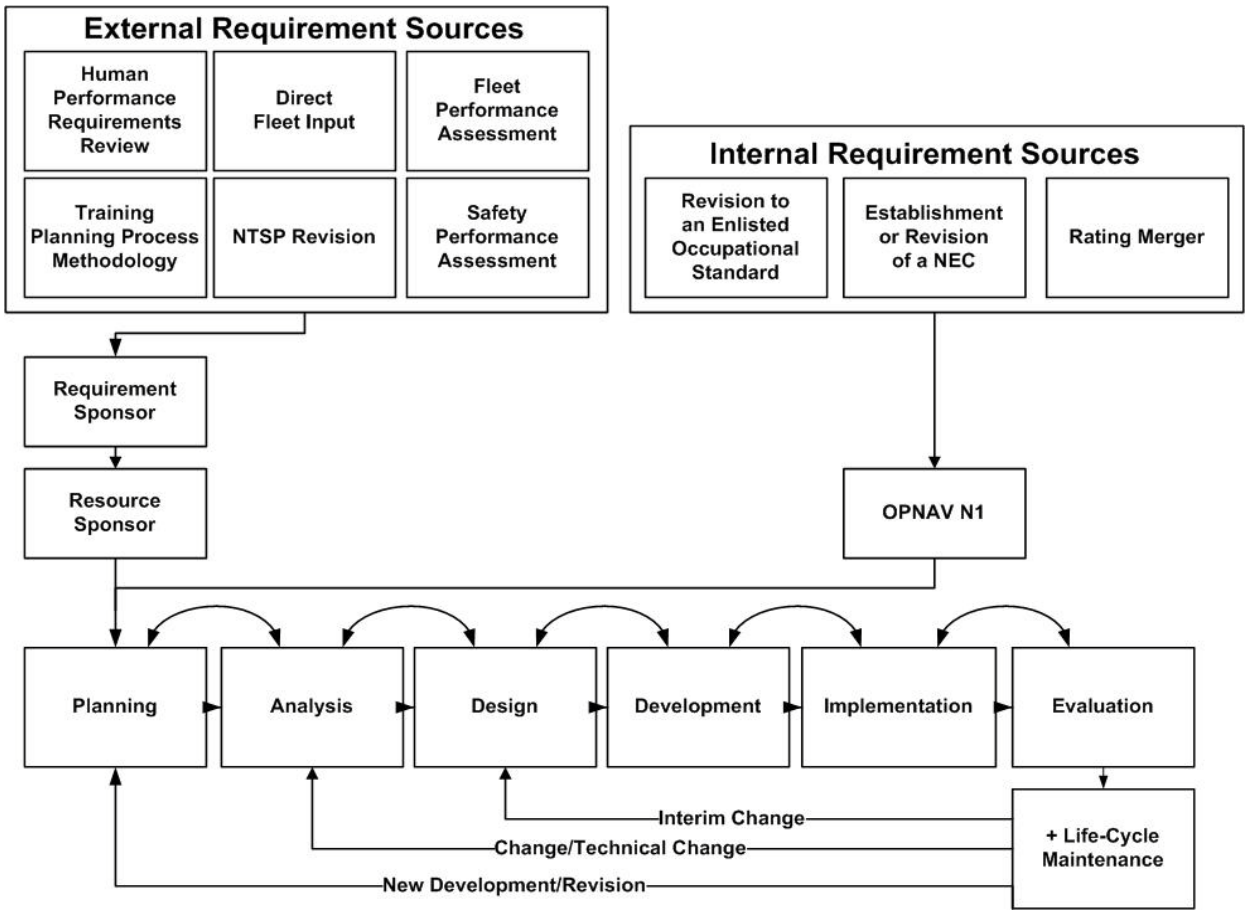



**FIGURE 3: PLANNING PHASE PROCESS**

*The Training Project Plan (TPP) is developed for those projects not originally funded by NETC.

## SECTION 2 - TRAINING REQUIREMENTS SOURCES

There are several external trigger events that drive the need to develop or revise training materials. These events include:

- Training Planning Process Methodology (TRPPM)
- Navy Training System Plan (NTSP)
- Safety performance assessment
- Fleet performance assessment
- Direct fleet input
- Human Performance Requirements Review (HPRR)

No matter what the trigger event, the requirements sponsor submits formal correspondence identifying a training requirement to the Course Curriculum Authority (CCA) and commits to resourcing the training requirement.

Other trigger events, in which OPNAV (N1) is the training requirements source, include:

- Revision to an Enlisted Occupational Standard (OCCSTD)
- Rating merger
- Establishment or revision of a Navy Enlisted Classification (NEC) code

## SECTION 3 - JOB DUTY TASK ANALYSIS

Regardless of how the training requirement is identified, the foundation is Job Duty Task Analysis (JDTA) data (see NETCINST 1510.4 (series)). NETC commands shall use NETCINST 1510.4 (series). JDTA data provides detailed descriptions of the work performed by Sailors and is the basis for the NETC Front-End Analysis (FEA). JDTA shall be captured using the Authoring Instructional Materials (AIM) Content Planning Module (CPM).

Knowledge, Skills, Abilities, Tools, and Resources (KSATR) are derived by the JDTA team at the conclusion of the JDTA and shall be captured using AIM CPM. KSATR are specific to individual tasks, subtasks, and steps, and are defined as follows:

- **Knowledge**: An understanding of facts or principles relating to a particular subject area and applying directly to the performance of a function.

- **Skill**: The ability to perform a job related activity that contributes to the effective performance of a task. Skills are the proficiencies needed to perform a task.
- **Ability**: An enduring attribute of the individual that influences performance and enables the performance of tasks.
- **Tool**: An item needed to perform the work.
- **Resource**: The informational source or reference material used to locate information or house information about processes. Resources include items such as manuals, publications, guides, handbooks, instructions, tutorials, documents, reports, forms, blueprints, plans, specifications, codes (e.g., National Electrical Code), regulations, etc.

## SECTION 4 - NETC FRONT END ANALYSIS

The NETC FEA occurs after the JDTA (see NETCINST 1500.6 (series)). This analysis further refines the FEA that is performed by the acquisition community during the development of the NTSP (see OPNAVINST 1500.76 (series)). The goal of the NETC FEA is too further analyze the skills and knowledge needed to perform the job, assess the technologies available for training the skills and knowledge, perform a media analysis to recommend the best mix of delivery media, and determine the best methodology to develop and deliver training content that will satisfy the outstanding training need.

The analysis provides a list of alternatives (e.g., media strategies and methods) used in leveraging existing training interventions for previously selected tasks, and identifies interventions needed to be developed. This analysis will be further refined during the Design Phase and captured in the Instructional Media Design Package (IMDP). During the NETC FEA process, every attempt is made to reuse, repurpose, and reference (R3) existing content.

Per NETCINST 1500.6 (series), the following steps are to be completed during the NETC FEA process:

- Document reason for conducting NETC FEA
- Document existing (AS-IS) training requirements
- Document new (TO-BE) training requirements
- Compare existing (AS-IS) training requirements with new (TO-BE) training requirements and determine if a gap in training exists

- Search existing course(s) material for R3 to support new training requirements
- Determine new (TO-BE) training requirements delivery methods (list in order of precedence)
- Provide recommendations and solutions to close the gap in training
- Prepare and finalize NETC FEA output statement

The completed NETC FEA shall be routed to the CCA for approval and NETC for concurrence.

## SECTION 5 - TRAINING TRANSFER PLAN (TTP)

A TTP will be completed for those projects not originally funded by NETC. The TTP is used to allocate fiscal resources and define the training requirement transition to the NETC domain (see OPNAVINST 1500.76 (series)). The TTP shall include the following:

- Project name
- Purpose of project
- Requirement Sponsor
- Projected student utilization
- Assigned Learning Center
- Assigned Training Support Activity (TSA)
- Projected availability of funding
- Resource requirement list with life-cycle maintenance responsibilities for each item
- Projected course life-cycle maintenance

**NOTE**

See Appendix A for a sample of the TTP form. The completed TTP shall be routed to the CCA for concurrence.

## SECTION 6 - CONTENT REVIEW

During the Planning Phase, every attempt is made to use existing training materials. When conducting an evaluation of existing training materials the Quality Evaluation Tool shall be used to assess the materials under consideration. Developed in 2005 by the Naval Air Warfare Center Training Systems Division (NAWCTSD), this tool contains items and scales that help determine the quality of the materials. The use of this tool occurs after the NETC FEA.

Organizations, as part of the NETC FEA, are required to search for existing content before creating new content (refer to DoDI 1322.26 (series)). Such materials may be available at the Advanced Distributed Learning-Registry (ADL Registry)[2] or DefenseImagery.mil[3].

## SECTION 7 - BUSINESS CASE ANALYSIS

A Business Case Analysis (BCA) details the cost and risk associated with each training option identified during the NETC FEA (see NETCINST 1510.3 (series)). The approved BCA will serve as input to the TPP.

The completed BCA shall be routed to CCA for approval and concurrence, and it shall be routed to NETC if there is a change in resourcing.

## SECTION 8 - TRAINING PROJECT PLAN

The TPP is the overarching course management document that identifies all training requirements including instructor resources, classrooms, and training devices. It is the base planning document for the course development effort. Create the TPP early in the process, with the understanding that the first draft will not necessarily have all the required information. When approved, the TPP becomes the authorization to undertake a course cancellation, revision, or new development effort and initiate resource requisitions.

The following CCA actions require NETC concurrence for TPP approval:

- Addition of a new training course
- Revision to a training course that changes the instructional strategy or delivery method

- Revision to a training course that changes the course length
- Revision to a training course which increases resource requirements
- Deletion of a training course
- Transfer of a training course between CCAs
- Addition or deletion of a training course (Course Data Processing (CDP))

AIM CPM shall be used to produce the TPP.

**NOTE**

OPNAV (N15) is the only organization authorized to approve announcement of large-scale mandatory training (e.g., active duty and mandatory training) via the Navy eLearning (NeL) Learning Management System (LMS)[4] ashore or afloat. Mandating any form of large-scale training, new or emerging technologies, or training to be accomplished within a finite time period via the NeL LMS requires completion of a Special-Case Readiness Review (SCRR). The NeL Content Administration and Support Team and NETC (N72) shall conduct this review and coordinate with OPNAV (N15) for approval. Contact NeL Content Administration and Support Team to begin the request.

**8.1. Course Identification Number:** A TPP requires a Course Identification Number (CIN). A CIN is an alphanumeric combination that uniquely identifies a course in training databases such as the Navy Training Management and Planning System (NTMPS), the NeL LMS, and the Corporate enterprise Training and Reporting System[5] (CeTARS). The CCA initiates the request.

## SECTION 9 - EVALUATION ASSESSMENT PLAN

Evaluation of instructional effectiveness must be a consideration from the beginning of the project. These evaluations may include content reviews during the development process through training effectiveness reviews following delivery. Early selection of the evaluation strategy ensures the required resources are in place when needed. The evaluation plan may be a subset of the TPP or a separate plan. In either case, the plan shall be developed using the format contained in paragraphs 2.1, 2.2, and 2.3 of the Training Evaluation Document Data Item Description, DI-SESS-81524B.

The completed Evaluation Assessment Plan (EAP) shall be routed to the CCA for approval.

## SECTION 10 - PLANNING INPUTS AND OUTPUTS

Depending on the scope and magnitude of the training requirement, the following inputs and outputs listed in TABLE 1 occur during this phase.

**TABLE 1: PLANNING INPUTS, OUTPUTS, AND TOOLS**

| **INPUTS TO PLANNING PHASE** |
|---|
| Training Planning Process Methodology (TRPPM)<br>Navy Training System Plan (NTSP)<br>Safety Performance Assessment<br>Fleet Performance Assessment<br>Direct Fleet Input<br>Human Performance Requirements Review (HPRR)<br><br>NOTE: The above documents should be created by the organization generating the requirement. |
| **OUTPUTS DURING PLANNING PHASE** |
| Job Duty Task Analysis (JDTA)<br>NETC Front-End Analysis (NETC FEA)<br>Training Transition Plan (TTP)<br>Business Case Analysis (BCA)<br>Training Project Plan (TPP)<br>Evaluation Assessment Plan (EAP)<br><br>NOTE: The PADDIE+M process is not linear but interrelated. Therefore, several outputs from other phases may be required to complete the Planning Phase (e.g., some developers use Analysis and Design Phase outputs to assist with the finalization of Planning Phase documentation). |
| **TOOLS SUPPORTING THE PLANNING PHASE** |
| Corporate Enterprise Training and Reporting System (CeTARS)<br>Authoring Instructional Materials (AIM) Content Planning Module (CPM) |

## SECTION 11 - SUMMARY

Planning is a key phase to the overall success of training materials development. The products developed because of this phase will be referenced throughout the life-cycle of the project.

TABLE 2 provides a listing of the products of the Planning Phase and approval authority.

**TABLE 2: PRODUCTS AND APPROVAL AUTHORITY**

| Products | Approval Authority |
|---|---|
| Job Duty Task Analysis | Consensus between CCA and Resource Sponsor |
| NETC Front End Analysis | CCA |
| Training Transition Plan | Consensus between CCA and Requirement Sponsor |
| Business Case Analysis | CCA (or NETC, if there is a change in resourcing) |
| Training Project Plan | CCA (or NETC, if there is a change in resourcing) |
| Evaluation Assessment Plan | CCA |

# CHAPTER 3

# ANALYSIS PHASE

## SECTION 1 - INTRODUCTION

The inputs for the Analysis Phase are the Job Duty Task Analysis (JDTA), a Naval Education and Training Command (NETC) Front End Analysis (FEA), a Training Transition Plan (TTP), a Business Case Analysis (BCA), a Training Project Plan (TPP), and an Evaluation Assessment Plan (EAP). The TPP is the blueprint for the entire project.

During the Analysis Phase, reexamine all available documents and data in order to create the Course Training Task List (CTTL). The CTTL lists the duties and tasks for a given course, sources for the duties and tasks, and associated Knowledge, Skills, Abilities, Tools, and Resources (KSATR). The CTTL is used to develop learning objectives during the Design Phase.

**NOTE**

The Personnel Performance Profile (PPP) may be used in place of the CTTL, if the CTTL does not apply.

FIGURE 4 illustrates the Analysis Phase process. See below.

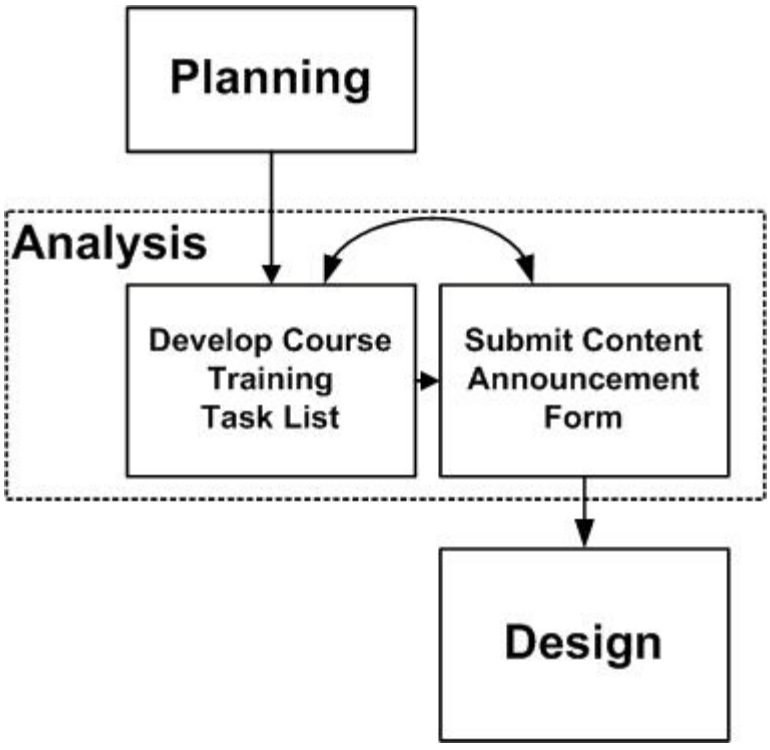



**FIGURE 4: ANALYSIS PHASE PROCESS**

## SECTION 2 - COURSE TRAINING TASK LIST

The CTTL is a list of duties and tasks to be trained in a course. The analysis of the course mission, JDTA, and technical documentation are used to develop a CTTL. The rules, examples, and direction for the construction of CTTL statements are found in NAVEDTRA 130 (series). The Authoring Instructional Materials (AIM) Content Planning Module (CPM) shall be used to construct the CTTL.

The completed CTTL shall be routed to the Curriculum Control Authority (CCA) for approval.

## SECTION 3 - CONTENT ANNOUNCEMENT

As a best practice and to avoid delays in getting online content (i.e., course materials) hosted on the Navy eLearning (NeL) Learning Management System (LMS), the CCA should always submit NeL Content Announcement Forms as early as possible because content announcement must be completed before access to any official NeL testing environment will be granted. The form is accessed using the NeL Content Forecasting Service (CFS)[6]. Completion of the form is the responsibility of the CCA.

**NOTE**

The NeL Content Administration and Support Team governs the content announcement and content submission process. There is a 30-day wait period between each content announcement and content submission.

## SECTION 4 - ANALYSIS INPUTS AND OUTPUTS

Depending on the scope and magnitude of the training requirement, the following inputs and outputs listed in TABLE 3 occur during this phase.

### TABLE 3: ANALYSIS INPUTS, OUTPUTS, AND TOOLS

| INPUTS TO ANALYSIS PHASE |
|---|
| Job Duty Task Analysis (JDTA)<br>Front End Analysis (FEA)<br>Training Transition Plan (TTP)<br>Business Case Analysis (BCA)<br>Training Project Plan (TPP)<br>Evaluation Assessment Plan (EAP) |
| **OUTPUTS DURING ANALYSIS PHASE** |
| Course Training Task List (CTTL)<br>Content Announcement Form<br><br>NOTE: The PADDIE+M process is not linear but interrelated. Therefore, several outputs from other phases are sometimes required to complete the Analysis Phase. |
| **TOOLS THAT SUPPORT THE ANALYSIS PHASE** |
| Authoring Instructional Materials (AIM) Content Planning Module (CPM)<br>NeL Content Forecasting Service (CFS) |

## SECTION 5 - SUMMARY

The output of the Analysis Phase is the CTTL and Content Announcement Form for course materials planned for hosting within the Integrated Learning Environment (ILE).

In the next phase, use the CTTL to develop the design. The Course Identification Number (CIN) will be used to establish the course in the authoritative course tracking system, Corporate enterprise & Training Activity Resource System (CeTARS).

TABLE 4 provides a listing of the products of this phase and the approval authority of the members involved.

### TABLE 4: PRODUCTS AND APPROVAL AUTHORITY

| Products | Approval Authority |
|---|---|
| Course Training Task List | CCA |
| Content Announcement Form | CCA |

# CHAPTER 4

# DESIGN PHASE

## SECTION 1 - INTRODUCTION

During the Design Phase, the duties and tasks listed in the Course Training Task List (CTTL) are developed into learning objectives. The learning objectives are then arranged in the order in which they will be taught to produce the most effective learning in the shortest time possible. Much of the instructional design work started in the Planning and Analysis Phases will be expanded to form a detailed blueprint for the development of Integrated Learning Environment (ILE) course materials. The completion of the Training Course Control Document (TCCD), the Instructional Media Design Package (IMDP), and the ILE prototype lesson will mark the end of the Design Phase.

Design phase products may be developed by contract, Navy activities, or some combination of the two. In this chapter the term "curriculum development project team" refers to the government, contractor, or combined team assembled to design the course material. The team shall include instructional designers and subject matter experts. Depending on the project, the team may also include graphic artists, software developers, media, and assessment experts. See NAVEDTRA 135 (series) for details regarding staff requirements and contract management. FIGURE 5 illustrates the Design Phase process.

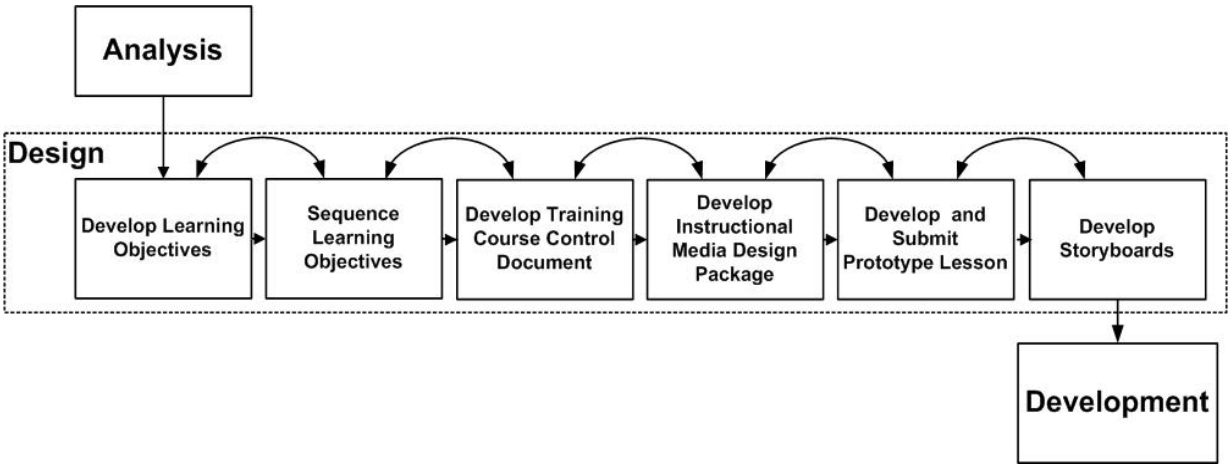



**FIGURE 5: DESIGN PHASE PROCESS**

**NOTE**

If the Training Project Plan (TPP) and CTTL are not approved, do not begin the Design Phase.

## SECTION 2 - LEARNING OBJECTIVES

Learning objectives are found on the CTTL. They describe what the learner must achieve to successfully complete the course of instruction. Learning objectives shall include terminal and enabling objectives. Refer to NAVEDTRA 130 (series) for general guidance on writing learning objectives.

Learning objectives shall be constructed using the Authoring Instructional Materials (AIM) Content Planning Module (CPM) and approved by the Curriculum Control Authority (CCA). Within AIM CPM, learning objectives are constructed based on content type (i.e., concept, facts, procedure, process, and principle). The five content types are defined as follows:

- **Concept**: A category that includes multiple examples. It comprises a group of objects, ideas, or events that are represented by a single word or term, and share common features.
- **Facts**: Unique and specific information usually represented in the form of a statement.
- **Procedure**: A sequence of steps that are followed systematically to achieve a task or make a decision. A procedure contains directions or procedural tasks that are done in the same way every time.
- **Process**: A flow of events that identify how something works. Topics that list a chain of events that are performed by an organization usually represent a process.
- **Principle**: Consists of directions that outline guidelines for action in which people must adapt the rules to various situations. Principles typically require a person to make decisions when applying them. Tasks that are completed in different ways each time by applying the guidelines usually represent principles.

## SECTION 3 - SEQUENCE LEARNING OBJECTIVES

As the learning objectives are constructed, they are organized into a logical teaching sequence using one of the strategies detailed in NAVEDTRA 130 (series). Sequencing of learning objectives shall be performed using AIM CPM and approved by the CCA.

**NOTE**

AIM CPM learning objective construction and sequencing is not a linear process. These activities typically occur in parallel as the course material structure is defined.

## SECTION 4 - TRAINING COURSE CONTROL DOCUMENT (TCCD)

The TCCD provides the essential management information for an entire course. Significant portions of the TCCD will have been drafted in the Planning and Analysis Phases, and finalized during the Design Phase. The sequenced learning objectives will serve as the foundation for the Curriculum of Instruction (COI), detailed in the TCCD. Refer to NAVEDTRA 130 (series) for specifics on preparing the TCCD. AIM CPM shall be used to gather the required information and produce the TCCD. The completed TCCD shall be routed to the CCA for approval. The curriculum development project team will review the TCCD throughout the Development Phase for currency, adequacy, and accuracy. Changes in subsequent documents, such as changes in learning objectives which may be made during the development of course materials, will affect the TCCD. The TCCD shall be updated to reflect any changes.

## SECTION 5 - ILE COURSE STRUCTURE

The COI, included as part of the TCCD, is the master plan for the structure of the course. It includes the daily schedule for the course, the lessons assigned, and the number of hours allocated to complete each lesson.

A course may be made up of multiple components that include modules and lessons using various delivery media and instructional methods. A module includes a group of lessons. Only some of the modules and lessons may be Navy eLearning (NeL) Learning Management System (LMS)-delivered. See FIGURE 6 for an example of a course structure.

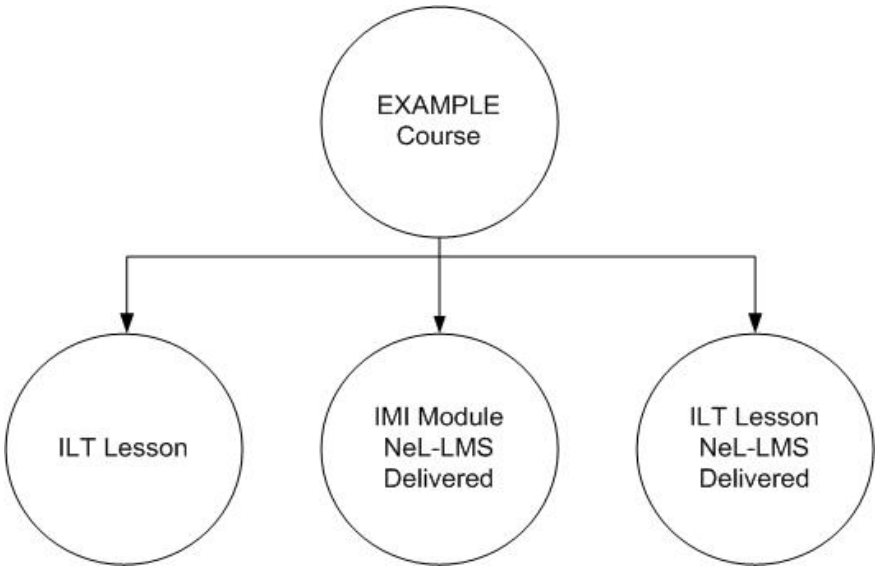



**FIGURE 6: EXAMPLE COURSE HIERARCHY**

**NOTE**

Some LMSs are capable of managing live (i.e., synchronous) training solutions. As the capabilities of the NeL LMS evolve, Instructor Led Training (ILT) lessons may be distributed using the LMS.

**5.1. ILE Lesson Structure:** Lessons shall be organized using the structure provided in TABLE 5.

**TABLE 5. LESSON STRUCTURE**

| Lesson Structure | Description |
|---|---|
| Lesson Pretest (optional) | Pretests can be used as an advanced organizer, to bypass training, or to ensure mastery of prerequisite knowledge. |
| Lesson | Addresses one or more terminal objectives. |
| Lesson Overview | Each lesson begins with an overview. Each overview consists of the following information: Introduction, importance, learning objectives addressed, and the bibliography/references. |
| Section | Addresses one or more enabling objectives. Instruction addresses steps in the attainment of knowledge. These steps will be provided in the following groups: Learn, Explore, and Practice (see Appendix E). Sections will include comprehension check questions throughout and specifically in the practice portion. Feedback for incorrect responses is required, and remediation is recommended. |
| Summary | Provides a summary of information presented in the section and/or lesson and learning objectives addressed. |
| Section or Lesson Progress Test (optional) | Includes scored test questions, processes, or procedures required for meeting the terminal objective(s) and enabling objective(s). Determines successful completion of the lesson. Progress tests may include practical exams. Refer to Appendix F for additional details regarding tests. |

## SECTION 6 - INSTRUCTIONAL MEDIA DESIGN PACKAGE

The purpose of the IMDP is to detail and demonstrate the design intent for each module and lesson within a course and to describe how the course will achieve the intended learning. The IMDP is a detailed instructional design plan that supports the more general plan presented in the TCCD.

It is acceptable to deliver a “Master IMDP” for a course containing the common information in addition to lesson-specific information. The Master IMDP shall include a complete list of lessons, lesson titles, lesson numbers, and version numbers of all lessons addressed within the Master IMDP.

The IMDP shall contain, at a minimum, the following:

- **Cover page**: Include the title of the course, course number, and course version number. For Master IMDPs only: include a list of all modules and lessons covered by the IMDP.
- **Table of contents:** Include major headings and page numbers.
- **Summary description of training**: Include a brief course description, length of course, prerequisites, security level classification, and target audience.
- **Course design strategy:** Include descriptions of elements required to design the course
- **Course structure outline**: Include the hierarchy of course, module, lesson, and sections.
- **Course and lesson flow diagram**: Include a block diagram showing course, module, lesson structure, and the placement of all assessments. A description of the flow shall also be provided.
- **Learning objectives and instructional strategies**: Include terminal and enabling objectives and instructional strategies.
- **Presentation category/interactivity level strategy**: Include the types of presentation used (decision-based navigation, scenario-bounded branching, etc.), types of interactivity used (e.g., hyperlinks, hotspots, rollovers, etc.), and types of media used (e.g., videos, 2D or 3D animations, user-controlled animations, etc.). Refer to MIL-HDBK-29612-3A for a general description of presentation categories and interactivity levels.
- **Assessment strategy**: Describe how the learning objectives will be measured, weighted, and displayed (refer to NAVEDTRA 132 (series)).
- **Remediation strategy**: Describe how areas of deficiency will be addressed.
- **Rollup behavior**: Describe how the NeL LMS will report completion status and scores.
- **Plug-in(s) page**: Include any plug-in(s) that the developer anticipates using. A plug-in is a software component that adds specific capabilities.
- **User interface design**: Provide a graphic depiction of the user interfaces (e.g., screen captures). User interface design shall follow requirements as described in Appendix B.

- **Metadata items**: Provide a list of the metadata item entries that will be used. Required metadata fields are outlined in Appendix C along with the elements that NeL Test Track[7] will automatically populate.
- **Traceability matrix**: Provide a matrix that shows the traceability of learning objectives to JDTA. AIM CPM may be used to generate a comparable report, which includes the alignment of COI output, JDTA, and the learning objectives.

The IMDP shall be approved by the CCA before storyboards and a prototype lesson may be delivered for CCA review.

For general information on the IMDP see MIL-PRF-29612 (series), section 3.2.4 and the DI-SESS-81520B, Data Item Description.

## SECTION 7 - STORYBOARDS

Storyboards provide a detailed description of the instructional design. They also provide visuals of what the learners will see/hear as they transition through the course materials. Areas to be considered during the development of storyboards include the graphical user interface, outline, and flow of the content, graphic file association, instructional designer notes, background, and textual information such as color and font as well as narration (refer to Appendices B, C, D, E, and F for guidance).

**NOTE**

The AIM Learning Object Module (LOM) provides the capability to capture storyboard content. This storyboard information is made available via Extensible Markup Language (XML) output for use with authoring tools. AIM CPM also provides the storyboard capability at the section level.

Storyboards shall be approved by the CCA prior to course material development.

## SECTION 8 - ILE PROTOTYPE LESSON

Before a large-scale development effort begins, it is important to develop and test a prototype lesson. Authoring software used to develop this prototype lesson shall be the same as that intended for the full production activity and shall be Department of the Navy Chief Information Officer DON Application and Database Management System[8] (DADMS) approved, unless a waiver to not use DADMS-approved software has been granted by the CCA. The authoring software shall be listed in DADMS. After the prototype lesson is developed, evaluate and test it in NeL Test Track.

NeL Test Track is a Common Access Card (CAC) enabled environment that emulates the NeL LMS. Government contractors requiring access must have their request routed through the CCA. However, final approval authority for access lies with the NeL Content Administration and Support Team.

The goal of the ILE Lesson Prototype review is to approve the proposed interface design, navigation strategy, and file types to be used in the finished product before full-scale development efforts begin. Developers are encouraged to return to NeL Test Track throughout the design and development phases to perform functionality testing, especially when significant design changes are made.

### 8.1. ILE Prototype Lesson Requirements

- Comply with Rehabilitation Act (29 U.S.C. §794d) Section 508 Standards
- Meet Sharable Content Object Reference Model (SCORM) 2004 requirements
- Contain required metadata
- Adhere to the NETCINST 5510.1 (series), Information Protection Policy for Navy ILE and Navy Knowledge Online-SIPRNET (NKO-S)
- Adhere to Navy Marine Corps Intranet (NMCI) Core Build specifications (refer to NMCI Core Build)

## SECTION 9 - DESIGN PHASE INPUTS AND OUTPUTS

Depending on the scope and magnitude of the training requirement, the following inputs and outputs listed in TABLE 6 occur during this phase.

### TABLE 6: DESIGN INPUTS, OUTPUTS, AND TOOLS

| **INPUTS TO DESIGN PHASE** |
|---|
| Course Training Task List (CTTL)<br>Content Announcement Form |
| **OUTPUTS DURING DESIGN PHASE** |
| Training Course Control Document (TCCD)<br>Instructional Media Design Package (IMDP)<br>Storyboards<br>Prototype Lesson<br><br>NOTE: The PADDIE+M process is not linear but interrelated. Therefore, several outputs from other phases may be required to complete the Design Phase. |
| **TOOLS SUPPORTING THE DESIGN PHASE** |
| Authoring Instructional Materials (AIM) Content Planning Module (CPM)<br>Authoring Instructional Materials (AIM) Learning Object Module (LOM)<br>Navy eLearning (NeL) Test Track |

## SECTION 10 - SUMMARY

The output of the Design Phase is the TCCD, IMDP, storyboards, and ILE prototype lesson. In the next phase, these products will be used to develop the course materials. TABLE 7 provides a listing of the products of this phase and approval authority.

### TABLE 7: PRODUCTS AND APPROVAL AUTHORITY

| Products | Approval Authority |
|---|---|
| Training Course Control Document (TCCD) | CCA |
| Instructional Media Design Package (IMDP) | CCA |
| Storyboards | CCA |
| Prototype Lesson | Consensus between CCA and NeL Content Administration and Support Team |

# CHAPTER 5

# DEVELOPMENT PHASE

## SECTION 1 - INTRODUCTION

During the Planning Phase, the need for new or revised formal Navy training is identified and documented in the Training Project Plan (TPP). The scope of the training required is determined in the Analysis Phase. For formal training, the Course Training Task List (CTTL) is developed which lists the Job Duty Task Analysis (JDTA) items selected for a specific course. During the Design Phase, learning objectives are built to support the CTTL. The Instructional Media Design Package (IMDP) from the Design Phase organizes the course structure and captures the instructional design for each proposed lesson and section. Storyboards provide a detailed description of instruction. At the end of the Design Phase, a prototype lesson is produced using the software that will be used for development and the lesson is tested using Navy eLearning (NeL) Test Track.

This chapter provides information on the Development Phase. During the Development Phase, course materials are developed. These materials may include interactive multimedia instruction (IMI) and instructor-led training (ILT).

For formal schoolhouse training, the Development Phase ends with the completion of the course pilot. A course pilot is conducted for an entire course or major segment. After a successful course pilot, the curriculum control authority (CCA) will sign a letter of promulgation approving the course materials for implementation. The pilot process is described in NAVEDTRA 130B, Chapter 10. FIGURE 7 illustrates the Development Phase process.

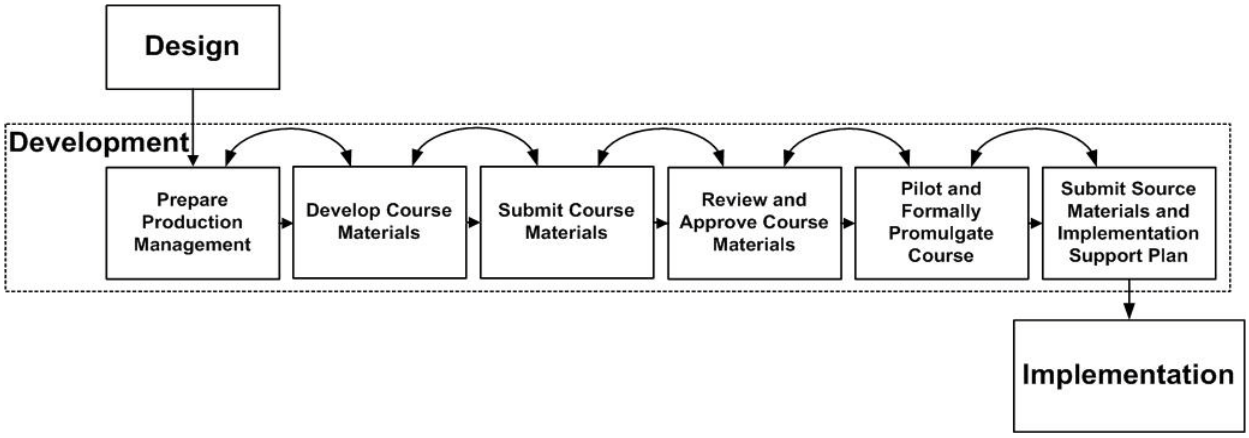



**FIGURE 7: DEVELOPMENT PHASE PROCESS**

**NOTE**

For development projects outside of formal training, such as in-service training, training development projects may not require a TPP, JDTA, or CTTL. In addition, the Development Phase may be complete upon delivery and testing of content on both NeL Test Track and the Government Content Acceptance Testing (GCAT) site. The CCA will specify the required deliverables for non-formal schoolhouse training.

## SECTION 2 - PRODUCTION MANAGEMENT

Whether the work is performed in-house or with contractor support, the curriculum development project team must have experience in developing and testing Sharable Content Object Reference Model (SCORM) compliant learning content from the instructional design, software design, and development perspectives. See NAVEDTRA 135 (series) for details regarding staff requirements and contract management.

During development planning, the CCA shall review:

- Steps to be used in the Development Phase
- Appropriate verification and validation processes
- Lines of responsibility and authority
- Appropriate management documents to be used to track the project
- Details regarding course material delivery to include the delivery schedule and format for delivery
- List of Government Furnished Information (GFI) and Government Furnished Equipment (GFE) to be obtained and delivered and the method of receipt

**NOTE**

All GFI and GFE are provided per project requirements. Obtaining the physical files and equipment may be a lengthy process. To avoid delays, it is important to start the process early.

At a suitable point in the process, systematic reviews shall be performed in accordance with planned arrangements to:

- Evaluate if the development processes will meet requirements
- Identify any project risks and propose necessary actions

Participants in such reviews shall include design and development team representatives. Records of results of the reviews and any necessary actions shall be maintained by the CCA.

## SECTION 3 - TRAINING MATERIALS DEVELOPMENT

A course may be made up of learning content that includes materials for IMI and ILT. These materials may be delivered using various delivery media and instructional methods. Only some of the course materials may be NeL Learning Management System (LMS)-delivered. For course, materials delivered using the NeL LMS follow format and style guidance detailed in Appendices B, C, D, E, and F.

## SECTION 4 - DEVELOPMENT TOOLS

Course materials developed for the Integrated Learning Environment (ILE) must be created using DON Application and Data Base Management System (DADMS) approved software. Refer to the DADMS website for a list of approved software and the current approved versions. Some of the government-owned tools, DADMS-approved, may also be required depending upon the nature of the project (see Appendix G for a listing).

**NOTE**

When an application is not listed on the DADMS website, contact NETC (N62) to request a review.

## SECTION 5 - SHARABLE CONTENT OBJECT REFERENCE MODEL

SCORM is a model that integrates a set of related technical standards, specifications, and guidelines to ensure interoperability of computer-delivered course materials across LMS delivery environments. All course materials developed for delivery through the NeL LMS must be SCORM 2004 compliant.

The SCORM 2004 Documentation Suite (SCORM 2004 4th Ed.)[9] provides the standards and specifications that must be followed in order to develop SCORM-compliant course materials.

The documentation suite includes:

- SCORM 2004 Content Aggregation Model (CAM)
- SCORM 2004 Run-Time Environment (RTE)
- SCORM 2004 Sequencing and Navigation (SN)

## 5.1. SCORM Content Package

Course materials planned for NeL LMS delivery, are bundled into SCORM content packages. The structure of the content packages is based on the course and lesson flow descriptions that are detailed in the IMDP. Refer to Appendix H and SCORM 2004 4th Ed. for a detailed description of SCORM 2004 content package organizations.

# SECTION 6 - SUBMISSION

After content has been announced via the Content Announcement process, developed, and packaged as SCORM 2004 content packages, the CCA (i.e., content sponsor) must complete a Content Submission form via the Content Forecasting Service (CFS). This is done before submitting final approved content to the NeL Content Administration and Support Team.

## 6.1. Content Package Requirements

- Comply with Rehabilitation Act (29 U.S.C. §794d) Section 508 standards
- Meet SCORM 2004 requirements
- Contain required metadata
- Adhere to the NETCINST 5510.1 (series), Information Protection Policy for Navy ILE and Navy Knowledge Online-SIPRNET (NKO-S)
- Adhere to Navy Marine Corps Intranet (NMCI) Core Build specifications (refer to NMCI Core Build)
- Adhere to copyright requirements as detailed in SECNAVINST 5870.4 (series)

The following deliverables are required for all content submitted to NeL Content Administration and Support Team:

- **Program Information File (PIF)/ZIP Content Package:** Each SCORM-compliant content package shall be delivered as a PIF in the .zip-format on Compact Disc (CD), Digital Video Disc (DVD) or electronically. Once content has passed sponsor review, all other materials used for

content development (i.e. storyboards, lesson designs, source files, etc.) shall be provided as a separate electronic deliverable and mailed to the NeL Content Administration and Support Team at:

NETPDTC - N634
BLDG 839 RM 113
6490 Saufley Field Road
Pensacola, FL 32509-5239

In addition, the CCA shall retain a copy of all materials as a life-cycle resource for future reference.

- **ADL Test Suite Logs:** Developers creating content according to SCORM 2004 are required to test a representative sample of their content using the Advanced Distributed Learning (ADL) Test Suite[10]. This test ensures compliance to SCORM baseline requirements. All content submitted for hosting within the NeL LMS must be accompanied by an electronic version of the ADL Test Suite Log files. These three log files will provide the results for the Sharable Content Object (SCO) run-time environment test, the metadata test, and the content package test.
- **NeL Test Track Files:** Upon completion of final tests in NeL Test Track, the metadata file (course_metadata.xml) and validation logs must be submitted to the NeL Content Administration and Support Team.

**NOTE**

NeL Test Track is a Navy-specific testing environment that provides a metadata editor (based on LOMv1.0), and has an additional extension for setting the properties used in configuring the SCORM engine during import of any given package to the NeL LMS.

- **508 Accessibility Compliance Statement:** NeL LMS content shall meet Section 508 standards. To determine if the content meets the standards, use a web-accessibility evaluation tool. Compliance to Section 508 standards shall be indicated on the Sponsor GCAT Content Testing Checklist (see Appendix J).

**NOTE**

The World Wide Web Consortium (W3C) Web Content Accessibility Guidelines (WCAG) maintains a listing of Web Accessibility Evaluation tools[11]. The current requirements that shall be met are provided in the WCAG 2.0 column of TABLE 8. The table also shows the alignment between WCAG 1.0 checkpoints, published in May 1999, and WCAG 2.0, published in December 2008.

**TABLE 8: MAPPING SECTION 508**

| Section 1194.22 Paragraph | WCAG 1.0 Checkpoint | WCAG 2.0 Success Criteria or Conformance Requirement as appropriate |
|---|---|---|
| (a) | 1.1 | 1.1.1, 1.2.1, 1.2.9 |
| (b) | 1.4 | 1.2.2, 1.2.3, 1.2.4, 1.2.5, 1.2.7 |
| (c) | 2.1 | 1.4.1 |
| (d) | 6.1 | Conformance Requirement 4 & 5, 1.4.2, 2.1.2, 2.3.1, 2.2.2 |
| (e) | 1.2 | 1.1.1, 2.1.1, 2.4.4 |
| (f) | 9.1 | 1.1.1, 2.1.1 |
| (g) | 5.1 | 1.3.1 (H51, H63) |
| (h) | 5.2 | 1.3.1 (H43) |
| (i) | 12.1 | 2.4.1, 4.1.2 |
| (j) | 7.1 | 2.3.1, 2.3.2 |
| (k) | 11.4 | Conformance Requirement 1 |

- **Assessment Answer Key(s):** Developers must provide an answer key for all graded tests. This will allow the NeL Content Administration and Support Team to validate the assessment. The answer key can be provided as a text file, database, .xml file, or electronic document. The CCA shall retain a copy of the answer key as a life-cycle resource for future reference.
- **Classified Content:** The Secret internet Protocol Router Network (SIPRNET) version of the NeL LMS can host classified content. Contact the NeL SIPRNET Management and Support Team prior to beginning content development efforts of classified content. When using the NeL Content Hosting Inquiry Form, set the topic selection to SIPRNET to ensure the message reaches the proper personnel.

## SECTION 7 - REVIEW AND APPROVAL

Once the course material (i.e., content package) has been received, the NeL Content Administration and Support Team will verify that all required deliverables have been obtained. The NeL Content Administration and Support Team will then place the course material into GCAT for NeL Content Administration and Support Team review using the criteria outlined in the NeL SCORM Pre-GCAT Content Testing Checklist (see Appendix I).

Once the course materials pass NeL Content Administration and Support Team review, they will be made available for CCA review. CCA's will be notified via a Sponsor Notification Report (SNR) when the course material is ready for review. SNR will contain a Sponsor GCAT Content Testing Checklist (see Appendix J) to use when performing the final review of the submitted course. CCAs shall ensure that the course materials meet the criteria outlined within the checklist. Upon successful review of the course, CCAs shall digitally sign and return it to the NeL Content Administration and Support Team. The act of digitally signing and submitting the Sponsor GCAT Content Testing Checklist serves as approval for the NeL Content Administration and Support Team to place the course material into the NeL LMS for access and use by authorized users.

Upon receipt of a completed and digitally signed Sponsor GCAT Content Testing Checklist, the NeL Content Administration and Support Team shall conduct one final review using the criteria outlined in the NeL SCORM Post-GCAT Content Testing Checklist (see Appendix K). Upon the successful completion of this review, the course material will be moved to the NeL LMS.

TABLE 9 and FIGURE 8 provide an overview of the stages involved in the NeL Content Review and Approval Process.

**TABLE 9: NEL CONTENT ADMINISTRATION PROCESSING STAGES**

| Status Category Codes | Course Material Status Definitions |
|---|---|
| Announced | Announced and expected to be hosted, but has not been officially submitted by the Government Sponsor. This is completed during the Announcement Phase. |
| Submitted | Submitted by the Government Sponsor. Submission may be accomplished via File Transfer Protocol or through the mail system. |
| Received | Received and in queue for testing. |
| NeL Review | Currently being tested in GCAT by the NeL Content Administration and Support Team. |
| Returned | Did not pass testing and returned to the Government Sponsor for technical revisions. |
| Sponsor Review | Passed NeL Content Administration and Support Team review and in GCAT pending Government Sponsor approval. |
| Approved | Passed Government Sponsor Review and in queue to be hosted or placed on hold. |
| On Hold | Imported into the NeL LMS catalog and moved to production, but the Government Sponsor has requested not to activate at this time. |
| Hosted | Hosted on NeL LMS and meets applicable guidelines. |
| Hosted: A School | Active, but not visible to all groups. This is a special status for all "A" School hosted content. |
| Hosted: Non Standard | Progress is not tracked using SCORM and/or may be accessed via a link from another site (e.g., Navy Knowledge Online) |
| Retired | Previously hosted on the NeL LMS, but removed or replaced by an updated version. |

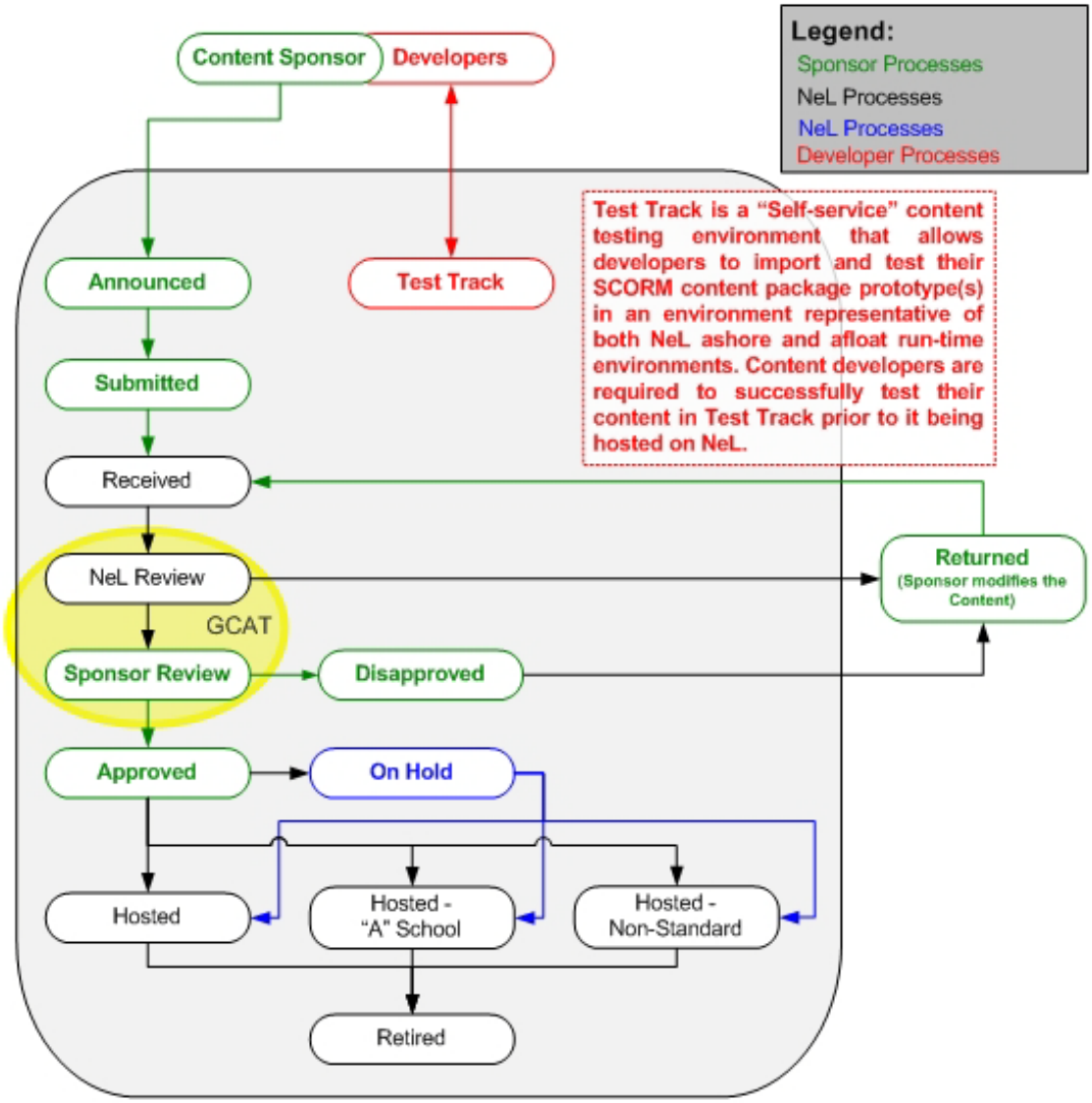



**FIGURE 8: PROCESSING FLOW**

## SECTION 8 - COURSE PILOT

A course pilot is the first delivery of the full-length course or first delivery of a major segment of the course. The purpose of a course pilot is to validate the materials and to determine learner effectiveness in attaining the learning objectives. A detailed "red-lined" copy will identify changes that must be incorporated in the corrected version. Course materials include those delivered via the NeL LMS during the pilot phase. Every effort should be taken to ensure the course materials are free of all errors prior to course pilot.

The method in which the NeL LMS-delivered course materials are piloted will depend on CCA requirements. For all hands, Navy-wide mandatory training or for follow-on, in-service, or other training that does not fall under the purview of formal schoolhouse training, a course pilot may not be required.

For formal schoolhouse course pilots, the NeL Content Administration and Support Team may, if directed by the CCA, tag the NeL LMS-delivered course materials with a catalog code which indicates that the materials are part of the course pilot. Access to these materials will be restricted to those learners participating only in the course pilot phase. Status of the materials will not be changed until the letter of promulgation is issued after a successful course pilot. Once the letter of promulgation is issued and the course materials have been approved by the CCA, the NeL Content Administration and Support Team will retire the pilot materials, and deploy the final versions to the NeL LMS with a catalog code meeting established standards. The retired pilot materials will then be removed from the NeL LMS to reduce the storage requirements of the system. For information on naming conventions and catalog codes see Section 3 on Page 8-4 of this manual.

A Pilot Course Monitoring Report is produced during the Development Phase. A general description of the pilot process can be found in NAVEDTRA 130B VOL I Chapter 10 and VOL III Chapter 6.

**NOTE**

A baseline training safety risk assessment must be conducted during the course pilot phase whenever a course is suspected of posing a reasonable element of risk. Risk assessment criteria must be performed as prescribed by NETCINST 5100.1 (series).

## SECTION 9 - SOURCE MATERIAL MASTER RECORDS

A set of reproducible masters of the training materials, associated documentation masters, and source materials (e.g., documentation, media, programming, and course life-cycle maintenance software) shall be maintained by the CCA. These masters must include a copy of all materials needed to conduct the training. Materials must be in a form that is available for other government agencies to review to determine if they can use the materials to meet their instructional needs. Each CCA must have a process in place to catalog and file source materials (see Appendix L). The CCA shall also ensure that the course entry in Corporate enterprise Training Activity Resource System (CeTARS) is current.

## SECTION 10 - IMPLEMENTATION SUPPORT DOCUMENTS

Before full implementation of the training materials, curriculum development project team shall produce implementation support documentation.

### 10.1. ILE Course Material User Manual

The curriculum development project team shall prepare a plan for successful delivery of course materials in the classroom setting if the classroom setting is the planned delivery location. This plan shall be reviewed, prior to course implementation, by all site representatives who are responsible for delivering the course materials. It is recommended that site representatives review the plan prior to the pilot, and again once the pilot has occurred and all red lines have been corrected.

All representatives must sign off on the final plan, indicating that their site location can support implementation. The signature sheet shall be routed to the CCA and included with the training materials.

**10.2. Contingency Plan.** The curriculum development project team shall prepare a contingency plan for course delivery. This contingency plan shall detail the specific strategies and actions to recover from course material delivery problems in the minimum time, with minimum disruption. The plan shall include a monitoring process and “triggers” for initiating contingency plan actions. Occasionally, NeL LMS, networks, or classroom resources experience downtimes. These downtimes are typically announced in advance, but it is a best practice to prepare for

an alternative delivery approach to support uninterrupted training. Refer to National Institute of Standards and Technology (NIST) Special Publication 800-34 for general recommendations on backup planning.

All representatives must sign off on the contingency plan indicating that their site location can support the plan. The signature sheet shall be routed to the CCA and be included with the training materials.

**10.3. Training System Support Document**

The curriculum development project team shall prepare a Training System Support Document (TSSD). This document provides complete procedures for using all software utility programs, support software file generation, and system performance characteristics verification for life-cycle maintenance.

All site representatives shall review the document. The final TSSD shall be routed to the CCA and included with the training materials.

**10.4. Information Assurance Certification**: Course materials may be Information Assurance (IA) or IA-enabled, as defined in the IA Implementation Instruction (DoDI 8500.2). For IA or IA-enabled course materials, the CCA shall comply with the appropriate security configuration requirements provided in DoDI 8500.2. An Information Assurance Manager designated by the CCA shall assist with meeting these requirements.

The two principal requirements are:

- All IA and IA-enabled products must be Common Criteria certified. Refer to The Common Criteria Evaluation and Validation Scheme[12] for certification guidance.
- Appropriate Security Technical Implementation Guides (STIGs) or equivalent must be used to configure all IA and IA-enabled products. Refer to the Information Assurance Support Environment[13] for configuration guidance.

TABLE 10 lists the products, descriptions, and Data Item Descriptor (DID) numbers that may be used to structure the Implementation Support Documents.

**TABLE 10: SUPPORT DOCUMENTS**

| PRODUCT | Description | DID# |
|---|---|---|
| ILE Course Material User Manual | Identifies configuration requirements for successful course delivery. | DI-IPSC-81443A |
| Contingency Plan | Details the specific strategies and actions to implement recover from delivery problems in minimum time and with minimum disruption. | Refer to 3.5 Contingencies and alternate states of mode in DI-IPSC-81443A |
| Training System Support Document (TSSD) | Provide procedures for using software utility programs, support software file generation, and system performance verification for life-cycle maintenance. | DI-ALSS-81527B |
| Security Technical Implementation Guides (STIGs) or equivalent | Provide configuration standards for DOD IA and IA-enabled devices/systems. | Refer to the Information Assurance Support Environment for configuration guidance. |

## SECTION 11 - COURSE MATERIALS SUPPORT

After the course materials are hosted on the NeL LMS, material change requests can be submitted by creating a problem report accessible from the “Help” link on the NeL LMS. Problem reports are ranked:

- **TIER 1**: Assistance provided by the Naval Education and Training Command (NETC) Call Center. Also accessible by calling (877) 253-7122 **-or-** Defense Switched Network (DSN) 922-1001 and listening to the menu options available. This assistance is provided for general support/course issues remedied at the client workstation and/or with the user.
- **TIER 2**: If the NETC Call Center is unable to remedy the TIER 1 issue, the issue is escalated to the NeL Content Administration and Support Team. This assistance is provided for user account issues, transcript/completion issues, and course performance issues.

- **TIER 3**: Should the NeL Content Administration and Support Team be unable to resolve TIER 2 issues or if there are issues with course content, the problem report is escalated to the CCA (i.e., content sponsor).

## SECTION 12 - DEVELOPMENT INPUTS AND OUTPUTS

Depending on the scope and magnitude of the training requirement, the following inputs and outputs listed in TABLE 11 occur during the Development Phase.

**TABLE 11: DEVELOPMENT INPUTS, OUTPUTS, AND TOOLS**

| **INPUTS TO DEVELOPMENT PHASE** |
|---|
| Training Course Control Document (TCCD)<br>Instructional Media Design Package (IMDP)<br>Prototype Lesson |
| **OUTPUTS DURING DEVELOPMENT PHASE** |
| Course Pilot Complete<br>Course Materials<br>All Source Materials<br>Implementation Support Documents<br>Software Product Description<br>Letter of Promulgation<br><br>NOTE: The PADDIE+M process is not linear but interrelated. Therefore, several outputs from other phases may be required to complete the Development Phase. |
| **TOOLS SUPPORTING THE DEVELOPMENT PHASE** |
| Authoring Instructional Materials (AIM) Learning Object Module (LOM) and Content Planning Module (CPM)<br>Navy eLearning (NeL) Test Track<br>Corporate Enterprise Training Activity Resource System (CeTARS)<br>Navy eLearning (NeL) Learning Management System (LMS) |

## SECTION 13 - SUMMARY

The Development Phase takes the analysis and design information developed in previous phases and builds the course materials. The piloting of materials is the final part of the Development Phase. Successful piloting of materials results in a letter of promulgation, which authorizes implementation of the course materials.

The CCA is the approval authority for all Development Phase products. Approval of deliverables including the GCAT testing results shall be documented and recorded by the CCA with the course management materials.

The CCA must ensure that NETC and participating activities are informed of developments that affect the schedule. The CCA is required to maintain an accurate recording of the project schedule.

TABLE 12 provides a listing of the products of the Development Phase and approval authority.

**TABLE 12: PRODUCTS AND APPROVAL AUTHORITY**

| Products | Approval Authority |
|---|---|
| Pilot Course Monitoring Report | CCA |
| Course Material Deliverables | Consensus between CCA and NeL Content Administration and Support Team |
| Source Materials | Consensus between CCA and NeL Content Administration and Support Team |
| Implementation Support Documentation | All site representatives |
| CeTARS Software Product Description | CCA |
| Letter of Promulgation | CCA |

# CHAPTER 6

# IMPLEMENTATION PHASE

## SECTION 1 - INTRODUCTION

In previous chapters, the products of the Planning, Analysis, Design, and Development Phases have been created, assembled, and piloted. Implementation takes place after the pilot has been conducted, adjustments to training materials indicated by the pilot course have been accomplished, and the training materials have been formally approved for use through issuance of a letter of promulgation by the Curriculum Control Authority (CCA). Once the course is promulgated, the CCA will turn over the course materials to the designated Course Curriculum Model Manager (CCMM).
FIGURE 9 illustrates the Implementation Phase process.

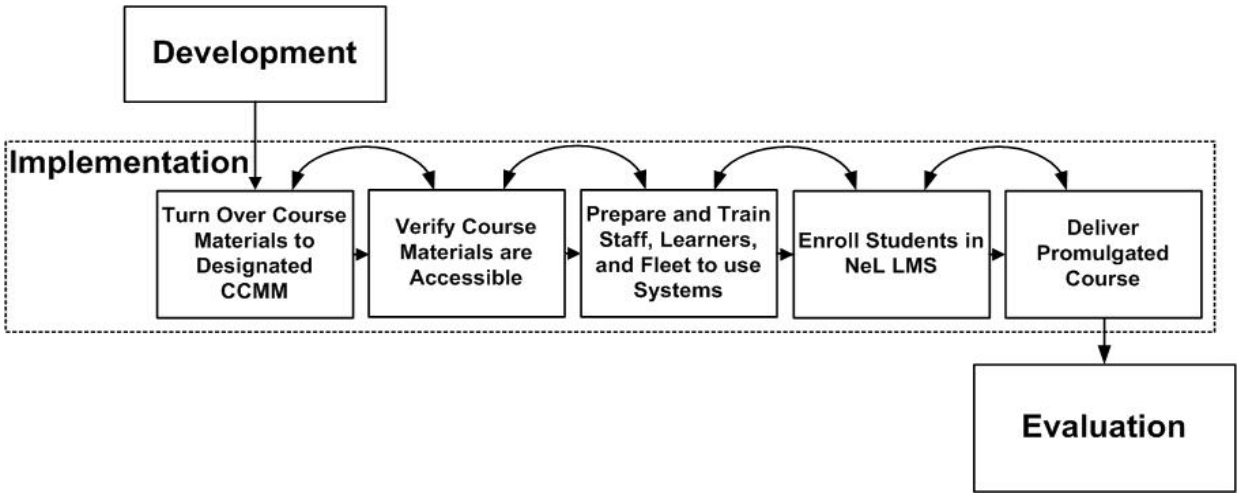



**FIGURE 9: IMPLEMENTATION PHASE PROCESS**

## SECTION 2 - IMPLEMENTATION RESPONSIBILITIES

A detailed description of CCA, CCMM, course supervisor, and Learning Site Implementation Phase responsibilities is available in NAVEDTRA 130 (series). Also see NAVEDTRA 135 (series) for details regarding staff requirements.

## SECTION 3 - NeL LMS CCMM RESPONSIBILITIES

In preparation for course delivery at learning site(s), the CCMM shall coordinate with course supervisor(s) and the learning standards office (LSO) (i.e., personnel assigned to manage course material delivery) to verify that all Navy eLearning (NeL) Learning Management System (LMS)- delivered courses and support materials (e.g., Interactive Electronic Technical Manual

(IETMs)) function as planned given site classroom configurations. The Implementation Support Documents shall be used to verify configuration requirements.

The course supervisor(s) shall coordinate with the training support center/training support detachment if issues arise with classroom configurations.

**NOTE**

Electronic classrooms (ECR) will be established following the guidance in Appendix M.

## SECTION 4 - NeL LMS INSTRUCTOR RESPONSIBILITIES

NeL LMS specific instructor responsibilities include:

- Ensuring learners create a NeL LMS account. For foreign nationals, follow procedures detailed in Accessing Navy eLearning: A Guide for International Student Management Office (ISMO)s and the Foreign National Community[14]
- Ensuring proper LMS job code assignment to allow learners access to enroll
- Ensuring assignment to wait list/rosters as necessary (all training types)
- Monitoring course completion status and learner progress (all training types)
- Monitoring that proper scores are recorded in the LMS
- Providing technical support if completion issues arise due to system or infrastructure deficiencies
- Ensuring learners are removed from the LMS job code assignment, waitlist, and/or rosters as applicable after course completion

## SECTION 5 - IMPLEMENTATION TRAINING

The CCMM will coordinate with the course supervisor(s) and LSO to ensure all sites are ready to train. Course supervisors and the LSO will ensure instructors are properly trained to use capabilities of the NeL LMS and available classroom resources (i.e., instructor and student workstations, projectors, etc). These considerations shall be made for single and multiple site implementations to ensure that training consistency is maintained.

NeL LMS training is provided by a designated learning center LMS trainer, or a NeL Content Administration and Support Team LMS trainer. After instructors have been trained to use the LMS, they must request an LMS instructor account at the Integrated Learning Environment (ILE) website.[15] Formal instructor training courses, such as Journeyman Instructor Training (JIT), address the use of classroom resources and the NeL LMS.

## SECTION 6 - CONTINGENCY PLAN IMPLEMENTATION

The CCMM must coordinate with the course supervisor(s) and LSO (i.e., schoolhouse personnel) to ensure that sites are prepared to implement the contingency plan for course delivery. This may include maintaining a copy of course materials on back up media. Instructors should be aware of personnel to contact in the event any technical issues occur.

## SECTION 7 - AFLOAT/FLEET COURSE FUNCTIONALITY

In preparation for course delivery within the afloat/fleet environment, CCA designated personnel shall coordinate with those assigned to manage content delivery, to ensure that all NeL LMS-delivered course and support materials (e.g., IETMs) allow for course enrollment and completion given technology resources available shipboard.

Afloat delivery of NeL LMS-based training is in compliance with the Navy Information Application Product Suite (NIAPS) build. Along with consideration for infrastructure, it is important to ensure that sufficient time is allowed to install course materials for implementation afloat. NeL LMS-based courses are distributed via an amendment process. Time for processing can take several weeks. Once the amendment is published, additional time is needed to allow the afloat instance of the NeL LMS to synchronize and gather the course data. Completions for afloat-based courses are available automatically onboard, but synchronization time is required to record completion status in shore-based systems.

**NOTE**

The Office of the Chief of Naval Operations (OPNAV) N16 Fleet Introduction Team provides NIAPS support at the Anchor Desk.[16]

## SECTION 8 - IMPLEMENTATION INPUTS AND OUTPUTS

Depending on the scope and magnitude of the training requirement, the following inputs and outputs listed in TABLE 13 occur during the Implementation Phase.

**TABLE 13: IMPLEMENTATION INPUTS, OUTPUTS, AND TOOLS**

| **INPUTS TO IMPLEMENTATION PHASE** |
|---|
| Course Pilot Complete<br>Course Materials<br>All Source Materials<br>Implementation Support Documentation<br>Software Product Description<br>Letter of Promulgation |
| **OUTPUTS DURING IMPLEMENTATION PHASE** |
| Delivered Course Materials<br><br>NOTE: The PADDIE+M process is not linear but interrelated. Therefore, several outputs from other phases may be required to complete the Implementation Phase. |
| **TOOLS SUPPORTING THE IMPLEMENTATION PHASE** |
| Navy eLearning (NeL) Learning Management System (LMS)<br>Traditional Classroom Equipment<br>Electronic Classroom Resources |

## SECTION 9 - SUMMARY

The Implementation Phase focuses on deploying content to actual learners. Preparations for and delivery of course materials are realized in the Implementation Phase. Many elements of implementation are covered in NAVEDTRA 130 and 135 (series). This chapter addressed some of the more NeL-specific Implementation Phase considerations.

After implementation, the Evaluation Phase begins. Course management is carried out by all sites per NAVEDTRA 135 (series) and the specific guidance provided in this manual.

TABLE 14 provides a listing of the products of this phase and approval authority.

**TABLE 14: PRODUCTS AND APPROVAL AUTHORITY**

| Products | Approval Authority |
|---|---|
| Deliver Course Materials for Implementation | CCA to CCMM |
| Deliver Course Materials to Site(s) | CCMM |
| Verify operational classrooms using Implementation Support Documents | CCMM |
| Implementation Training | CCMM coordinates with Course Supervisor and LSO |
| Afloat delivery | CCMM, or other CCA designated personnel |
| Verify operational contingency plan | CCMM coordinates with Course Supervisor and LSO |

# CHAPTER 7

# EVALUATION PHASE

## SECTION 1 - INTRODUCTION

The evaluation of training is a dynamic process in which information about the training is collected to determine its effectiveness. Early adoption of the evaluation strategy ensures the required resources are in place when needed. The Evaluation Assessment Plan (EAP), developed during the Planning Phase, will provide the blueprint for structuring the evaluations.
FIGURE 10 illustrates the Evaluation Phase.

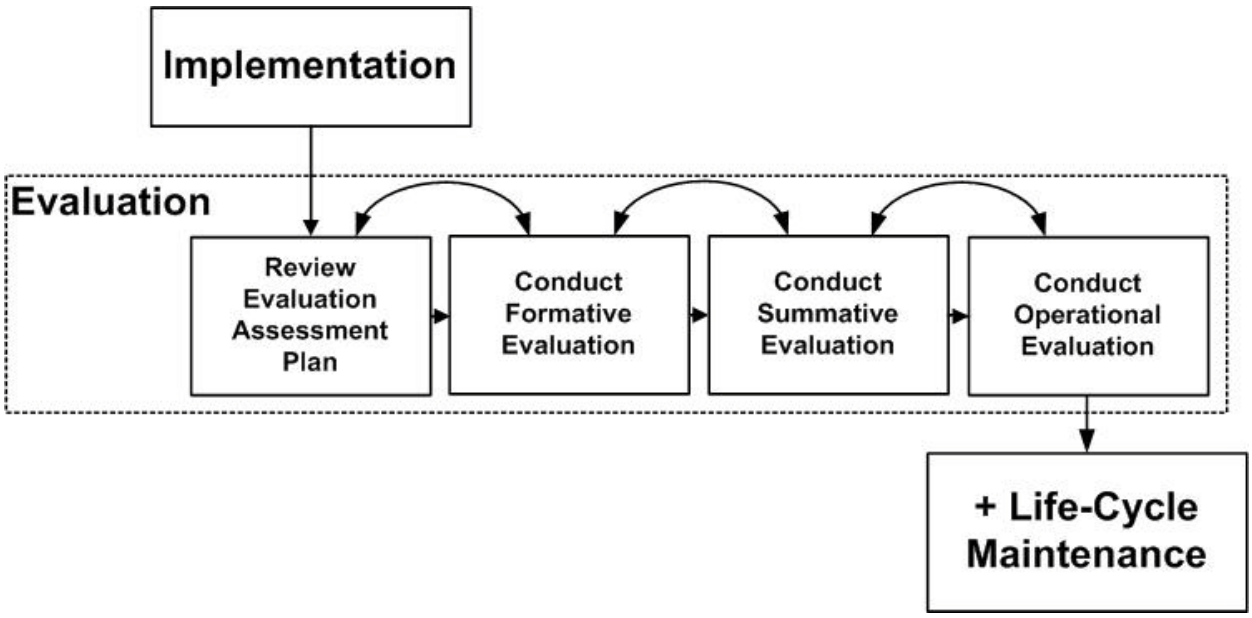



**FIGURE 10: EVALUATION PHASE PROCESS**

The evaluation process includes formative, summative, and operational reviews and assessments. For a thorough discussion of evaluation, see MIL-HDBK-29612-A Section 10. Formative evaluation occurs during the Design and Development Phases, and concludes when the formal course pilot has been completed and the letter of promulgation has been signed. Summative and operational evaluations occur after the final version of the course has been implemented. Summative and operational evaluations include internal and external assessments as described in Chapter 5 of NAVEDTRA 135 (series). Before any course of instruction is modified, information gathered during summative and operational evaluations is used to identify course materials that require improvement.

## SECTION 2 - PROCESS AND GOVERNANCE

Whether conducting formative or summative evaluations, process and governance can be found in NAVEDTRA 135 (series). NAVEDTRA 132 (series) shall be used when developing a test for purposes of evaluating student learning, achievement, or skill improvement.

## SECTION 3 - RESPONSIBILITIES

A detailed description of Curriculum Control Authority (CCA), Course Curriculum Model Manager (CCMM), and learning site responsibilities is available in NAVEDTRA 135 (series).

## SECTION 4 - FORMATIVE EVALUATION

Formative evaluations may include the following types of reviews:

- Reviews by specialists not directly involved in the instructional development project.
- One-on-one review: In which a course designer works with individual learners to obtain data and revise materials.
- Small-group evaluations: In which a representative sample of the population reviews the materials on their own. Data about their experience is collected.
- Course pilot, as the first delivery of a course or section of a course conducted at a Navy school, by Navy instructors, using the course and supporting materials.

**4.1. Reviews by Specialists:** This review may include individuals from outside the project that have expertise in the subject area or instructional design. The materials should be reviewed and assessed for subject matter accuracy and instructional presentation. Many valid approaches to internal evaluation exist. The approach chosen for the project is established in the EAP.

**4.2. One-On-One Reviews:** The purpose of this review is to identify errors in the instructional materials. A small, but representative sample of the learner population is ideal. This group works one-on-one with the designer.

**4.3. Small-Group Evaluations:** The small-group assessments will help validate that the changes made during the previous assessments are effective and, if computer-delivered, help

determine if the materials can be used without the support of an instructor if that was part of the original design plan.

**4.4. Course Pilot:** Detailed information on the course pilot process is provided in NAVEDTRA 130 (series).

## SECTION 5 - SUMMATIVE EVALUATION

Summative evaluations are described in detail in Chapter 5 of NAVEDTRA 135 (series). Summative evaluations may be conducted using the NeL Learning Assessment System (LAS).

## SECTION 6 - OPERATIONAL EVALUATION

Operational evaluation is a continuous process that assesses how well course graduates are meeting the established job performance requirements. Operational evaluations focus on quality improvement.

## SECTION 7 - QUALITY EVALUATION TOOL

When conducting an evaluation (either formative or summative) for the purpose to redeploy, Reuse, Repurpose and Rereference (R3) course materials, the Quality Evaluation Tool will be used. It can be obtained from Naval Air Warfare Center Training Systems Division (NAWCTSD) in Orlando, FL and is referenced as Technical Report 2005-002. Developed in 2005 by the NAWCTSD, this evaluation tool contains items and scales that will help determine the quality of the course materials.

## SECTION 8 - EVALUATION INPUTS AND OUTPUTS

Depending on the scope and magnitude of the training requirement, the following inputs and outputs listed in TABLE 15 occur during the Evaluation Phase.

**TABLE 15: EVALUATION INPUTS, OUTPUTS, AND TOOLS**

| INPUTS TO EVALUATION PHASE |
|---|
| Evaluation Assessment Plan (EAP) |
| **OUTPUTS DURING EVALUATION PHASE** |
| Tests<br>Surveys (School and Fleet)<br>Completed Evaluation Checklists<br><br>NOTE: The PADDIE+M process is not linear but interrelated. Therefore, several outputs from other phases may be required to complete the Evaluation Phase. |
| **TOOLS SUPPORTING THE EVALUATION PHASE** |
| Authoring Instructional Materials (AIM) Learning Object Module (LOM) and Content Planning Module (CPM)<br><br>Quality Evaluation Tool (NAWCTSD Technical Report 2005-002)<br>Navy eLearning (NeL) Learning Assessment System (LAS)<br>Corporate enterprise Training Activity Resource System (CeTARS) |

## SECTION 9 - SUMMARY

The Evaluation Phase addresses formative, summative, and operational evaluations. Many of these guidelines are general in nature and should be further developed to address the unique needs of individual commands.

TABLE 16 provides a listing of the products of this phase and approval authority.

**TABLE 16: PRODUCTS AND APPROVAL AUTHORITY**

| Products | Approval Authority |
|---|---|
| Tests | CCA |
| Surveys | CCA |
| Completed Evaluation Checklists | CCA |

# CHAPTER 8

# LIFE-CYCLE MAINTENANCE PHASE

## SECTION 1 - INTRODUCTION

This chapter provides information on the Life-Cycle Maintenance Phase. Once the training materials are implemented, the materials will enter life-cycle maintenance. The original information that is needed to maintain the materials is contained in source materials provided during the Development Phase. The source materials are updated and maintained for the remainder of the training program by the Course Curriculum Model Manager (CCMM). See Military-Handbook (MIL-HDBK) 29612 (series), Appendix C, Government Concept of Operations for Digital Training Data, Section C 3.5 Data format recommendations, c., page 84.

Course materials may be linked to Interactive Electronic Technical Manuals (IETMS) and technical publications. Care must be taken to ensure that the materials are current.

**NOTE**

Authoring Instructional Materials (AIM) Learning Object Module (LOM) and Content Planning Module (CPM) enable and maintain links to Job Duty Task Analysis (JDTA) data, IETMs, and other resources. They have the capability to run a “Change Impact Report” which may reduce the time required to review changes to content due to revisions.

During life-cycle maintenance, the course materials are monitored through standard surveillance methods. In part, this surveillance is implemented using the standard Formal Course Review (FCR) process as described in detail in NAVEDTRA 135 (series) for all schoolhouse content.

In order to support the sustainment of schoolhouse course materials, it is important to allocate maintenance funding in the initial Training Project Plan (TPP). For other developments, such as In-Service Training (IST), funding for life-cycle maintenance should be considered for allocation as early as possible.

## SECTION 2 - SURVEILLANCE

Every learning site is responsible for monitoring each course it instructs and proposing course changes to the CCMM. NAVEDTRA 130B, VOL III, Chapter 7 describes in detail the surveillance activities. Course materials delivered using the

Navy eLearning (NeL) Learning Management System (LMS) may become inoperable due to dependencies on plug-ins that are outdated. During the Life-Cycle Maintenance Phase a review of these dependencies should occur annually.

The Curriculum Control Authority (CCA) shall determine the category of the modification (i.e., interim change, change, technical change, new development, or revision). Depending on the category of the modification, one of the three phases (i.e., Plan, Analysis, or Design) will be the starting point for the maintenance activity.

FIGURE 11 illustrates the process flow from Life-Cycle Maintenance to modification status to the Phase starting point.

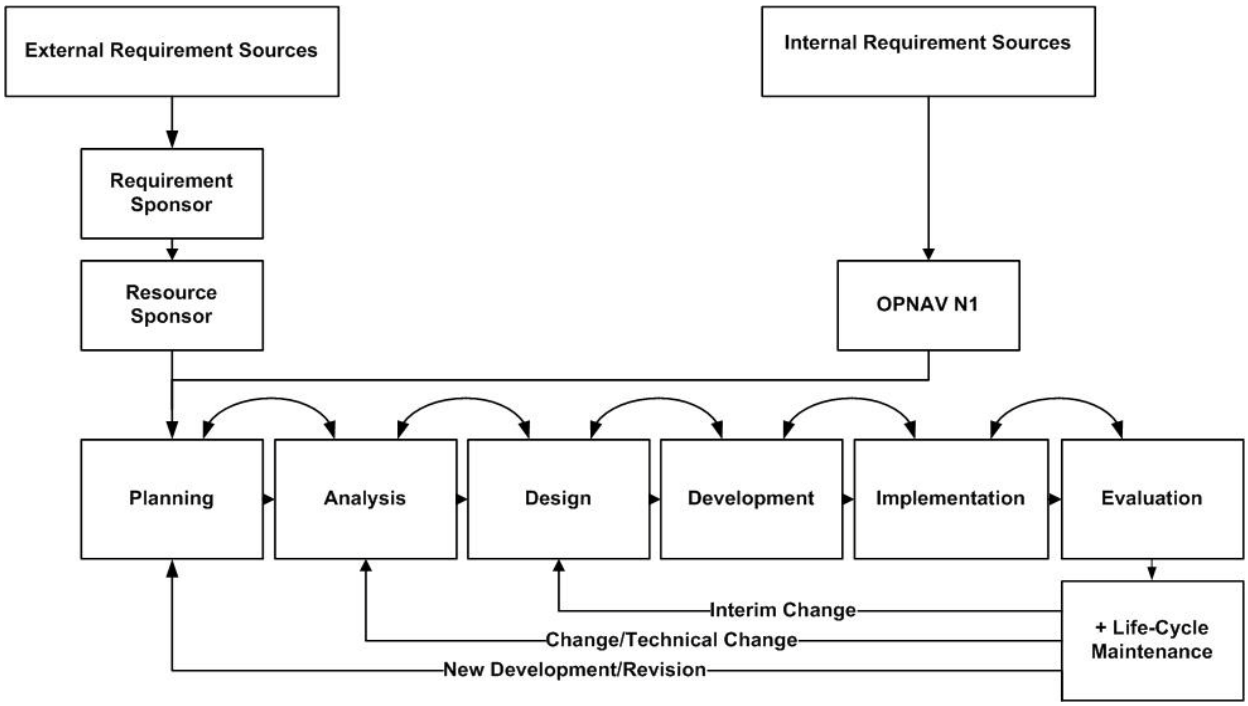



**FIGURE 11: LIFE-CYCLE MAINTENANCE PHASE PROCESS**

All modified course materials that are NeL LMS-delivered must comply with the established standards and guidelines as outlined in this manual including Government Content Acceptance Testing (GCAT) and completing content checklists. If the course materials are to be implemented in the schoolhouse, sufficient time must be allotted for the various forms of evaluation.

**NOTE**

Content repository and management is a CCA responsibility. Each CCA should have a method in place to maintain a master copy of training materials with a record of all updates.

## SECTION 3 - NAMING CONVENTIONS AND CATALOG CODES

Well-defined naming conventions and versioning is crucial for life-cycle maintenance. CCAs are responsible for developing a naming convention for their course materials. Examples of catalog codes and numbering conventions are included in TABLE 17 and FIGURE 12. Additional information pertaining to the proper formatting of catalog codes can be found in Appendix C.

**TABLE 17. SAMPLE CATALOG CODES**

| Requirement | Suggested Code | Description |
|---|---|---|
| Center ID (up to 5 characters) | CNATT<br>SUBLC<br>METOC | To identify course materials by Learning Center. |
| Platform/Rating | 999 | Three digit numerical code to identify platform or rating specific training. See codes below. |
| System | 999 | Three digit alpha-numerical code to system (000 reserved for General N/A). To be developed similar to platform/rating codes. |
| Series Position | 999 | Three digit numerical code for series position (tied to delivery). |
| Position in series | 999 | Three digit numerical code for position in series. |
| Version identifier | X9 | One alpha (for major revisions) and one numerical (for minor revisions) digit. |

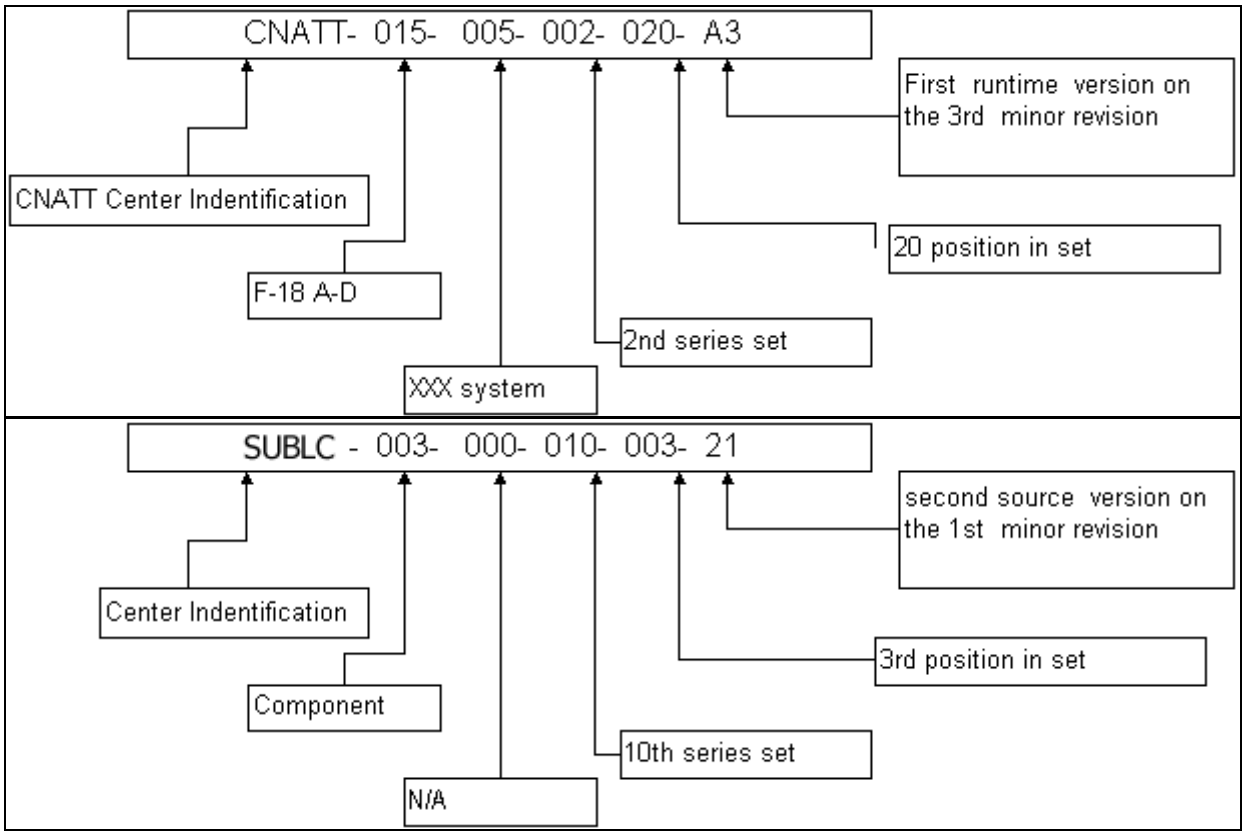



**FIGURE 12: EXAMPLE NUMBERING SYSTEMS**

Catalog codes identify lessons within the NeL LMS. These lessons can then be used to build the contents of a complete schoolhouse course cataloged using a Course Identification Number (CIN). For example, a blended course may include lessons that are Instructor-Led Training (ILT) with Interactive Multimedia Instruction (IMI) delivered through the NeL LMS. Other cataloging and naming conventions can be used. The key is to have a logical convention that fits the requirements of the CCA.

## SECTION 4 - LIFE-CYCLE MAINTENANCE INPUTS AND OUTPUTS

Depending on the scope and magnitude of the training requirement, the following inputs and outputs listed in TABLE 18 occur during the Life-Cycle Maintenance Phase.

**TABLE 18: LIFE-CYCLE INPUTS, OUTPUTS, AND TOOLS**

| **INPUTS TO LIFE-CYCLE MAINTENANCE PHASE** |
|---|
| NeL LMS-delivered course materials (Lessons and Sections) with embedded links to authoritative external sources such as JDTA and technical data<br><br>Source materials |
| **OUTPUTS DURING LIFE-CYCLE MAINTENANCE PHASE** |
| Current and Accurate NeL LMS-delivered Course Materials through proper Surveillance and Maintenance.<br><br>NOTE: The PADDIE+M process is not linear but interrelated. Therefore, several outputs from other phases may be required to complete the Life-Cycle Maintenance Phase. |
| **TOOLS THAT SUPPORT THE LIFE-CYCLE MAINTENANCE PHASE** |
| AIM Learning Object Module (LOM) and Content Planning Module (CPM)<br>Navy eLearning (NeL) Learning Management System (LMS) |

## SECTION 5 - SUMMARY

Life-cycle maintenance is a critical part of course material management. Material can become outdated quickly requiring surveillance and maintenance to keep material current.

This manual covered the Planning, Analysis, Design, Development, Implementation, Evaluation, and Life-Cycle Maintenance (PADDIE+M) of ILE training materials. Each phase, to include the steps required to complete the phase along with their approval points, was addressed within the chapters of this manual.

# APPENDIX A

# TRAINING TRANSFER PLAN FORM

Project name:

Purpose of project:

Requirement sponsor:

Projected student utilization over six years:

Assigned Learning Center:

Assigned Training Support Activity:

Project availability of funding (Number of years as appropriate):

Resource requirement list with life-cycle maintenance responsibilities for each item:

Projected course life-cycle maintenance (e.g., Interactive Multimedia Instruction (IMI) developed, projected changes to the system over the next two years will cause 20 percent content modifications)

# APPENDIX B

# USER INTERFACE DESIGN REQUIREMENTS

**SCREEN AREA AND LAYOUT:** Screen design shall be planned with the assumption that the presentation area for the course content is at a minimum of 800 by 600 pixels. The recommended screen size is 1024 by 768 pixels. These sizes support course materials running within an Learning Management System (LMS). All pages shall have the scrolling attribute set to “auto” in order to allow a scroll bar to appear if the course material does not fit in the available window area. The screen layout for the course presentation area shall consist of a menu area, with a course content area.

**MENU BUTTONS:** The menu shall contain navigation buttons for Previous and Next, which shall be used to navigate between pages within the course material. On the first page, the Previous button shall be inactive and appear dimmed (e.g., gray, or unavailable). On the last page, the Next button shall be inactive and appear dimmed.

The menu shall also contain buttons for glossary and help that are labeled with the corresponding text. The glossary button shall open the glossary containing definitions and an acronym list for the course. The help button shall open a help file or help index.

When any menu button is inactive, it shall appear dimmed. When any menu button appears dimmed, it shall be inactive, shall not respond to the user clicking on it, and shall not produce error messages if the user does click on it. All buttons shall be designed so that they change when the mouse pointer is placed over the button. The buttons shall indicate an action when the user clicks on them.

**PROGRESS INDICATORS AND PAGE NUMBERS:** A progress bar or page number must appear on every screen to indicate the page currently being viewed. Include the current page number along with the total number of pages when using page numbers if possible (e.g., page 10 of 65). The intent is to give the learner a reasonable expectation of how far he or she has progressed through the content.

**SCROLLING RULES**: If implementing scrolling:

- NEVER require horizontal scrolling
- Proportional scroll bars help determine page length
- Facilitate scrolling by highlighting major items (e.g., use bold text or graphics)

# APPENDIX C

# METADATA REQUIREMENTS

A metadata file shall be created at the “content package” level (refer to Appendix H for a description of the content package). The metadata file shall be named “course_metadata.xml.” This file is to be generated using Navy eLearning (NeL) Test Track, and shall include the Rustici Configuration Course Properties extension element (see TABLE 19).

Metadata based on LOMv1.0 shall be created for the Sharable Content Object (SCO) level. Repurpose the course_metadata.xml file, removing the Rustici Configuration course properties element. There is no naming convention for this file.

Metadata based on LOMv1.0 shall be created for the “asset” level. Repurpose the course_metadata.xml file, removing the Rustici Configuration course properties element for this file. There is no naming convention for this file.

All metadata elements must be completed and completely proofed by the Curriculum Control Authority (CCA) for clarity and detail.

**TABLE 19: METADATA**

| Category and Subcategories | Description and Requirement |
|---|---|
| **General** | |
| Catalog Code | Catalog Codes should be created to conform to the NeL schema as outlined using the following example. The Catalog Code for a course titled "Ship's Serviceman Class A - Resources" might be: CSS-SHA-0120-1.0:<br><br>Where:<br><br>**CSS** represents the Sponsoring Activity in this case.<br><br>**SHA** is representative of a grouping (perhaps by Navy rating) for your content<br><br>**0120** is representative of a catalog numbering scheme used by the Sponsor to track their content<br><br>**1.0** represents the version number, in "Major/Minor" format<br><br>Organizations that require a more complex approach for Catalog Code schemes should refer to Chapter 8, Section 3 of this document. |

| Category and Subcategories | Description and Requirement |
|---|---|
| Title | Be descriptive as possible. If any acronyms, abbreviations or initials are used, they must be completely spelled out. Entries cannot contain any of the following invalid characters: ~ tilde, ` back quote,! exclamation point, @ at symbol, # pound sign, $ dollar sign, % percent sign, ^ caret symbol, & ampersand symbol, * asterisk symbol, ( or ) opening or closing parenthesis, + plus symbol, = equal sign, { or } opening or closing brace, \| pipe symbol, [ or ] opening or closing bracket, \ backslash, : colon, " quote – opening or closing, ; semi-colon, ‘ single quote, <> less-than or greater-than symbol, ? question mark, and , comma. |
| Language | Set to English by default |
| Description | Provide enough detail to the learner so they will have a brief summary of the content subject matter. The description should not contain the same information as the title. |
| Keyword | Use to define common keywords or phrases. Three keywords are required. |
| Structure | Set to “Hierarchical” by default |
| Aggregation level | Set to “3" by default. |
| **Life-cycle** | |
| Version | Describes the edition of the content. The content may have several versions/editions during its lifetime. |
| Source | Set to Institute of Electrical and Electronics Engineers (IEEE) "Learning Object Metadata (LOMv1.0)" by default. |
| Value | Set to "final" by default. |
| **Contribute** | |
| Role Source | Set to IEEE "LOMv1.0" by default |
| Role Value | For Navy metadata, the value element should be populated with content provider (i.e., CCA). |

| Category and Subcategories | Description and Requirement |
|---|---|
| Entity | Can be an individual person, or organization. If more than one entity is listed, they should be listed in order of relevance (e.g., most relevant first). All entity values should be represented in a vCard format. |
| Date | Identifies the date of the contribution made by the entity. The date element is represented as the Date Time Data Type. Formatted by default. |
| **MetaMetadata** | |
| Catalog | Set to “URN.” |
| Entry | Automatically populated by Test Track with a Uniform Resource Name (URN). The URN is dynamically generated by creating a valid URN string. |
| Contribute label: Role Source | Set to IEEE "LOMv1.0" by default. |
| Contribute label: Role Value | For Navy metadata, the value element should be populated with validator. |
| Entity | Can be an individual person, organization, etc. If more than one entity is listed, they should be listed in order of relevance (e.g. most relevant first). All entity values should be represented in a vCard format. |
| Date | Identifies the date of the contribution made by the entity. The date element is represented as the Date Time Data Type. |
| MetadataSchema | Set to IEEE “LOMv1.0”, “SCORM_CAM_v1.3”, and “RusticiConfiguration+v2007.1” by default. |
| Language | Set to English by default. |
| **Technical** | |
| Format | The format element represents the technical data types used to create the content. This element is used to identify any potential software needed to access and use the content. |

| Category and Subcategories | Description and Requirement |
|---|---|
| Size | The size element represents the uncompressed size of the entire content package in bytes. |
| Location | Set to https://www.netc.navy.mil/ile/ by default. |
| Type: Source | Set to IEEE "LOMv1.0" by default. |
| Type: Value | For Navy metadata, the value element should be populated with “Microsoft (MS) -Internet Explorer.” |
| Minimum Version | Enter minimum version of MS-Internet Explorer required. |
| Maximum Version | Enter maximum version of MW-Internet Explorer required. |
| Installation Remarks | Provide instructions for the user on what plug-in requirements or any other technical requirements there might be. |
| Other Platform Requirements | Used to represent information about other software, hardware, and user interface requirements. |
| **Rustici Configuration (does not apply to Sharable Content Object (SCO) and Asset-level metadata)** | |
| Navigation Controls | These settings determine the availability of navigational controls in the Sharable Content Object Reference Model (SCORM) Player.<br><br>Show Navigation Bar<br>Show Finish Button<br>Show Progress Bar<br>Show Help<br>Show Course Structure<br>Course Structure Starts Open<br>Course Structure Width in Pixels<br>Structure Status Display<br>Invalid Menu Item Action |

| Category and Subcategories | Description and Requirement |
|---|---|
| Launch Behavior | These settings determine how the parts of the SCORM Player will be launched.<br><br>SCO Launch Type (select from pull down menu)<br>Player Launch Type (select from pull down menu)<br>New Window Options (check to enable)<br>User Browser Defaults (check to enable)<br>Full Screen (check to enable)<br>Specify New Window Dimensions (check to enable)<br>Width for content in pixels (enter number)<br>Height for content in pixels (enter number)<br>REQUIRED: Above dimensions are required for the course to function properly (check to enable)<br>Prevent Window Resize (check to enable) |
| Compatibility Settings | Finish Causes Immediate Commit (check to enable)<br>Logout Causes Player Exit (check to enable)<br>Wrap SCO Window with API (check to enable)<br>Always Flow to First SCO (check to enable)<br>Enable Validation of SCORM Interaction Results (check to enable)<br>Look-Ahead Sequencer Mode (select from pull down menu)<br>Reset Run Time Data Timing (select from pull down menu)<br>SCORM 2004 Edition (select from pull down menu) |

| Category and Subcategories | Description and Requirement |
|---|---|
| Communication Settings | These settings affect how the player saves course status.<br><br>Maximum Failed Attempts (enter a number).<br>Commit Frequency in Milliseconds (enter a number). |

# APPENDIX D

# WRITING STYLE CONVENTIONS

**HEADINGS:** Section headings reveal the organization of the information and provide visual cues for where information can be found. Section headings also give a preview of the content available in the section.

Section names identify the information covered in that portion of the content. Properly titled headings help learners find information. For example, if a section is named "Computer," it does not indicate what information about the computer can be found here. Is it a list of hardware components or instructions for turning a computer on and off?

To help write better Section names, remember the following guidelines:

- Use gerunds (action verbs with an –ing ending) as good descriptive titles. For example, the words "accessing," "saving," and "opening" all indicate what task the information will help the learner perform.
- Write grammatically parallel titles, meaning titles that are written similarly for similar information. For example: In a section describing the start of operations, use titles such as "Turning on the Server" and "Starting the Intelligence Mission Applications."

**PRESENTING WITH GRAPHICS:** Use graphics to help learners quickly understand and apply information. Visual presentation helps learners see, at a glance, the information. For example, a learner that sees a flowchart depicting a process will have an immediate overview of how each part relates to the other. This can then be explained by accompanying text.

When using graphics in instruction, follow these guidelines:

- Look for places in the text where a graphic will enhance the explanation.
- Use the type of graphic that is appropriate for the information. Remember that screen captures are only one

type of graphic; flowcharts, line drawings, graphs, and other types of graphics can also be used.

- Integrate the graphic with text by referring to it and explaining what the reader is supposed to see or conclude from it.
- If the graphic is complex, annotate it or crop to feature the area of focus.
- Label and position the graphic relative to the information it supports so the learner can find it easily.
- Text informs learners in a sequential way; a graphic informs in an instantaneous way. Because technical concepts are more easily understood when presented in an overall context, graphics are vital to conveying an idea; they simplify and clarify concepts. Use them to reinforce points, summarize data, and show relationships that are explained in the text.

**LISTS:** One of the simplest things to help learners find and understand information is to break down complex statements into lists. When several ideas appear as an unbroken mass of print, it intimidates the learner and makes it difficult for them to pick out the important concepts. Lists add emphasis to key ideas by making them stand out against the surrounding text.

Some general guidelines for using lists:

- Include two or more list items; a single item is not considered a list.
- Introduce the list with a sentence followed by a colon.
- Use parallel structure.
- If the list items are sentence fragments, begin with a capital letter and omit end punctuation.
- If the list items are complete sentences, begin with a capital letter and include end punctuation.
- Try to use fewer than nine items per list.

**TABLES:** Use tables to clearly present information that is too complex for a list. For example, if the list items have two or more parts, they look better and are easier to understand in a table with headings.

Follow these rules when using a table:

- Provide a descriptive caption.

- Reference tables in the text before the learners encounter them.
- Use parallel structure in information and punctuation.
- Do not use notes, cautions, or warnings inside a table. Instead, refer to them outside the table.

**WRITING CLEARLY:** Clear statements leave no question of what learners are supposed to do with the information. Eliminate doubt about what learners are supposed to do with the information by writing directive sentences. A directive sentence makes a statement as a command.

**Example**

**Use:**

- Turn on the computer.

**Do not use:**

- You should turn on the computer (Implies uncertainty of the procedure.)
- You can turn on the computer (Implies that the command is an option.)
- Turning on the computer is recommended (Implies that the step can be ignored.)

**Avoiding the following action-optional words and phrases, helps eliminate doubt**:

- Should
- May
- Could
- Might
- Is recommended

**WRITING CONCISELY:** Writing concisely simplifies the information and improves the clarity, both of which improve readability. Simple statements require less thought processing and learners can focus on the answer to their question (see TABLE 20).

**TABLE 20: SAY IT SIMPLY**

| Complex | Simple |
|---|---|
| In addition | Also |
| In accordance with | By |
| In order to | To |
| For the purpose of | To, for |
| Due to the fact that | Because |
| It is requested | We request, Please |
| It is necessary that you | You need to, you must |
| It is apparent that | Clearly |
| In the event that | If |
| In the near future | Soon |
| Is applicable to | Applies |

**ACRONYMS:** Use these guidelines for when to spell out acronyms:

- Spell out acronyms on the cover and in every title in the referenced section.
- Spell out acronyms in section headings if it helps the reader identify the content of the section. For example, if the entire manual is about the International Security Defense Systems (ISDS), do not spell out ISDS in the headings. If a section is about the Error Log Manager (ELM), and most learners are not familiar with the acronym ELM, spell out the acronym in the heading.
- Spell out an acronym the first time it appears in the body and the first time it appears in the body of each main section. Repeat the spelled out phrase more frequently if it is necessary for clarity.
- Do not spell out an acronym when the learners know what it means. Do make sure to include the spelled out acronym in an acronym list or glossary.
- Do not spell out an acronym if referring to something the learners are more familiar with in its acronym form, like the title of a window. For example, if a window title is “IP Start,” do not write, “The Installation Procedure (IP) Start window appears,” because that would be inaccurate.

Use these guidelines to punctuate acronyms:

- Include “a” or “an” before the acronym if it is common usage to do so. Choose “a” or “an” depending on how the acronym is pronounced.
- Do not use an apostrophe with plural acronyms.
- Do not capitalize the spelled out words unless there is a reason to capitalize them.

**Examples**

**Use:**

- An HTML file

**Use:**

- Turn off the TVs.
- Update the SAMs.

**Do not use:**

- Turn on the TV’s.
- Update the SAM’s.

**Use:**

- GCCS (Global Command and Control System)
- COTS (Commercial Off-The-Shelf)

**Do not use:**

- HTML (Hyper-Text Markup Language)
- ASAP (As Soon As Possible)

**CAPITALIZATION:** Capitalize only these words in instruction:

- The first word in headings, captions, and titles
- The rest of the words in headings, captions, and titles except for “a,” “an,” and “the”; conjunctions (i.e., “or” and “but”); and prepositions (i.e., “over” and “with”) of four letters or less.
- The first word in titles of troubleshooting scenarios
- Names of people, places, programs/applications, segments, departments, or organizations if that body requires it

- The words “section”, “table”, “figure”, and “step” if they are followed by a number
- Do not capitalize generic job titles, such as “system administrator” or “Intel analyst”

**COMMAS:** Use commas in lists of three or more items. Use a comma before the conjunction, such as “or” and “but.”

**Example**

**Use:**

- We have canoed the Delaware, the Schuylkill, and the Susquehanna rivers.

**Do not use**:

- We have canoed the Delaware, the Schuylkill and the Susquehanna rivers.

**Use:**

- The water was warm, but I did not go swimming.
- Do not use:
- The water was warm but I did not go swimming.

**GRAMMAR AND PUNCTUATION (MISCELLANEOUS):** Accurate grammar and punctuation are important, but not at the expense of understanding. When writing, do everything possible to avoid incorrect grammar and punctuation; but above all, do not confuse the learner. Use these guidelines for punctuation and grammar issues not covered elsewhere in this guide:

- Precede a colon with a complete sentence unless the phrase introduces procedures
- Use small caps and periods for a.m. and p.m
- Do not use words like “this” or “it” unless the learner will have no doubt about the reference
- Do not use plural pronouns (i.e., “they” or “them”) when the word referred to is singular

# APPENDIX E

# Learn, Explore, Practice

**DESIGNING THE SECTIONS**. Each section is composed of instructional content organized into Learn, Explore, and Practice groups (see TABLE 21). Each group addresses various levels of interactivity (see TABLE 22).

**What is the difference between these groups?** The Learn, Explore, and Practice groups are used too progressively provide the learner with opportunities to enhance understanding.

**The Learn group** usually provides broad descriptive information about the topic in narrative form. The Learn group contains instruction that is similar to what is equated with lecture-based instruction. In the Learn group, instruction provides a description of the overall concept and then breaks it into smaller, more understandable components.

**The Explore group** provides the learner with more opportunities to improve understanding. This can be done in the Explore group by providing amplifying information, examples, more detail, and different perspectives. The Explore group should leverage interactive capabilities. Learning activities and step-by-step problems are presented with coaching which provides opportunities for the learner to progressively internalize the content of instruction.

**The Practice group** contains assessment questions, which allow the learner to practice the application of what was learned with informative feedback so that the learner can increasingly enhance understanding of the learning content.

**TABLE 21: LEARN, EXPLORE, PRACTICE DESCRIPTION**

| |
|---|
| **Learn** |
| Instructional content contained within the Learn group addresses knowledge attainment. Normally the Learn group consists of the knowledge or familiarization component of instruction. It is typically provided in a linear format and introduces an idea or concept. |
| **Explore** |
| Instructional content within the Explore group includes examples, learning activities, and cognitive strategies. This instructional content is provided to help the learner understand the content presented in the Learn group. Emulations or simulations may be presented to the learner. Activities that help the learner study the information may also be provided within the Explore group. |
| **Practice** |
| Includes practice test questions that reinforce learning. |

**TABLE 22: LEVELS OF INTERACTIVITY IMPLIED BY THE GROUP**

| Group | Level of Interactivity* | Category of Interactivity |
|---|---|---|
| Learn | Level 1: Passive | The learner acts solely as a receiver of information. |
| | Level 2: Limited Participation | The learner makes simple responses to instructional cues. |
| Explore | Level 2: Limited Participation | The learner makes simple responses to instructional cues. |
| | Level 3: Complex Participation | The learner makes a variety of responses using varied techniques in response to instructional cues. |
| | Level 4: Real-time Participation | The learner is directly involved in a life-like set of complex cues and responses. |
| Practice | Not applicable. | Not applicable. |

*Listed are the minimum levels of interactivity per group.

# APPENDIX F

# Test Development and Policy

**TEST DEVELOPMENT AND POLICY:** Assuring that assessment items are stored within the Integrated Learning Environment (ILE) systems in the most appropriate manner to prevent breaches in security is a Curriculum Control Authority (CCA) responsibility. The CCA should provide written policy to subordinate commands as to how assessment items/banks will be administered. If the results of a learner's performance on the assessment instrument will directly affect a learner's promotion potential and career progression, the assessment is considered "high stakes". Refer to NAVEDTRA 132 (series) for additional information on testing.

All high-stakes assessment items will be stored in a manner that ensures the items will be seen only by the learner while engaged in the intended high-stakes assessment instrument. All high-stakes assessment items will be adequately protected from compromise by ensuring that they can be accessed only by designated personnel. Preferably, high-stakes assessment items will be partitioned in a manner that maintains separation between high-stakes and low-stakes items.

**BREACH OF SECURITY OR COMPROMISE:** The CCA shall identify preventive measures that may be taken to eliminate compromise or breaches in security. The ILE systems afford commands a number of ways to reduce breaches in security. Non-technology-based solutions are encouraged as well (e.g., posting Core Values in the testing labs; discussing cheating with learners; requiring learners to sign a document before taking the exam; requiring identification checks before entering the exam room; providing a proctor in the exam room; apprising learners of the consequences of test integrity violations, etc.).

In the event of a test security breach or compromise, the command responsible for the test should take appropriate action as provided by CCA guidance.

**LIFE-CYCLE MAINTENANCE OF TESTS**. The CCA provides guidance to their subordinate commands regarding the periodic review of assessment items. The review should include a table that matches the objective, the assessment items, the content, and

the associated reference publication. The reviewing team should check to ensure that the information contained within the assessment items is correct.

**COMPUTER-DELIVERED ASSESSMENT.** A knowledge-based test that is delivered via the computer from the Navy eLearning (NeL) Learning Management System (LMS) or a test management system (e.g., NeL Learning Assessment System or Corporate enterprise Training Activity Resource System (CeTARS)) may include certain conditions that affect the way the test is presented and scored. Determining how to construct assessment for computer-delivery will be based on several factors.

**Assigned Passing Score**: This is entered as a percentage of correct answers needed by the learner in order to pass the assessment. If the score is reached, the learner may proceed to new learning activities as directed by the NeL LMS or instructor. Policy on passing scores is set by the CCA.

- The passing score should be determined prior to question development and be based on the criteria defined in the learning objectives.
- The passing score should be able to distinguish critical differences in the level and type of comprehension obtained by learners.
- Consider providing information to the learner that identifies what a learner needs to learn to improve.
- In order to assign the passing score, consider reviewing the test questions to determine how many, and which ones, a learner must be able to answer correctly in order to meet the requirements of the learning objectives.

**Duration:** This indicates the length of time, in minutes, allotted to a learner to complete assessment.

- Consider the reliability of computer response if the learners are required to take assessment within a certain length of time.
- Only use a timed test if the criteria defined in the learning objectives require it.
- Consider the variations of the learner population in terms of their reading speed and hand-eye coordination.

**Weights:** This is a number that represents the value the assessment results will have in relation to other assessment scores.

- The weight of a test question should be established to distinguish critical differences in the level and type of comprehension obtained by learners.
- Higher weights should be assigned to test questions that provide strong evidence of learner understanding.

**Number of Tries for Tests:** This indicates the number of times a learner may retake assessment.

- Consider allowing the learner to take assessment several times, if it is determined that the learner will improve comprehension by repetitive exposure to the same assessment.
- The CCA determines the policy on the number of tries allowed.

**Mandatory Test Delivery:** This enforces that a test question is always included.

- Mandatory delivery should be assigned to test questions that provide strong evidence of learner understanding.
- Consider that learning can be enhanced by careful selection of questions to provide evidence of comprehension.
- Consider that the careful combination of various test questions can provide strong evidence of comprehension.

**Test Question Shuffle:** This is used to rearrange test questions and test options.

- Shuffle questions when the order in which the questions are presented is not of any significance.
- Shuffle questions and distracters when planning to reuse questions for several test types.
- Consider a mix of question types when mastery of the learning objective is critical. Don’t rely on the reliability of two-state questions.

**Number of Test Questions:** This assigns the number of test questions that will be displayed to the learner during assessment delivery. This number may be equal to, or greater than, the number of mandatory items.

- Set the number of test questions to less than what is available in the pool of questions when the number of questions presented to the learner is not of any significance.
- Set the number of assessment questions to less than what is available when planning to reuse questions for several test types. This will help to ensure that each delivery of assessment is unique.
- Consider how many test questions a learner needs to answer correctly to be judged successful on a particular learning objective.

# APPENDIX G

# LIST OF GOVERNMENT-OWNED TOOLS

**Authoring Instructional Materials (AIM) Learning Object Module (LOM)**: A government owned tool which takes input from the Content Planning Module (CPM) and uses it to build Integrated Learning Environment (ILE) compliant instruction during the Development Phase. Instruction designed for Instructor-Led Training (ILT) shall be fully developed in AIM LOM. Instruction designed for self-paced delivery may be developed using AIM LOM in conjunction with other self-paced authoring tools to take advantage of the automated content surveillance capabilities in AIM LOM. AIM LOM produces Sharable Content Object Reference Module (SCORM) 2004 conformant output.

**Authoring Instructional Materials (AIM) Content Planning Module (CPM)**: A government-managed web-based front-end analysis development tool that provides content planning and management capabilities. CPM is programmed around a Services Oriented Architecture (SOA) and can be used regardless of final training output and with any content authoring tool. CPM is a key tool that provides the connection between the description of work provided in the JDTA and the learning content developed to support the work. CPM may be used to support Instructional Media Design Package (IMDP) and Training Course Control Document (TCCD) development in the Design Phase.

**Corporate enterprise Training Activity Resource System (CeTARS):** A government-managed web-based system that is the Navy's Corporate Training Database and the sole source of official Navy Training statistics for all formal training.

**Navy eLearning (NeL) Learning Assessment System (LAS):** A government-managed web-based system used for authoring, scheduling, delivering, and reporting on surveys, quizzes, tests, and exams.

**Navy eLearning (NeL) Learning Management System (LMS)**: A web-based system used to deliver and track performance of SCORM-compliant course materials for learners. The NeL LMS supports schoolhouse classroom management requirements and student management through waitlist, rosters, and curriculum.

**NeL Test Track**: A version of Rustici Test Track providing a "self-service" environment which mimics the capabilities of the NeL LMS. This environment allows developers to import and test their prototype lessons to ensure SCORM compliance, and to validate that the course functions as intended. The developer and the Curriculum Control Authority (CCA) are highly encouraged to re-test their content in Test Track if major design or functionality changes are implemented during the full-scale development phase. Such changes can inadvertently introduce deficiencies and/or unexpected behaviors that, if undetected throughout the development stage, could negatively impact the period of performance.

NeL Test Track provides a metadata editor, metadata validation and error checking, and generates deliverables (files and logs) required by NeL Content Administration and Support Team when the content is formally submitted. Test Track is available on Non-Classified Internet Protocol Router Network (NIPRNET) and Secret Internet Protocol Router Network (SIPRNET).

**NOTE**

NeL Content Administration and Support Team will not accept Test Track deliverables from any other vendor’s implementation of the test suite. All testing and required deliverables must originate from NeL Test Track.

# APPENDIX H

# CONTENT PACKAGE

The Sharable Content Object Reference Module (SCORM) content package is a self-contained package that includes everything needed to deliver the course materials in a Learning Management System (LMS). There are two main parts to the content package:

- **Imsmanifest.xml file**: Describes the package structure. The imsmanifest.xml file can be thought of as a packing list.
- **Physical files**: Makes up the content package.

The imsmanifest.xml file consists of three (3) major sections:

- **Metadata**
- **Organization(s)**
- **Resources**

The Organization section is used to describe how the learning content is organized in the content package. The organization will appear as menu items in the Learning Management System (LMS). More complex organizations may have menus with nested sub-menus representing various course and lesson flows.

The organization section is comprised of single or multiple elements referred to as “items”. These items can be arranged singularly or in clusters.

FIGURE 13 provides an example of a basic SCORM content package depicting how the Organization section may be structured and how the organization looks in an activity tree. In this example, the content package includes a pretest, lesson, and final post test. The lesson contains a lesson overview, section, summary, and post test.

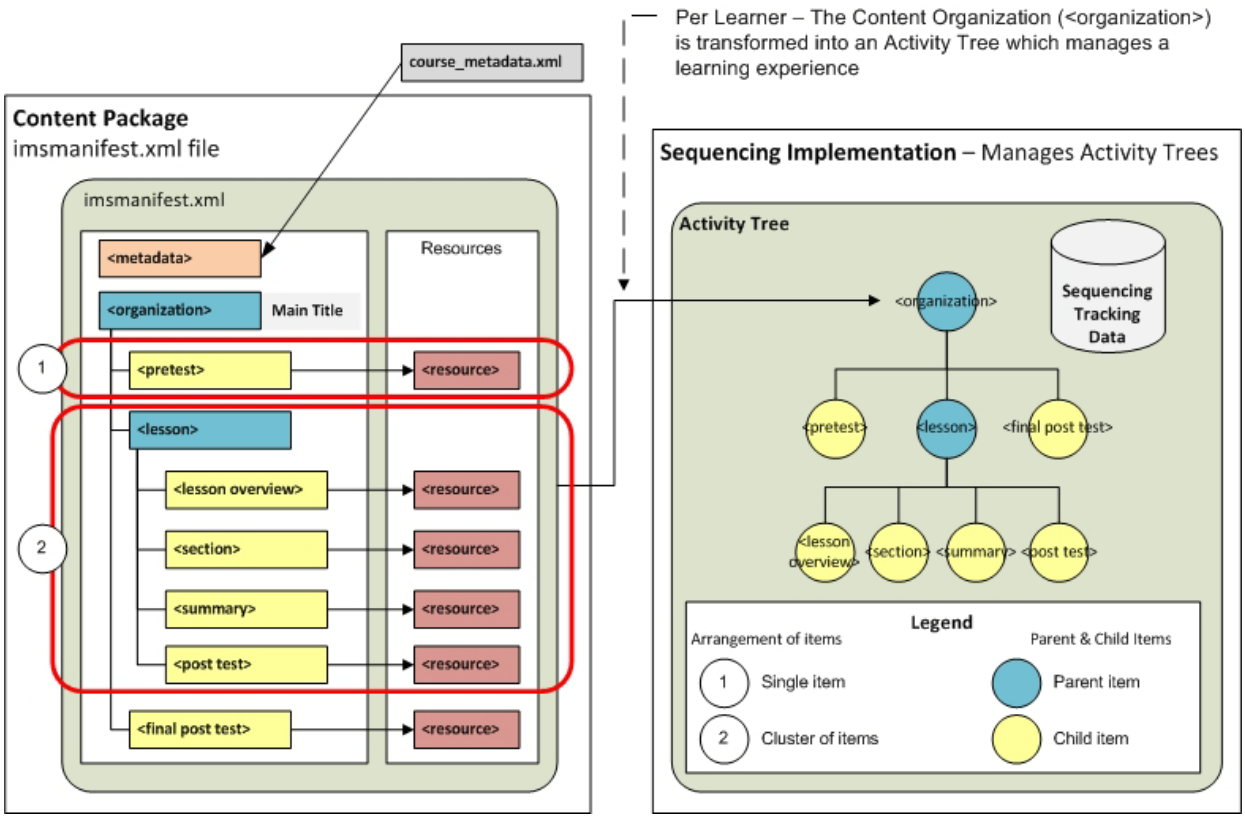



**FIGURE 13: EXAMPLE SCORM CONTENT PACKAGE**

Referring back to the legend in FIGURE 13, single items, and those items referred to as child items (those items which are nested beneath a parent item), will contain a reference to a resource. By definition, parent items themselves do not contain references to resources. A resource is a listing used by an item that identifies the file that will launch the item, along with references to the item is accompanying assets (i.e., html, .jpg files, javascript, etc.)

A Sharable Content Object (SCO) is any single or child item which launches content and is labeled as a SCO resource. The term content aggregation refers to the content package as a whole – the top level (also referred to as “root organization”). The purpose of aggregation is to organize the learning material in a logical way for presentation to the learner. SCO aggregation can occur at any level below the root organization.

FIGURE 14 illustrates a more complex example of a SCORM content package. In this example, the content package contains a pretest, followed by three lessons, and a final post-test.

Lesson 1 includes a lesson overview, section, summary, and post-test.

The information presented in the diagram for Lessons 2 and 3 are meant to assist the reader in better understanding how additional items or clusters can be added to the organization of the content package based on varying instructional design needs.

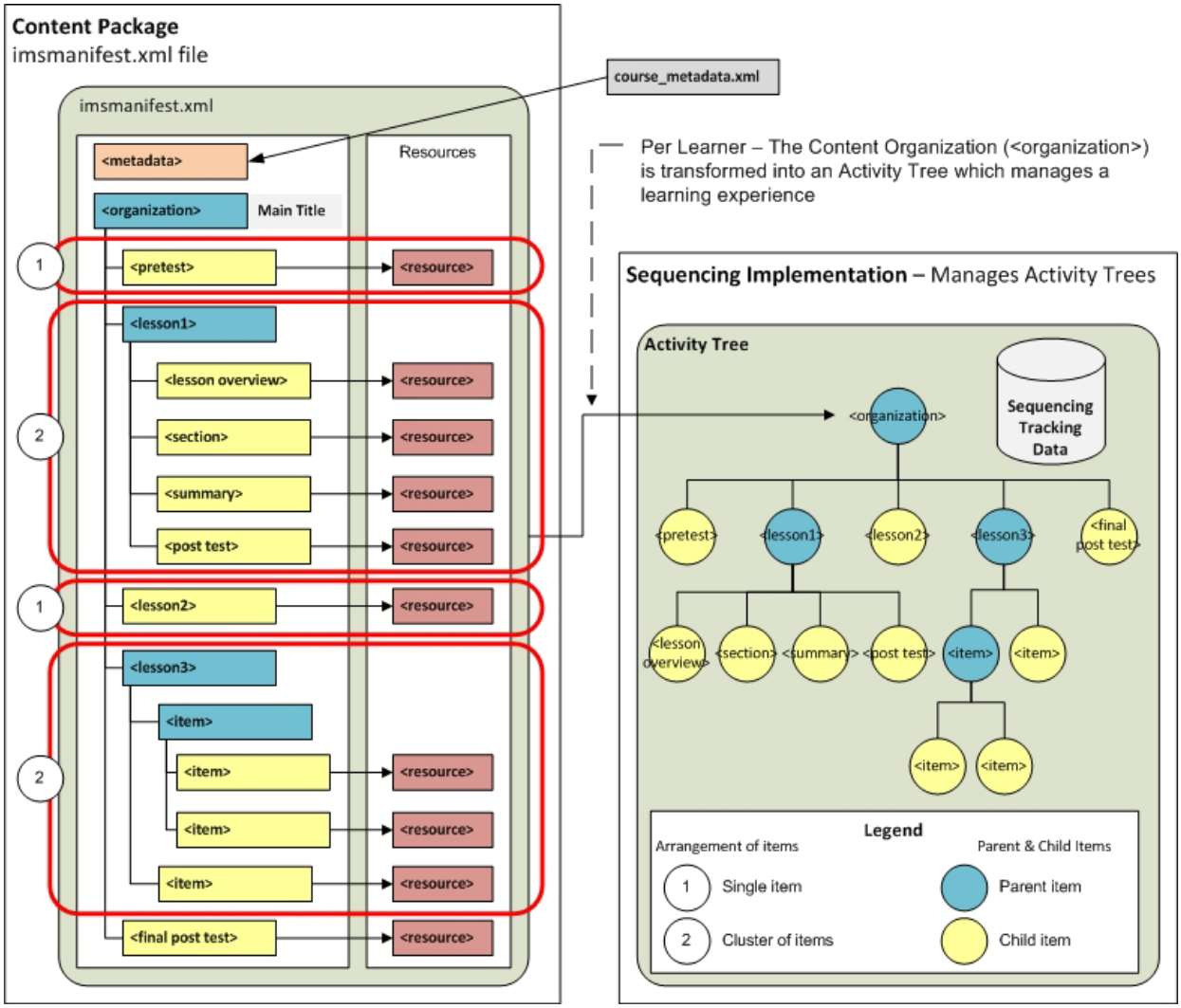



**FIGURE 14: COMPLEX EXAMPLE OF SCORM CONTENT PACKAGE**

**NOTE**

A lesson should address approximately 50 minutes of instruction. A root organization, when presented by the LMS, will appear as a menu item with a sub-menu of links beneath it in the order of SCO aggregation, unless there are sequencing and navigation pre and/or post-condition

rules that would disable or enable views depending on activity status. It is therefore important to realize that decisions made when designing the lesson structure (and in creating the flow diagram), will ultimately determine how the finished lesson appears when delivered by the LMS.

If the content aggregation (i.e., lesson) is too large, there may be lag time as the LMS transitions between activities defined within the SCOs. To avoid issues with performance, consider separating large packages into multiple content packages. If the order of delivery of multiple content packages needs to be controlled, this can be accomplished via functionality of the LMS.

**SCORM RUN-TIME ENVIRONMENT DATA MODEL:** The SCORM Run-Time Environment Data Model contains a set of data model elements that can be tracked by the SCO during the run-time of the SCO in the LMS. The data model elements can be used to track items like status, scores, and interactions.

Some of the run-time environment data model elements impact each other or are used in coordination with others. Some of the data model elements, if used, impact the control and sequence of other SCOs that are being used in the same context (e.g., lesson or course). Refer to TABLE 23 for a listing of data model elements for dot-notation binding and description information.

**TABLE 23: SCORM RUN-TIME ENVIRONMENT DATA MODEL ELEMENTS**

| Data Model Element | Dot-Notation Binding | Description |
|---|---|---|
| Comments From Learner | cmi.comments_from_learner | Contains text from the learner. |
| Completion Status | cmi.completion_status | Indicates whether the learner has completed the SCO. |
| Completion Threshold | cmi.completion_threshold | Identifies a value against which the measure of the progress the learner has made toward completing the SCO can be compared to determine whether the SCO should be considered completed. |

| Data Model Element | Dot-Notation Binding | Description |
|---|---|---|
| Credit | cmi.credit | Indicates whether the learner will be credited for performance in this SCO. |
| Entry | cmi.entry | Contains information that asserts whether the learner has previously accessed the SCO. |
| Exit | cmi.exit | Indicates how or why the learner left the SCO. |
| Interactions | cmi.interactions | Defines information pertaining to an interaction for the purpose of measurement or assessment. |
| Launch Data | cmi.launch_data | Provides data specific to a SCO that the SCO can use for initialization. |
| Learner Id | cmi.learner_id | Identifies the learner on behalf of whom the SCO instance was launched. |
| Learner Name | cmi.learner_name | Represents the name of the learner. |
| Learner Preference | cmi.learner_preference | Specifies learner preferences associated with the learner’s use of the SCO. |
| Location | cmi.location | Represents a location in the SCO. |
| Maximum Time Allowed | cmi.max_time_allowed | Indicates the amount of accumulated time the learner is allowed to use a SCO in the learner attempt. |
| Mode | cmi.mode | Identifies the modes in which the SCO may be presented to the learner. |

| Data Model Element | Dot-Notation Binding | Description |
|---|---|---|
| Objectives | cmi.objectives | Specifies learning or performance objectives associated with a SCO. |
| Progress Measure | cmi.progress_measure | Identifies a measure of the progress the learner has made toward completing the SCO. |
| Scaled Score | cmi.score.scaled | Identifies the scaled score for a SCO. This is also used as the performance score for a SCO at aggregation roll-up in the activity. |
| Session Time | cmi.session_time | Identifies the amount of time that the learner has spent in the current learner session for the SCO. |
| Success Status | cmi.success_status | Indicates whether the learner has mastered the SCO. |
| Suspend Data | cmi.suspend_data | Provides information that may be created by a SCO as a result of a learner accessing or interacting with the SCO. |
| Total Time | cmi.total_time | Identifies the sum of all of the learner’s learner session times accumulated in the current learner attempt prior to the current learner session. |

# APPENDIX I

# SCORM PRE-GCAT TESTING CHECKLIST

Reset Form

FORM INSTRUCTIONS

Step 1: Fill in ALL Data Fields  Step 2: Click to Validate -> Validate

**Navy eLearning**
**SCORM Pre-GCAT Content Testing Checklist**

**General Details**

Content Title:

Content Sponsor:  Date Tested:

Content Format:  Submission Method:  Test Location:

**Evaluation of Content**

| | | Comments: |
|---|---|---|
| **Extract & Virus Scan**<br>- All data and/or zip files must be extracted and scanned for virus before placing on any NEL web servers. | ○ Pass<br>○ Fail<br>○ n/a | |
| **NeL Submission Form**<br>- All content intended for hosting requires the completion of an NEL Submission form by the content developer and sponsor at the NEL Support Center: https://ile-help.nko.navy.mil. | ○ Pass<br>○ Fail<br>○ n/a | |
| **Assessment Answer Key(s)**<br>- Each assessment must have an answer key. The answer key(s) can be located anywhere in the content package, but should be packaged in the root if possible. | ○ Pass<br>○ Fail<br>○ n/a | |
| **Plug-in Requirements Page**<br>- All content should have a help section or provide plug-in requirements for accessing the course. | ○ Pass<br>○ Fail<br>○ n/a | |
| **Navigation /UI Instructions**<br>- If built with a custom interface, the content should have instructions for navigating through the course & descriptions for the user interface buttons. | ○ Pass<br>○ Fail<br>○ n/a | |
| **External Links**<br>- If external links are used in the content, they can only point to URLs of Gov't sites. In addition, the links must be maintainable from an HTML, XML or text-based file. | ○ Pass<br>○ Fail<br>○ n/a | |

## Content Package Details

### Well Formed & Valid Manifest

- The manifest must be well formed and validated against the schemas. This can be performed using XML parsers & validation tools from the W3C, XML Spy, & Internet Explorer. The imsmanifest.xml file and any files supporting namespaces (DTD, XSD) that are referenced internally must be placed at the root of the Package.

( ) Pass
( ) Fail
( ) n/a

### Descriptive Title(s)

- The title of all TLOs and ELOs should be as descriptive as possible. If any acronyms, abbreviations or initials are used, they must be completely spelled out.

( ) Pass
( ) Fail
( ) n/a

### Resources Validated

- All assets required for the course to run must be referenced in the resources section of the manifest. Use an NeL-provided resource validation tool to verify that all resources are provided in the manifest.

( ) Pass
( ) Fail
( ) n/a

### Metadata

- Unless noted otherwise in the SOW, Metadata records should exist for the course and scos. Metadata records should exist in external files. The external metadata records should be referenced from within the manifest. The NeL Support Team must create and reference the course_metadata.xml file for each content package before afloat testing.

( ) Pass
( ) Fail
( ) n/a

### Source Files Provided

- Unless noted otherwise in the SOW, content developers should provide all source files on a separate disc. The preferable way to deliver these source files is by providing an independent SCORM resource package on DVD or CD.

( ) Pass
( ) Fail
( ) n/a

### Environmental Interoperability

- All content must be tested in both the ashore and afloat test environments. In addition, all content should be tested on both NMCI & legacy workstations.

( ) Pass
( ) Fail
( ) n/a

## Content Run-Time

### Initialize

- Using the java console (SCORM 1.2) or debug console (SCORM 2004) make sure each SCO can initialize communication with the LMS.

( ) Pass
( ) Fail
( ) n/a

### Bookmarking

- Each SCO should have the ability to bookmark each page so that the user may return to the last visited page in a SCO.

( ) Pass
( ) Fail
( ) n/a

**Scaled Score**

- The scaled score indicates the actual performance of the learner for a SCO. If the SCO has an assessment to be included with the rollup and averaging, then it should set a scaled score.

○ Pass
○ Fail
○ n/a

**Navigation & Exiting**

- Check the navigation requests and exiting state of each SCO. The "logout" value for cmi.exit was deprecated so it should not be used.

○ Pass
○ Fail
○ n/a

**Sequencing**

- Test the sequencing of the content to ensure it matches the intended instructional sequencing of the developer as described in the content submission form.

○ Pass
○ Fail
○ n/a

**Rollup & Scoring**

- Completed all SCOs & assessment SCOs using the answer key. Ensure the course rolls up correctly and all scores are averaged according to the intended rollup rules specified in the content submission form.

○ Pass
○ Fail
○ n/a

Testing Method(s)

**ADL Test Suite**

- The content developer should provide ADL Test Suite Logs files to show SCORM conformance for the manifest, each SCO, and metadata. The test logs should be packaged with the course.

○ Pass
○ Fail
○ n/a

**508 Test Logs**

- Unless content meets NEL Exemptions and includes a written waiver, the content developer should provide test log output from any 508 Accessible Tool listed here: http://www.section508.gov

○ Pass
○ Fail
○ Exempt

Additional Notes (Add as much text as is needed -- additional pages will be created automatically)

# APPENDIX J

# SPONSOR GCAT TESTING CHECKLIST

Please be patient while the Digital Signature Validates

**FORM INSTRUCTIONS**

Step 1: Fill in ALL Data Fields  Step 2: Click to Validate ->  Step 3: Click Here to Sign & Save the Form ->

## Sponsor
## GCAT Content Testing Checklist

**General Details**

Content Title:

*If this Checklist pertains to multiple Titles, list the additional Titles (along with Catalog Item Code) in the Additional Notes section.*

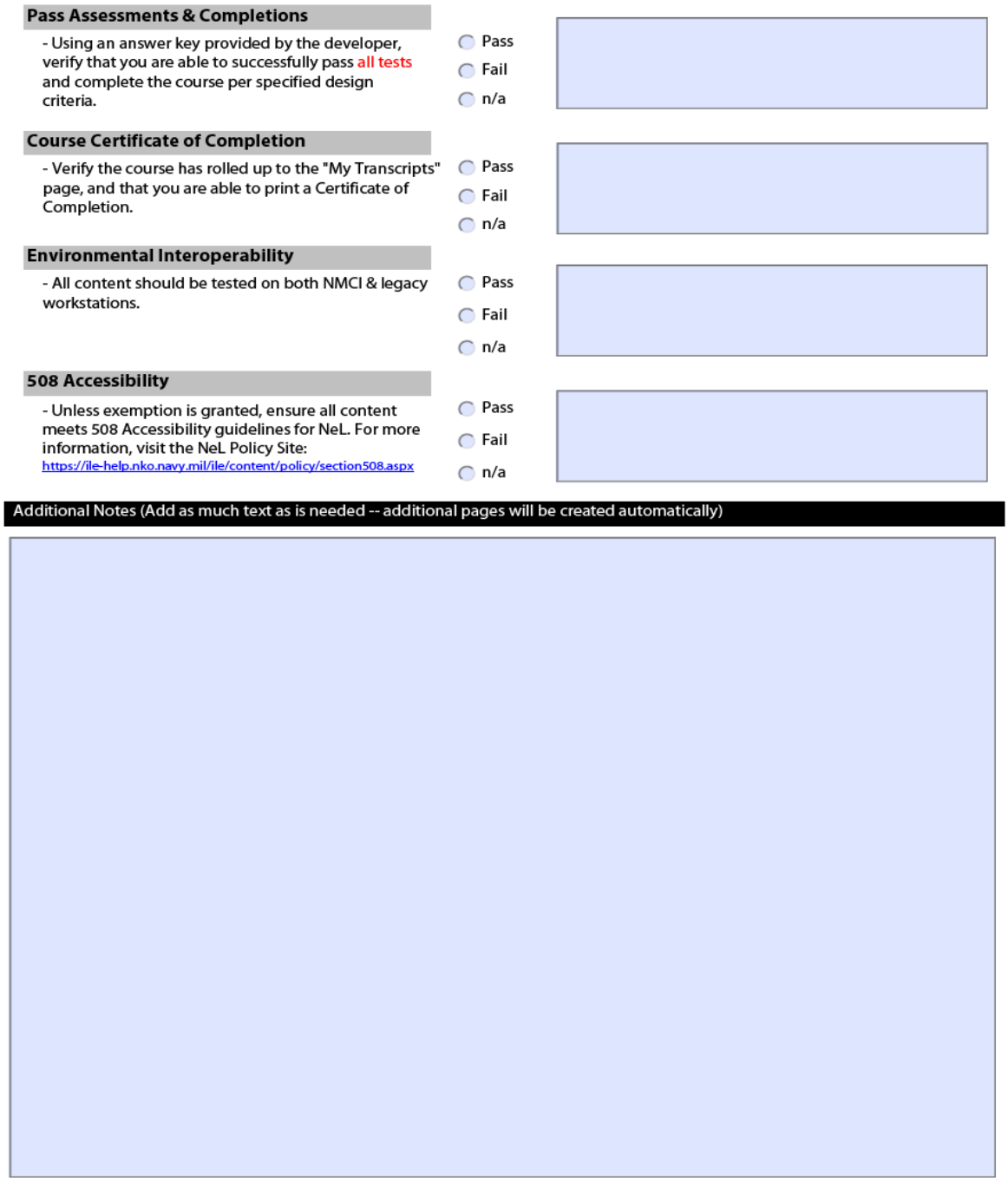
Content Sponsor:  Date Tested:

Content Format:  Test Location:

**Evaluation of Content**

If errors are encountered while testing your content, please DO NOT delete your enrollments within GCAT as they contain valuable information that the NeL Content Administration team can use to assist you in your troubleshooting efforts.

| | | Comments: |
|---|---|---|
| **Subject Matter, Spelling & Grammar**<br>- All contextual content is free from spelling and grammatical errors. The content was reviewed by a subject matter expert (SME). | ○ Pass<br>○ Fail<br>○ n/a | |
| **Acceptable Load Times**<br>- Any content images and/or multimedia have acceptable load times (10 seconds per page). | ○ Pass<br>○ Fail<br>○ n/a | |
| **Navigation / User Interface Instructions**<br>- The content should provide clear instructions for navigating through the course. The content interface is intuitive and easy to use. | ○ Pass<br>○ Fail<br>○ n/a | |
| **External Links**<br>- If external links are used in the content, verify that they only point to U.S. Government URLs.<br>Note: The use of external links is not recommended as they may change, thereby affecting the functionality of your content. | ○ Pass<br>○ Fail<br>○ n/a | |
| **Tracking & Progress**<br>- All lessons have bookmarking and update user progress in the course as expected. | ○ Pass<br>○ Fail<br>○ n/a | |
| **Course Failure & Remediation**<br>- Using an answer key provided by the developer, verify that the course functions as designed when tests are failed, and where appropriate, that remediation is provided. | ○ Pass<br>○ Fail<br>○ n/a | |




## DETAILS FOR COMPLETING THE FORM:

The Sponsor Government Content Acceptance Test (GCAT) Content Checklist Form is to be completed, digitally certificate signed by the representing government sponsor, and returned to Navy eLearning (NeL).

1. **Subject Matter, Spelling & Grammar**: All contextual content is free from spelling and grammatical errors. The content was reviewed by a Subject Matter Expert.

2. **Acceptable Load Times:** Any content images and/or multimedia have acceptable load times (10 seconds per page).

3. **Navigation/User Interface Instruction:** The content should provide clear instructions for navigating through the course. The content interface is intuitive and easy to use.

4. **External Links:** If external links are used in the content, verify that they only point to U.S. Government URLs. Note: The use of external links is not recommended as they may change, thereby affecting the functionality of the content.

5. **Tracking & Progress:** All lessons have book marking and update user progress in the course as expected.

6. **Course Failure & Remediation:** Using an answer key provided by the developer, the course functions as designed when tests are failed, and where appropriate, remediation is provided.

7. **Pass Assessments & Completions:** Using an answer key provided by the developer, course completion functions as designed per specified design criteria, and all tests can be successfully passed.

8. **Course Certificate of Completion:** Verify the course has rolled up to the “My Transcripts” page, and a Certificate of Completion can be printed.

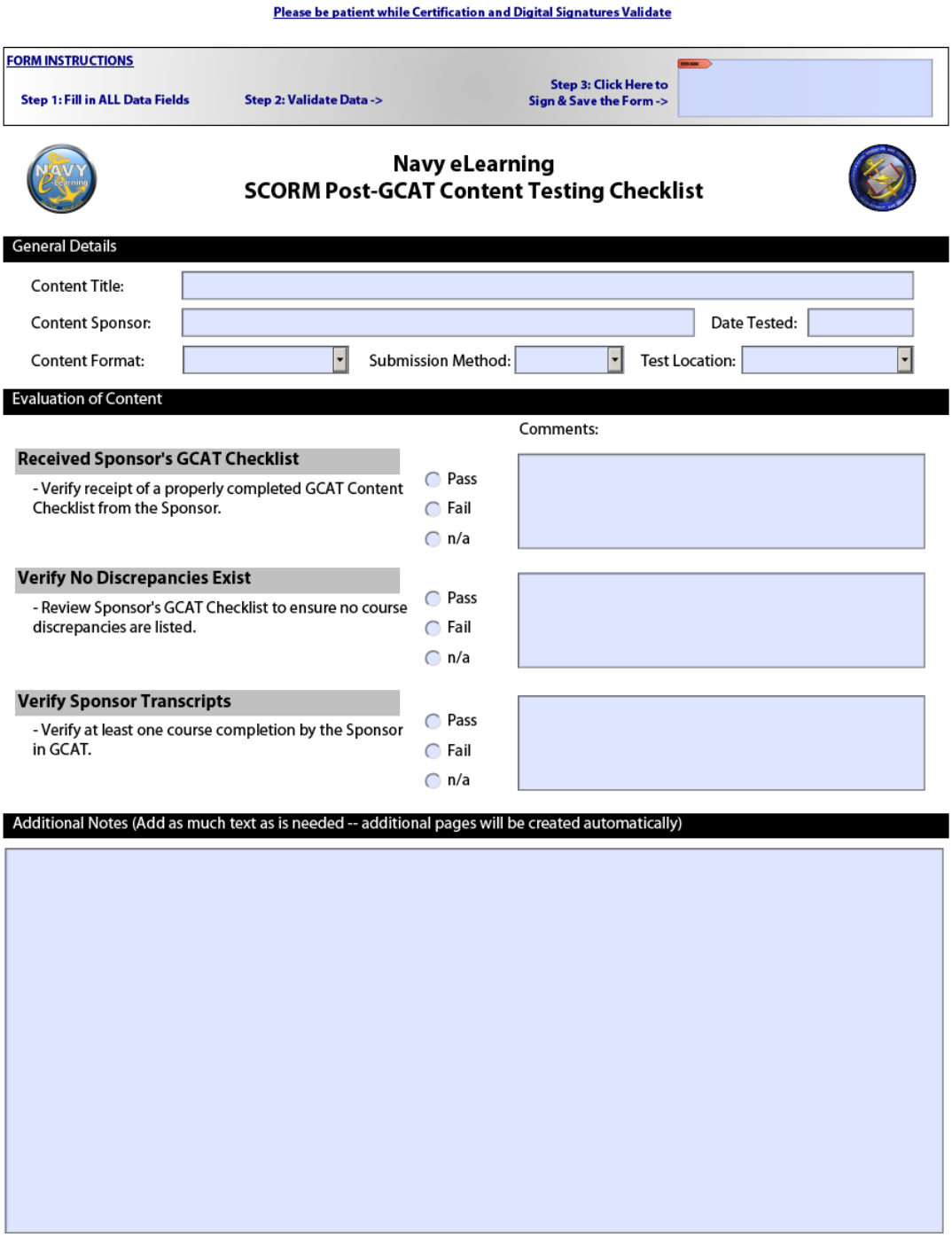
10. **Environmental Interoperability:** All content is tested on both NMCI and Legacy workstations.

11. **508 Accessibility:** All content meets 508 Accessibility guidelines for NeL.

**Additional Notes:** Additional notes for NeL Content Administration and Support Team have been included in the Additional Notes field.

# APPENDIX K

# SCORM POST-GCAT TESTING CHECKLIST



Please be patient while Certification and Digital Signatures Validate

FORM INSTRUCTIONS

Step 1: Fill in ALL Data Fields

Step 2: Validate Data ->

Step 3: Click Here to Sign & Save the Form ->

**Navy eLearning**
**SCORM Post-GCAT Content Testing Checklist**

General Details

Content Title:

Content Sponsor:

Date Tested:

Content Format:

Submission Method:

Test Location:

Evaluation of Content

Comments:

**Received Sponsor's GCAT Checklist**

- Verify receipt of a properly completed GCAT Content Checklist from the Sponsor.

Pass
Fail
n/a

**Verify No Discrepancies Exist**

- Review Sponsor's GCAT Checklist to ensure no course discrepancies are listed.

Pass
Fail
n/a

**Verify Sponsor Transcripts**

- Verify at least one course completion by the Sponsor in GCAT.

Pass
Fail
n/a

Additional Notes (Add as much text as is needed -- additional pages will be created automatically)

# APPENDIX L

# SOURCE MATERIAL MASTER RECORDS

Each Curriculum Control Authority (CCA) should have a process in place to catalog and file source materials.

**Organization of Source Materials**: There are three basic types of source materials:

- Documentation
- Media
- Programming and course life-cycle maintenance software, if applicable

Source materials of different types should be separated into a Compact Disc (CD)/Digital Video Disc (DVD)/external hard disk drive. Documentation may be placed on one disc, programming on one disc, and media files on another disc.

**Documentation:** Documentation includes all reports, necessary contract documents, and course documentation including lesson specification reports, Instructional Media Design Package (IMDP), and Training Course Control Documents (TCCD), and storyboards. These products should comprise the first part of the source disc set. Additionally, the documentation disc should include a read me file detailing the content and location of the rest of the source deliverables.

**Media:** The media should be the second part of the source set. Media files are subdivided into two groups:

- Final media: Files that are exported or packaged into a compressed format used to create viewable/interactive content and placed within the actual courseware.
- Source media files: Files containing raw uncompressed data such as text, graphics, animation, and interactions. Course materials must be traceable to the original course material.

Media files will be grouped together onto CD/DVD/external hard disk drive. Figure E-1 provides an example for delivery order 0010 that was composed of ten lessons. Five of the lessons

are for the Aviation Boatswain's Mate (Equipment) (ABE) rate, while the other five are for the Aviation Boatswain's Mate (Fuels) (ABF) rate. The codes shown in FIGURE 15 are the numbers used by the Aviation community. Each CCA may have their own system for cataloging source materials.

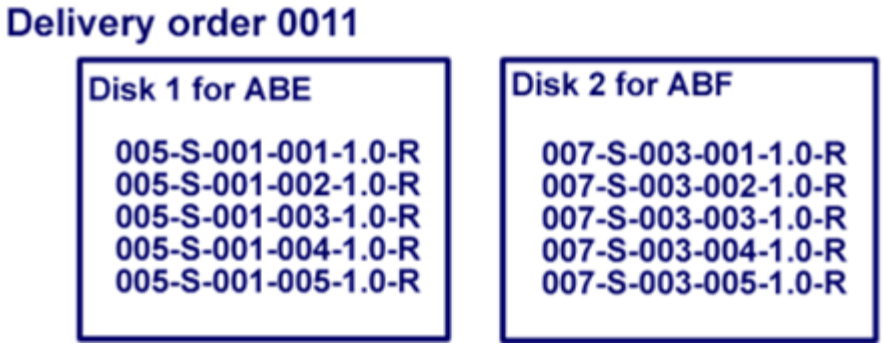



**FIGURE 15: EXAMPLE MEDIA FILE PACKAGE**

**NOTE**

Large deliveries of 50+ gigabytes can be submitted on external hard disk drives. The hard drive should be indexed and separated into the appropriate folders. They should also contain a readme file detailing contents and location of files.

FIGURE 16 illustrates the architecture and elements for the file as it would appear on the computer screen:

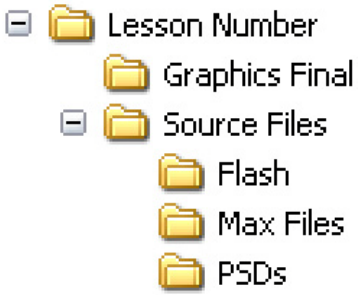



**FIGURE 16: SAMPLE FILE STRUCTURE**

Individual files may be named based on the lesson, lesson number, unique frame Identification (ID) number, section name, and sequence number.

**Disk Contents:** Each CD/DVD/external hard disk drive should provide a document named Lesson_name_disk_contents.doc within the source lesson folder. This document lists all lesson elements by frame number and file name used to create the lesson. This document allows a user to map from the frame number to the frame file name to the uncompressed source data that makes up the frame. FIGURE 17 is an example of a source document.

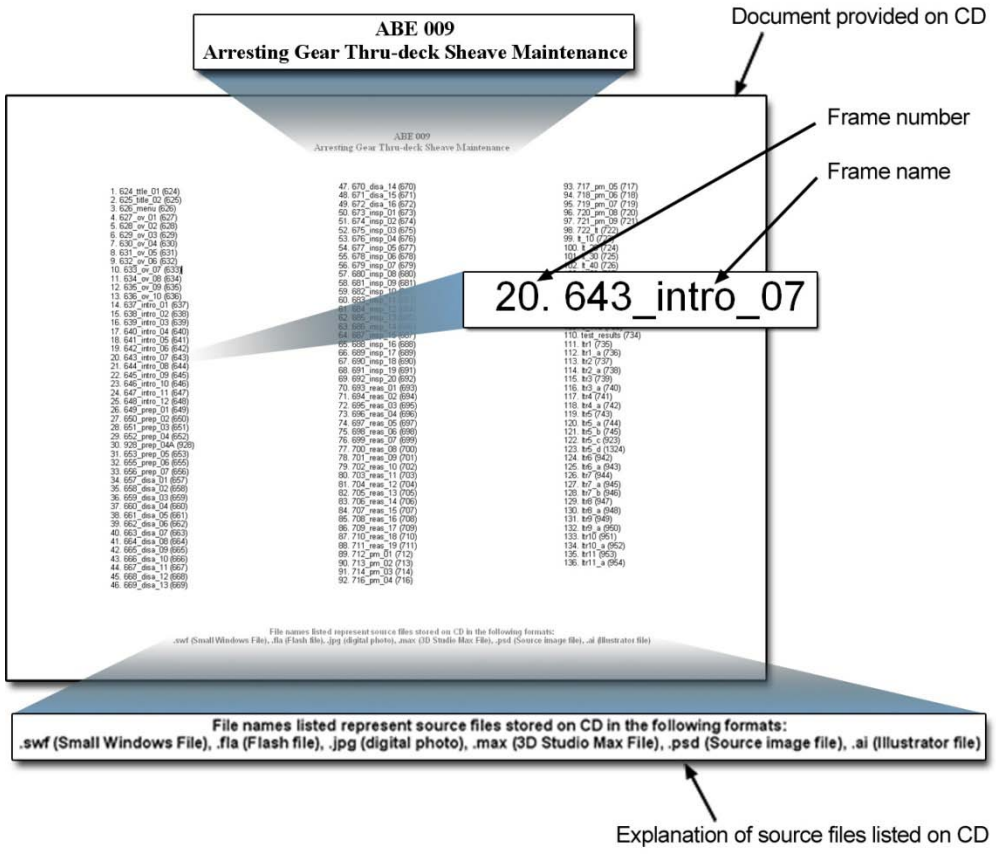



**FIGURE 17: SOURCE DOCUMENT EXAMPLE**

FIGURE 18 is an example of a delivery media folder structure. In the example, the four files are needed to create frame 643_intro_07.

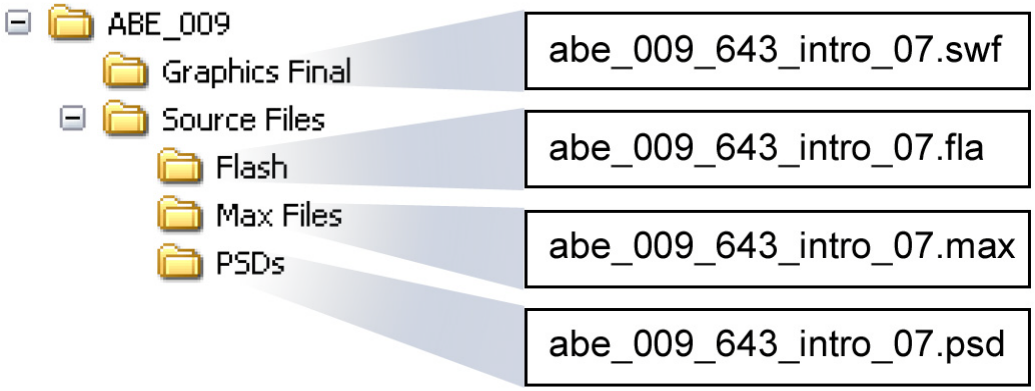



**FIGURE 18: DELIVERY MEDIA FOLDER STRUCTURE**

**Programming and Life-Cycle Maintenance Disk(s):** The programming and life-cycle maintenance CD/DVD/external hard disk should contain all source files (e.g., SCORM log, graphics, XML files, any required plug-ins, and editor/developer engines).

**Labeling CD/DVD/External Hard Disk Drives:** Include project name when labeling the storage media. A list of contents should accompany the delivery.

# APPENDIX M

# ELECTRONIC CLASSROOM CONFIGURATIONS

Electronic classroom (ECR) configurations included the following:

- Level 1 (L1): Contains an instructor workstation, student workstations, and a projection/display subsystem. Includes “Thin Client/Blade Technology” with “user port” vice student workstations on desktops.
- Level 2 (L2): Contains an instructor workstation, student response devices, and a projection/display subsystem.
- Level 3 (L3): Contains an instructor workstation and a projection/display subsystem.
- Whiteboard/Chalkboard: Does not contain installed electronic presentation/display subsystem.
- Blended Learning Initiative Multi-Purpose Electronic Classroom (MPEC): Level 1 ECR, plus Video Tele-Training (VTT) capabilities.

# APPENDIX N

# ACRONYMS/UNIFORM RESOURCE LOCATOR ADDRESSES

| | |
|---|---|
| ADL | Advanced Distributed Learning |
| AIM | Authoring Instructional Material |
| AIM I | PPP-Based Authoring Tool NAVEDTRA 131 |
| AIM II | Task-Based Authoring Tool NAVEDTRA 130 |
| AIM LOM | AIM Learning Object Module |
| AIM CPM | AIM Content Planning Module |
| BCA | Business Case Analysis |
| CAC | Common Access Card |
| CAM | Content Aggregation Model |
| CANTRAC | Catalog of Navy Courses |
| CCA | Curriculum Control Authority |
| CCMM | Course Curriculum Model Manager |
| CeTARS | Corporate enterprise Training Activity Resource System |
| CD | Compact Disc |
| CDP | Course Data Processing |
| CFS | Content Forecasting System |
| CIN | Course Identification Number |
| COI | Curriculum of Instruction |
| COTS | Commercial Off-The-Shelf |
| CTTL | Course Training Task List |
| DADMS | DON Application & Database Management System |
| DID | Data Item Descriptor |
| DoD | Department of Defense |
| DSN | Defense Switched Network |
| DVD | Digital Video Disc |
| EAP | Evaluation Assessment Plan |
| ECR | Electronic Classroom |
| ELO | Enabling Learning Objective (i.e., Enabling Objective) |
| EO | Enabling Objective |
| FCR | Formal Course Review |
| FEA | Front End Analysis |
| GCAT | Government Content Acceptance Testing |
| GFE | Government Furnish Equipment |
| GFI | Government Furnish Information |
| HPRR | Human Performance Requirements Review |

| | |
|---|---|
| IA | Information Assurance |
| IETM | Interactive Electronic Technical Manual |
| ILE | Integrated Learning Environment |
| ILT | Instructor-Led Training |
| IMDP | Instructional Media Design Package |
| IMI | Interactive Multimedia Instruction |
| ISMO | International Student Management Office |
| IST | In-Service Training |
| JDTA | Job Duty Task Analysis |
| JIT | Journeyman Instructor Training |
| KSATR | Knowledge, Skills, Abilities, Tools, and Resources |
| LAS | Learning Assessment System |
| L1 | Level 1 Electronic Classroom |
| L2 | Level 2 Electronic Classroom |
| L3 | Level 3 Electronic Classroom |
| LC | Learning Centers |
| LOM | Learning Object Method |
| LOMv1.0 | Learning Object Metadata Version 1.0 |
| LMS | Learning Management System |
| LSO | Learning Standards Office |
| MIL-HNDBK | Military Handbook |
| MIL-STDS | Military Standards |
| MPEC | Multi-Purpose Electronic Classroom |
| NAWCTSD | Naval Air Warfare Center Training Systems Division |
| NEC | Navy Enlisted Classification |
| NeL | Navy eLearning |
| NEOCS | Navy Enlisted Manpower and Personnel Classifications and Occupational Standards |
| NETC | Naval Education and Training Command |
| NETCINST | Naval Education and Training Command Instruction |
| NIAPS | Navy Information Application Product Suite |
| NIPRNET | Non-Classified Internet Protocol Router Network |
| NIST | National Institute of Standards and Technology |
| NKO | Navy Knowledge Online |
| NKO-S | Navy Knowledge Online-SIPRNET |
| NMCI | Navy Marine Corps Intranet |
| NMETLS | Navy Mission Essential Task List |
| NTMPS | Navy Training Management and Planning System |
| NTSP | Navy Training System Plan |
| OCCSTDS | Occupational Standards |
| OPNAV | Office of the Chief of Naval Operations |

| | |
|---|---|
| ORM | Operational Risk Management |
| PADDIE+M | Plan, Analyze, Design, Develop, Implement and Evaluate + Life-Cycle Maintenance |
| PIF | Program Information File |
| PPP | Personnel Performance Profile |
| R3 | Reuse, Repurpose, and Reference (R3) |
| RTE | Run-Time Environment |
| SCO | Sharable Content Object |
| SCORM | Sharable Content Object Reference Model |
| SCRR | Special-Case Readiness Review |
| SECDEF | Secretary of Defense |
| SIPRNET | Secret Internet Protocol Router Network |
| SME | Subject Matter Expert |
| SN | Sequencing and Navigation |
| SNR | Sponsor Notification Report |
| SOA | Services Oriented Architecture |
| SOW | Statement of Work |
| STIG | Security Technical Implementation Guides |
| SUM | Software User Manual |
| SYSCOM | Systems Command |
| TCCD | Training Course Control Documents |
| TLO | Terminal Learning Objective |
| TO | Terminal Objective |
| TPP | Training Project Plan |
| TRPPM | Training Planning Process Methodology |
| TSA | Training Support Agency |
| TSSD | Training System Support Document |
| TTAP | Technical Training Audit Program |
| TTE | Technical Training Equipment |
| TTP | Training Transition Plan |
| URL | Universal Resource Identifier |
| VI | Visual Information |
| VTT | Video Tele-Training |
| WCAG | Web Content Accessibility Guidelines |
| W3C | World Wide Web Consortium |
| XML | eXtensible Markup Language |

# Uniform Resource Locator Addresses

[1] Authoring Instructional Materials (AIM) Content Planning Module (CPM)
https://navyile.fedsun.navy.mil/cpm/

[2] Advanced Distributed Learning (ADL) Registry
http://www.adlnet.gov/Technologies/adlr/default.aspx

[3] DefenseImagery.mil
http://defenseimagery.mil/index.html

[4] Navy eLearning (NeL) Learning Management System (LMS)
https://ile-lms.nko.navy.mil/main_app.asp?main=app

[5] Corporate enterprise training Activity Resource System (CeTARS)
https://cetarsweb.cnet.navy.mil/cetars/main.cac_message

[6] Content Forecasting Service (CFS)
https://ile-help.nko.navy.mil/ile/content/supportapps/cfsoverview.aspx

[7] Navy eLearning Test Track
https://testtrack.nko.navy.mil

[8] DON Application and Database Management System (DADMS)
https://www.dadms.navy.mil

[9] Sharable Content Object Reference Model (SCORM) Documentation Suite
http://www.adlnet.gov

[10] Advanced Distributed Learning Test Suite
http://www.adlnet.gov

[11] World Wide Web Consortium (W3C)
http://www.w3.org/WAI/ER/tools/complete

[12] Common Criteria Evaluation and Validation Scheme
http://www.niap-ccevs.org/pp/

[13] Information Assurance Support Environment
http://iase.disa.mil/stigs/stig/index.html

[14] Accessing Navy eLearning: A Guide for ISMO's and the Foreign National Community
https://ile-help.nko.navy.mil/ile/contentItems/NeL-BRF-NeL_Foreign_National_Access-20091028-v1.pdf

[15] Integrated Learning Environment (ILE) web site
https://ile-help.nko.navy.mil/ile/

[16] Anchor Desk
http://www.anchordesk.navy.mil