DEPARTMENT OF THE NAVY
COMMANDER
NAVAL EDUCATION AND TRAINING COMMAND
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LETTER OF PROMULGATION FOR NAVEDTRA 142

1. The Naval Education and Training (NAVEDTRA) M-142 series of manuals has been extensively revised. This revision merges the Ready Relevant Learning process, the Naval Education and Training Command (NETC) End-to-End process, and the OPNAV acquisition process into one Navy Training Process (NTP). The NTP is more agile, relies on type commanders to push training requirements to NETC, and eliminates a multitude of outdated and often conflicting policy and guidance.

2. The NAVEDTRA 142 series of manuals define the NTP and provide fundamental direction for the development of curricula, the delivery of instruction, and the management and evaluation of training programs, within NETC.

3. This publication is a major change and should be read in its entirety.

4. This publication is available electronically at: https://netc.navy.mil/Resources/NETC-Directives/.

5. NETC N71 solicits any comments and recommendations to improve the NAVEDTRA 142 series of manuals through the following link: https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/Lists/ChngRqstForm/AllItems.aspx or comments may be submitted to netc-n7@us.navy.mil.

6. Reviewed and approved.

J. J. CZEREWKO

Navy Training Process

Phase III: Course Development, Modernization, Acquisition and Pilot

SECURITY CLASSIFICATION: UNCLASSIFIED

18 JUN 2025

Record of Changes

Number and Description of Change:	Entered By:	Date:

Foreword

Naval Education and Training Series Manuals:

The Naval Education and Training (NAVEDTRA) M-142 series of manuals provide policy and guidance within the Naval Education and Training Command (NETC) for the development of curricula, delivery of instruction, and management and evaluation of training programs. This manual supersedes the following documents:

- NAVEDTRA 130B, Task Based Curriculum Development Manual
- NAVEDTRA 131B, Personnel Performance Profile Based Curriculum Development Manual
- NAVEDTRA 136, NETC Integrated Learning Environment Course Development and Life-Cycle Maintenance Manual
- Ready Relevant Learning (RRL) Guidance Memorandum (RRLGM) #20-0001, Shareable Content Object (SCO) Assignment
- RRLGM #20-0004, Train-the-Trainer (T3) Requirements
- RRLGM #21-0004, Course Pre-Pilot and Pilot Requirements
- RRLGM #21-0005A, NETC Approved Content Authoring Tools
- RRLGM #22-0001, Practical Applications of Learning Science (PALS)
- NETC Style Guide, CH-3

Scope:

The NAVEDTRA M-142.3 provides direction for designing, developing, and testing training materials to be delivered by NETC. It reflects the philosophical principles underlying NETC policy for curriculum design and development and provides procedures for carrying out that policy. It also outlines specific standardized convents and guidance that the Instructional Development Team will use to build sound training material.

Communication and collaboration between NETC, type commanders (TYCOM), system commands, program offices, requirement sponsors, and resource sponsors

are vital to ensure validated fleet requirements are properly aligned and efforts are focused on developing proper fleet interventions and/or training interventions.

The guidelines set forth in this series of manuals are not intended to conflict with any higher-level authority policies or procedures. In instances where there appears to be a conflict or disagreement, please notify NETC N71, Training Standard Branch. NETC N71 solicits any comments and recommendations to improve the NAVEDTRA M-142 series of manuals through the following link: https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/Lists/ChngRqstForm/AllItems.aspx or comments may be submitted to netc-n7@us.navy.mil. This manual is intended for use by military, civil service, and contractor personnel engaged in the development and modification of Navy training materials.

NOTE: All links in this manual must be copied and pasted into a browser to access the document being referenced.

Contractual Use of this Manual:

Throughout the NAVEDTRA M-142 (series), examples are provided to illustrate and clarify points being discussed. It is important to note in the case of an item identified as an "example," this item is not intended to be copied exactly in all situations, but rather provided to help clarify the information being discussed. The content for items shown as examples are representative and may be tailored by the user for specific situations. Table 1 provides the meanings of various words that may be used in this manual.

Table 1: Guidance Terms

Term	Meaning
Must	**This action, behavior, or construct is required by the guidelines.**
Will	**This denotes a required action in the future.**
May	**This action, behavior, or construct is permitted; however, it is discretionary, not required.**
Can	**This refers to the inherent behavior of software and/or computer languages. Do not use to mean that an action, behavior, or construct is permissible or allowed by the guidelines.**
Must not	**This action, behavior, or construct is prohibited by the guidelines.**
Should	**This suggests that something is proper, reasonable, or the best thing to do.**

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NTP Appendices are available for download:

https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/1423/Forms/AllItems.aspx

Phase V Appendices

Acronym List

Acronym	Description
2D	Two-Dimensional
3D	Three-Dimensional
ADL	Advanced Distributed Learning
AIM	Authoring Instructional Materials
AR	Augmented Reality
CAC	Common Access Card
CANTRAC	Catalog of Navy Training Courses
CCA	Curriculum Control Authority
CCMM	Course Curriculum Model Manager
CD	Curriculum Developer
CDP	Course Data Processing
CeTARS	Corporate Enterprise Training Activity Resource System
CHaRMS	Content Hosting and Reports Management Service
CIN	Course Identification Number
CSS	Cascading Style Sheets
CMS	Course Master Schedule
COI	Course Outline of Instruction
CPM	Content Planning Module
CRM	Comments Resolution Matrix
CUI	Controlled Unclassified Information
CUIT	Course Unique Instructor Training
DID	Data Item Description
DoD	Department of Defense
DoDI	Department of Defense Instruction
DP	Discussion Point
DPI	Dots per Square Inch
FCA	Fleet Concentration Area
GCAT	Government Content Acceptance Testing
GUI	Graphical User Interface
ECR	Electronic Classroom
EO	Enabling Objective
ESC	Executive Steering Committee
FPS	Frames per Second
GFI	Government Furnished Information
HRT	High-Risk Training
HTML	Hypertext Markup Language

IA	Information Assurance
ICW	Interactive Courseware
ID	Instructional Designers
IETM	Interactive Electronic Technical Manuals
IFIT	Instructor-Facilitated Interactive Training
IG	Instructor Guide
IMDP	Instructional Media Design Package
IMI	Interactive Multimedia Instruction
IMM	Instructional Multimedia Material
IMP	Instructional Media Package
ISD	Instructional Systems Design
IT	Information Technology
IVE	Immersive Virtual Environment
LC	Learning Center
LMS	Learning Management System
LO	Learning Objective
LOM	Learning Objective Metadata
LRS	Learning Record Store
LS	Learning Site
MFR	Memorandum for Record
MILCON	Military Construction
MIME	Multipurpose Internet Mail Extension
MOS	Military Occupational Specialties
MR	Mixed Reality
MRTS	Multipurpose Reconfigurable Training System
MS	Microsoft
NAVEDTRA	Naval Education and Training Manual
NAWCTSD	Naval Air Warfare Center Training Systems Division
NeL	Navy e-Learning
NESD	Navy Enterprise Service Desk
NETC	Naval Education and Training Command
NIPR	Navy Internet Protocol Router Network
NMCI	Navy Marine Corps Intranet
NTP	Navy Training Process
PADDIE+M	Plan, Analyze, Design, Develop, Implement, Evaluate, and Maintain
PALS	Practical Applications of Learning Science
PDF	Portable Document Format
PC	Personal Computer
PBR	Physically Based Renderer
PTT	Part-Task Trainer
PX	Pixel
RAC	Risk Assessment Code
RIA	Related Instructor Activity
RRL	Ready Relevant Learning

RRLGM	Ready Relevant Learning Guidance Memorandum
SAAR	System Authorization Access Request
SAT/UNSAT	Satisfactory/Unsatisfactory
SCO	Shareable Content Object
SCORM	Shareable Content Object Reference Model
SDIT	Self-Directed Interactive Training
SE	Software Engineering
SME	Subject Matter Expert
SPST	Sailor Performance Support Tool
STIG	Security Technical Implementation Guides
T3	Train-the-Trainer
TCCD	Training Course Control Document
TCSD	Training Conduct Support Document
TD	Training Device
TO	Terminal Objective
TP	Test Package
TPP	Training Project Plan
TRANET	Training Network
TSSD	Training System Support Document
TTE	Technical Training Equipment
TYCOM	Type Commander
UI	User Interface
UX	User Experience
VAP	Visual Aid Panel
VDI	Virtual Desktop Initiative
VFR	Visual Flight Rules
VR	Virtual Reality
VSIM	Virtual Simulation
VTT	Virtual Task Traininer
XR	Extended Reality

CHAPTER 1
INTRODUCTION

1.0. Phase III. The Course Development, Modernization, and Acquisition Phase, or Phase III, of the Navy Training Process (NTP) builds on the requirements development steps (NTP steps 3-5) in Phase II. Phase III focuses on detailed design, content development, and evaluation, culminating in a pilot of the material. The design stage in the Plan, Analyze, Design, Develop, Implement, Evaluate, and Maintain (PADDIE+M) Model begins in Phase II, Requirements Development, when learning objectives (LO) and media characteristics are established, as illustrated in Figure 1-1. A detailed process map for Phase III is provided in Appendix C.

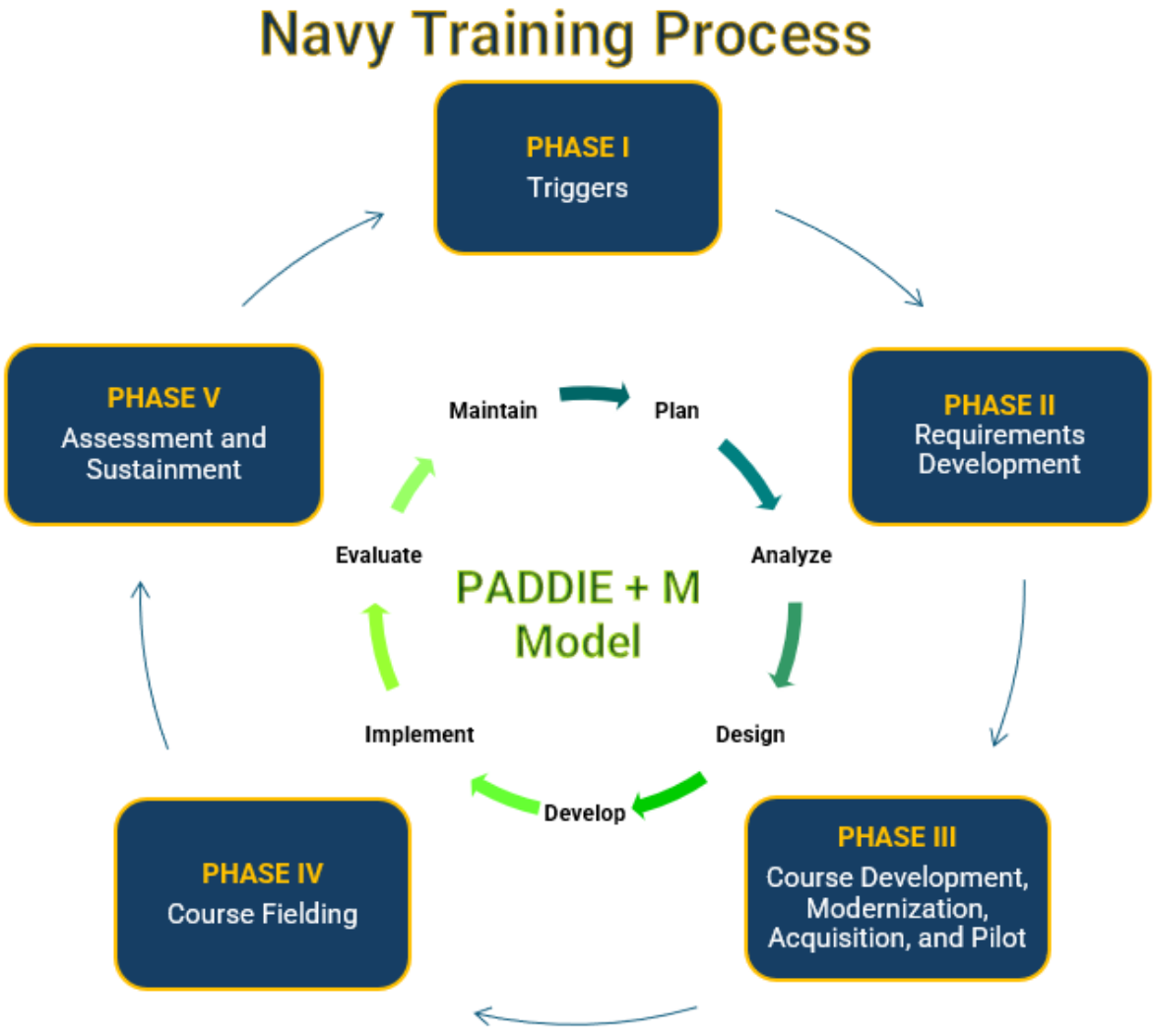


Figure 1-1: Navy Training Process Using the "PADDIE+M" Model

A vital portion of NETC's mission is to deliver training and education that transforms civilians into Sailors and provides specialized training and educational tools to advance the personal and professional development of Sailors throughout their career. To achieve this mission, a critical action is the modernization of course content through the implementation of innovative instructional design and assessment strategies, alongside the utilization of new and updated technologies to actively engage Sailors in the learning process. Possible actions to enhance training include:

a. **Actual Equipment:** Utilize equipment from the fleet that is maintained in operational environments and remains unaltered for training purposes.

b. **Adapted Branching:** Implement techniques that accommodate individual student differences, allowing them to bypass material they have already mastered or receive additional instruction as needed. Adapted branching adjusts based on student choices.

c. **Extended Reality (XR):** Leverage XR technologies, encompassing augmented reality (AR), mixed reality (MR), and virtual reality (VR), to enhance immersive experiences and innovative solutions.

   (1) **AR:** Enhances physical equipment with digital overlays. For example, viewing an engine with AR can allow for interactive exploration, including disassembly and visualization of internal components.

   (2) **MR:** Combines real and virtual worlds in real-time, creating environments where physical and digital objects interact. Used in instructor-facilitated interactive training (IFIT).

   (3) **VR:** Provides immersive, computer-generated environments. Requires a headset and allows full interaction with the virtual surroundings.

d. **Flipped Classrooms:** Introduces Sailors to course material through online coursework or lectures prior to class, including knowledge checks. Use class time for guided practice, exercises, and application of knowledge.

e. **Frequent Knowledge Checks:** Embed knowledge checks in instructor-facilitated and self-directed training to provide immediate feedback. This helps instructors address misunderstandings and adapt learning tasks based on responses.

f. **Game-Based Learning/Gamification:** Integrate gaming elements to enhance motivation and performance through competition. Develop engaging games that reinforce learning and may incorporate elements such as badging.

g. **Intelligent Tutoring System:** Utilize computer systems that offer immediate, customized instruction or feedback without requiring instructor intervention.

h. **Interactive e-Books:** Provide training material in interactive e-books, or by incorporating video, audio, animations, scenarios, and embedded knowledge checks.

i. **Lab Rotations:** Combine online learning with practical lab sessions for hands-on application of skills.

j. **Part-Task Trainer (PTT):** Use specialized training devices (TD) for practicing specific tasks, allowing repeated practice at lower costs than full-scale equipment. PTTs are designed for focused skill development and can simulate technical requirements without military-spec equipment.

k. **Real-World Simulations:** Provide scenarios that mimic job conditions, allowing Sailors to make choices, experience different outcomes, and receive feedback to handle complex situations.

l. **Short Interactive Videos:** Create videos highlighting key information with interactive elements like select-and-reveal or drag-and-drop features.

m. **Technical Training Equipment (TTE):** Invest in end items of operational equipment dedicated to the training and instruction of Naval personnel, with program managers responsible for its design, development, and maintenance.

n. **Training Device:** Develop hardware and software designed or modified for training, involving simulation or stimulation to demonstrate concepts or replicate operational requirements.

o. **Virtual Machines or Digital Twin Technology:** Constitutes cloud-based machines to replicate actual systems/software rather than simulating/emulating them with interactive multimedia instruction (IMI) content.

1.1. Input to Phase III. Step 6 of the NTP is Detailed Content Design and Prototypes. This step refers to the process of designing and organizing instructional content and materials in a way that aligns with the LOs and enhances the overall effectiveness of the training program. In this step, the instructional media design package (IMDP) and the testing package are developed. The output of NTP Phase II Requirements are the inputs for Phase III. The Phase III inputs are:

a. Instructional Performance Requirements Document.

b. Instructional Media Requirements Document.

c. Military Characteristics Document - Required only for high fidelity and military construction (MILCON) projects.

d. Total Lifecycle Cost Estimate.

e. Fielding and Feasibility reporting and Functional Requirements Document - Required for courses going through the RRL Modernization.

f. Draft Training Program Structure Document, including:

(1) Training Project Plan (TPP).

(2) Draft Training Course Control Document (TCCD).

(3) Curriculum Outline of Instruction (COI) with LOs.

(4) Draft Course Master Schedule (CMS).

(5) Draft Resource Requirements List.

1.2. Content Development, Testing and Evaluation, and Delivery. Step 7 consists of producing the instructional materials for the course. The following is an overview of Step 7:

a. **Content Creation:** Develop instructional materials and resources based on the detailed design documents. This includes writing and refining content, creating multimedia elements (such as videos, graphics, animations), and producing any print materials or handouts.

b. **Course Production:** Assemble the course materials into the final format. This may involve integrating content into a learning management system (LMS), formatting digital documents, and ensuring all multimedia elements work seamlessly.

c. **Developing Assessments:** Create and finalize assessments and evaluation tools that will be used to measure students' understanding and performance. This includes quizzes, tests, assignments, and practical exercises.

d. **Creating Learning Activities:** Develop any interactive elements, simulations, or exercises that will be used to engage students and facilitate the application of knowledge.

e. **Review and Quality Assurance:** Conduct reviews to ensure that all materials are accurate, complete, and meet the design specifications. This includes checking for errors, ensuring consistency, and verifying that the content aligns with LOs.

1.3. Train-the-Trainer. Step 8 of the NTP involves a specialized workshop designed to equip instructors with the skills and knowledge they need to effectively teach or train others. This is required when new technology or systems are introduced. During these events, trainers learn various instructional methods, presentation skills, and assessment strategies. The goal is to enhance their ability to deliver engaging and effective training sessions. Ultimately, a T3 event aims to create a ripple effect, enabling trained individuals to pass on their knowledge to other instructors efficiently.

1.4. Pilot. Step 9 involves three key components: Pre-Pilot Materials Review, Pre-Pilot Meeting, and the Pilot. A course pilot serves as a trial run, allowing instructors and Course Curriculum Model Managers (CCMM) to test and refine the content and delivery. This process ensures that the course meets the required standards and objectives before seeking final approval from the Curriculum Control Authority (CCA) for full implementation.

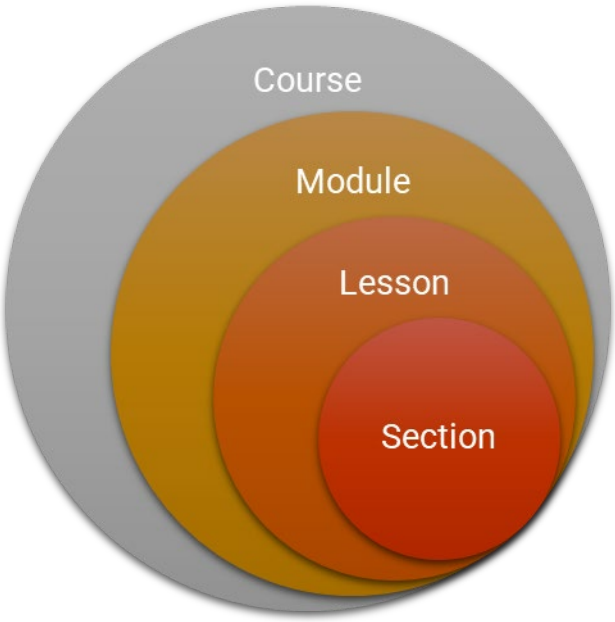
1.5. Output of Navy Training Process Phase III. The Development Phase is complete when the curriculum has been successfully piloted, and the course is approved by the CCA for implementation. The output of NTP Phase III include:

a. Testing package and approved test plan.
b. Training Conduct Support Document (TCSD).
c. Training System Support Document (TSSD).
d. Testing and evaluation (including government sponsors and other stakeholders acceptance testing) completed.
e. Approved risk assessment.
f. Approved course unique instructor training (CUIT) (only high-risk courses).
g. Approved TCCD.
h. Authorization to Teach letter (Appendix V).

CHAPTER 2
NAVY COURSE STRUCTURE AND DESIGN CONCEPTS

2.0. Introduction. Design phase products may be developed by contract, Navy activities, or some combination of the two. The instructional development team refers to the professionals who create educational programs and materials to enhance learning experiences. They apply principles of instructional theory, design, and technology to develop curricula, online courses, and training modules that meet the needs of learners. The team may include instructional designers (ID), curriculum developers (CD), and subject matter experts (SME). Depending on the project, the team may also include graphic artists, software developers, media, and assessment experts. The guidelines and standards provided are for in-house development as well as the acquisition process for all contracted efforts. It contains proven methods to develop materials that are clear and establish a standard for instructional design.

2.1. Navy Course Structure. The COI consists of properly sequenced LOs. Once complete, the COI becomes the master plan for the structure of the course as outlined in the TCCD. A course is comprised of multiple elements that include modules, lessons, and sections using various delivery media and instructional methods. Figure 2-1 depicts the hierarchy of a course.



- **COURSE**
  A course is made up of multiple components that include modules and lessons using various delivery media and instructional methods.
- **MODULE**
  A module consists of a group of lessons.
- **LESSON**
  A lesson addresses one Terminal Objective.
- **SECTION**
  A section consists of elements that address one Enabling Objective. Enabling Objectives support the Terminal Objective and the attainment of specific skills and cognitive development.

Figure 2-1: Navy Course Structure

2.1.1. Course. All courses are identified by a course identification number (CIN). The CIN is comprised of a functional commander code, skill defense group, and a sequence number. Data elements are aligned to the CIN such as type course, security classification, purpose, scope, and managed in the Curriculum Data System. These data elements will apply to anywhere the course may be taught. Course data processing (CDP) codes are used to identify a specific location where a course may be taught. Capacity constraints are aligned to the CDP since location can influence class size and training resources utilized. Each CDP can have one active CMS. For out-year planning purposes (e.g., resource sponsor requirements, etc.) multiple CMSs can be delineated via versions and/or effective dates, but only one CMS can be approved at a time. Each CMS has multiple training events that make up the schedule and sequence of the course.

2.1.2. Module. A module refers to a distinct segment or unit within a training program designed to cover specific topics or skills. Each module typically focuses on a particular area or concept, providing structured learning experiences through a series of lessons. A module is the largest portion of a course and may conclude with quizzes, tests, or assignments to evaluate understanding and reinforce learning.

2.1.2.1. Duty. In Step 3 of the NTP, work conducted in the fleet is decomposed and structured into duties and tasks during the task analysis. Duty, task, and sub-task level data are the source data for building LOs, and thus the foundation of Navy curriculum development. During the creation of the COI, duties are generally aligned with and linked to the relevant training modules.

2.1.3. Lesson. A lesson is comprised of individual instructional sections designed to teach specific concepts, skills, or knowledge. The lesson contains the terminal objective (TO) representing the desired outcome of the learning experience and typically encompasses the key skills, knowledge, or competencies that students need to demonstrate upon completion. A lesson must have at least two sections.

2.1.3.1. Task. During the task analysis, attributes are captured at the task level to identify training requirements. Critical data collected, such as knowledge, skills, and abilities are essential in developing the TO. Task level data may be aligned and linked to the TO at the lesson level.

2.1.4. Section. A section is the smallest unit of a course that supports one enabling objective (EO). Instruction addresses steps in the attainment of knowledge or skill. Sections must include comprehension check questions throughout and specifically in

the practice portion. Each section has specific elements selected for the instructor guide (IG) based on the content type selected. See section 2.3 Content Type for more details.

2.1.4.1. Sub-Task. During the task analysis, attributes are captured at the sub-task level to pinpoint training requirements. Essential data collected plays a decisive role in developing the EO. Sub-task level data naturally aligns with and will be linked to the EO at the section level.

2.1.4.2. Shareable Content Object Assignment. Course materials planned for LMS delivery are bundled into SCO Reference Model (SCORM) content packages. The SCO is the smallest logical unit of information that can be delivered to a student via the LMS. SCOs collect information on the students' performance and the SCOs must be context-independent and of a reasonable size so they can be reused. The NTP construct includes content reuse and multiple delivery options for the student. Consequently, SCOs will be assigned at the EO level to support optimum student performance collection, content reuse, and modernized delivery.

2.2. Content Type. The Five Content Type Model is a framework which NETC uses in instructional design and training. It outlines five fundamental types of content that are essential for effective learning experiences. These types are:

a. **Procedure Information:** This type of content focuses on teaching students how to perform specific tasks or procedures. It often involves step-by-step instructions and practical demonstrations.

b. **Process Information:** This type includes real-world experiences and applications that help students connect theoretical knowledge with practical situations. It often involves case studies, simulations, or scenarios.

c. **Principle Information:** This content involves teaching students how to use their knowledge and skills effectively in various contexts. It includes strategies, problem-solving techniques, and decision-making processes.

d. **Fact Information:** A piece of information or assertion that can be objectively verified through observation, measurement, or reliable sources. It serves as the foundation for understanding complex topics, improves mental abilities like problem-solving and reasoning, and enhances overall learning by making it easier to remember new information. Factual knowledge also helps individuals make informed decisions, stay safe, and avoid making potentially harmful choices, especially when misinformation is prevalent.

e. **Concept Information:** This type focuses on teaching the underlying principles and theories that govern the subject matter. It helps students understand the broader context and framework within which specific tasks or facts fit.

The Five Content Type Model helps IDs create more comprehensive and engaging learning experiences by ensuring that all essential types of content are included in the training. Each content type has elements associated to assist in developing the IG. Table 2 is the list of allowed elements for each content type of a section.

Table 2: Five Content Type Model

PROCEDURE	PROCESS	PRINCIPLE	FACT	CONCEPT
1. Introduction - Gain Attention - Learning Objective - Relevance - Prior Knowledge Activation - Safety Information - Security Information 2. **Procedure** 3. Fact - Statement - Image - List - Table **4. Table** - Procedure Table - Decision Table - Combined Table 5. **Demonstration** 6. Section Review **7. Practice** **8. Assessment**	**1. Introduction** - Gain Attention - Learning Objective - Relevance - Prior Knowledge Activation - Safety Information - Security Information 2. Concept 3. Fact - Statement - Image - List - Table **4. Process** - Block Diagram - Cycle Charts - Staged Table 5. Section Review **6. Practice** **7. Assessment**	**1. Introduction** - Gain Attention - Learning Objective - Relevance - Prior Knowledge Activation - Safety Information - Security Information 2. Fact - Statement - Image - List - Table **3. Guidelines** **4. Example** 5. Non-Example 6. Analogy 7. Section Review **8. Practice** **9. Assessment**	**1. Introduction** - Gain Attention - Learning Objective - Relevance - Prior Knowledge Activation - Safety Information - Security Information **2. Fact** - Statement - Image - List - Table 3. Section Review **4. Practice** **5. Assessment**	**1. Introduction** - Gain Attention - Learning Objective - Relevance - Prior Knowledge Activation - Safety Information - Security Information **2. Definition** 3. Fact - Statement - Image - List - Table **4. Examples** 5. Non-Example 6. Analogy 7. Section Review **8. Practice** **9. Assessment**

Task-Based Objectives

Knowledge-Based Objectives

Bold elements are mandatory fields for the content type.

2.2.1. Procedure. A procedure is a series of clearly defined steps you perform to complete a task.

a. Characteristics of Procedures:

(1) Have a beginning and end with a given set of directions or steps.

(2) The steps are followed the same way or order and are not based on the performer's judgment.

(3) Each step has an observable result to let the student know they can move on to the next step.

b. Examples:

(1) Launcher control group drawer replacement

(2) Installation of a battery

(3) Activating surface RADAR; filling out a request chit.

c. Non-examples:

(1) Launcher control group drawer

(2) Battery safety concerns

(3) Request chit approval process

2.2.2. Process. A process is a series of actions or steps taken in order to achieve a particular result or outcome. It's a method or procedure that is followed to reach a goal or complete a task. Processes can be simple, like making a cup of coffee, or more complex, like how a business produces a product or how the body digests food.

a. Characteristics of Processes:

(1) Describes Operational Flow: It details how something functions or operates rather than instructing how to perform a specific task.

(2) Flow of Stages: It can be illustrated as a series of interconnected stages or phases.

(3) Involves Multiple Roles: Individuals may contribute to different stages or functions within the process but are not necessarily following the same steps.

b. Examples:

(1) Natural Processes: Photosynthesis; thunderstorm development.

(2) Mechanical Processes: Storage and retrieval of digital information from a hard drive; operation of an internal combustion engine.

(3) Business Processes: Data logging in missile tube gas systems; approval workflow for request chits.

c. Non-Examples:

(1) How to change out a battery. (This is a task-focused instruction rather than a description of how a process works.)

(2) Filling out your request chit. (This is a procedural task, not a description of the approval process.)

(3) How to replace spark plugs in an internal combustion engine. (This describes a specific maintenance task rather than the overall operation of the engine.)

2.2.3. Principle. Applying a principle requires using guidelines to perform a task which cannot be performed using a defined set of procedural steps.

a. Characteristics of Principles:

(1) Require the use of judgment and guidelines rather than following a set of directions or steps.

(2) Often results in different task outcomes. You do not necessarily get the same result each time.

(3) The steps used to complete the task vary. They are not the same each time.

b. Example(s):

(1) Troubleshoot beyond documented procedures.

(2) Provide financial counseling to Sailors.

(3) Maintain good order and disciple, ensure the working party is following safety precautions.

c. Non-example(s):

(1) Perform preventive maintenance on the landing gear.

(2) Put on personnel protection equipment.

2.2.4. Fact. A fact is a distinct, specific piece of information or a unique item.

a. Characteristics of Facts:

(1) Unique: Each fact is specific, and while multiple instances can exist, they are exact duplicates.

(2) Memory-Based: Facts are remembered rather than applied.

(3) Concrete or Abstract: Can be either physical objects or informational.

b. Examples:

(1) Personnel Reliability Program

(2) Screening and Evaluation Form

(3) Portable Air Monitor AN/PDR-73; weight in pounds of a D5 Missile

c. Non-Examples:

(1) Personnel forms

(2) Air monitor

2.2.5. Concept. A concept is an abstract idea that represents something in the mind. It helps us categorize and understand the world around us by grouping similar things or experiences together based on common characteristics.

a. Characteristics of Concepts:

(1) Tell what something is.

(2) Can be distinguished from similar objects by examining critical characteristics.

(3) Can be concrete (physical) or abstract (mental).

b. Example(s):

(1) Chair

- Critical features include seat, back, legs or other supporting structure.
- Types include kitchen chair, office chair, highchair, rocking chair.

(2) Missile

- Critical features include self-propelled, guidance system, explosive.
- Types include D5, Trident, Tomahawk.

c. Non-example(s):

(1) The President's office chair in the oval office.

(2) D5 missile serial # ADS76576.

2.3. Learning Modality. A modality is a form of delivery, such as instructor-led training or online learning. NETC provides a flexible approach that incorporates a variety of methods moving from a singular learning approach to a flexible blended solution. The following are the standard categories for modality.

2.3.1. Self-Directed Interactive Training – Focusing on the student, Self-Directed Interactive Training (SDIT) is a modality that encompasses a more complex type of

content that supports refresher training, skill expansion, new system or procedure familiarization, or PTT training. Design SDIT to be used as a reference or for short episodic training accessible just prior to a Sailor's need. Highly effective and engaging content is delivered via adaptive simulation on a virtual desktop, traditional laptop or desktop, distributed system, or mobile device.

2.3.2. Instructor-Facilitated Interactive Training – Instructor provided content modality in which content is deployed live using skill/knowledge application-based training with student interaction either in-person or virtual settings. IFIT can take the form of labs (e.g., equipment-based or virtualized simulations) and is established at fleet concentration areas (FCA), learning sites (LS), or other locations that are immediately accessible to Sailors. Interactive multimedia, as defined below, and/or student exercises (job, assignment, and problem sheets) can be combined and integrated with the instructor to provide an engaging learning event for the student.

2.3.3. Sailor Performance Support Tool – May also be referred to as performance support. A modality in which content is accessible and useful at the time of need, tailored directly to the activity being supported. Sailor Performance Support Tool (SPST) is designed as on-the-job support in the operational environment, but it can also be used in a training setting via an LMS as training support or supplemental training (e.g., as a reference, resource, or condition statement). SPST can take the form of a basic checklist, table (array), annotated diagram, interactive media, three-dimensional (3D) models, virtual world applications, etc., providing additional references to procedures, or how-to videos.

2.4. Conventions for Interactive Multimedia Instruction Products. Content for SDIT and IFIT IMI is developed for deployment in schoolhouses and in FCAs and is delivered through an LMS. Courseware is developed in accordance with the LMS developer guidance, must pass the LMS verification list for standardization, and approved by the stakeholders/sponsors to ensure the accuracy of the courseware content. Additionally, an electronic version of the courseware must function as a stand-alone/offline delivery medium outside of an LMS.

2.5. Rules for Content Developers:

a. **Selecting content.** Teach students to answer their own questions. Resist teaching large amounts of detailed information.

b. **Teaching important associations.** Provide rich associations for key concepts you teach. Do not rely solely on simple pick-one tests.

c. **Avoid overloading students.** Don't require students to keep more than a few items in working memory at a time. Group items into meaningful categories.

d. **Organizing knowledge.** Show the organization of any group of more than a few items. Never bury something crucial in the middle.

e. **Accommodate for different learning styles and approaches.** Provide multiple paths for students to engage with the material.

f. **Focus students' attention.** Focus attention on the most important thing you are teaching. Forego meaningless multimedia.

g. **Set and clarify context.** Make the context of learning resemble that in which knowledge will be applied. Provide the context for all new information introduced.

h. **Provide opportunities for practice.** Offer plenty of opportunities for practice and repetition in varied, real-world contexts. Use a number of low-stake quizzes through-out the lesson to encourage students to retrieve information from memory.

i. **Performance oriented.** Application/performance elements will comprise approximately 60% of the available instructional time. Learning occurs when the Sailor is applying knowledge to scenarios and un-encountered instances of problems they will see in the Fleet.

2.6. Key Characteristics of Learning and Transfer:

a. Initial learning is necessary for transfer, and a considerable amount is known about the kinds of learning experiences that support transfer.

b. Knowledge that is overly contextualized can reduce transfer; abstract representations of knowledge can help promote transfer.

c. Transfer is best viewed as an active, dynamic process rather than a passive end-product of a particular set of learning experiences.

d. All new learning involves transfer based on previous learning, and this fact has important implications for the design of instruction that helps students learn.

2.7. Science of Learning Considerations. The PALS handbook is a product of work completed by Dr. Van Schaack. The handbook describes six best practices for instructional strategies that are "recommended as the foundation for education and training in the United States Navy" (Van Schaack, 2021). Incorporating these strategies

into training will help students increase long-term retention and transfer of knowledge and skills. The six best practices are as follows:

a. **Retrieval Practice.** Using low stakes oral or written quizzes to encourage students to retrieve information from memory.

b. **Spaced Practice.** Distributing study time over several short sessions produces better long-term memory than a single, long study session.

c. **Interleaving**. Mixing multiple subjects, topics, or problem types into study periods or homework to improve the transfer of knowledge and skills.

d. **Dual Coding.** Use multimedia that has a picture along with bulleted information that the instructor describes rather than having students see what the instructor will say, students will process the information both visually and verbally.

e. **Concrete Examples.** Provide specific, real-world examples to highlight essential features.

f. **Elaboration.** Have instructors use review questions that start with How, Why, and What if to make the information more memorable by relating new information to something they already know.

2.7.1. Plan, Analyze, Design, Develop, Implement, Evaluate, and Maintain Implementation. The instructional strategies found in the PALS handbook (NAVEDTRA M-142.6) must be incorporated into all NETC training courses. These practices must be incorporated by training and instructional staff SMEs during new course design and development or during a revision to a course, such as those occurring through training modernization workshops.

2.8. Approved Content Authoring Tools. While the Department of the Navy Applications and Database Management System provides an information technology (IT) portfolio repository for approved Navy software, the NETC domain will only use the approved content authoring tools outlined below for the development, modification, and life-cycle sustainment of training materials delivered by NETC.

a. **Content Authoring Tools -** These tools provide the ability to package content into a SCORM-compliant format for deployment in any SCORM conformant LMS. The training content and the interactivity of the content will be created external to these tools. Once the content is created, the content will be imported into these tools for configuration management and exported as a SCORM package. The export process is often referred to as SCORM-Wrapped process.

(1) **Tools:**

- Merge, Manage, Modernize E-Learning Development
- Adobe Captivate

(2) **Formats:**

- Raw Source Format: Project files from the software tool and any digital assets.
- Executable Format: Content up to SCORM 2004 4th edition. Some Fleet units may encounter issues with 4th edition, in which case, 3rd edition is acceptable.

b. **Multimedia Authoring Tool** - These tools are designed to create different types of media content such as text, audio, images, animations, video, and other complex media as a stream of information for incorporation into content packaging or interactive content authoring tool or standalone deployment.

(1) **Image Creation and Manipulation:** Adobe Photoshop and Adobe Illustrator.

- Raw Source Format: PSD, AI
- Executable Format: PNG

(2) **Video:** Any video capturing and editing software that produces the below raw source and executable format.

- Raw Source and Executable Format: MP4 (H.264/MPEG-4 AVC codec only)

(3) **Audio:** Any audio capturing and editing software that produces the below raw source and executable format.

- Raw Source and Executable Format: MP3

(4) **Two-Dimensional (2D) Animation:** Adobe Animate.

- Raw Source Format: FLA, Uncompressed XFL
- Executable Format: HTML5 Canvas, SVG, GIF, PNG

(5) **3D Modeling:** AutoCAD, 3D Studio Max, and Unreal Engine.

- Raw Source Format: CAD, DWG, DXF, DGN, STL, FBX, or SAV
- Executable Format: WebGL

(6) **Games, Simulations, and XR:** Unity and Unreal Engine.

- Raw Source Format: SAV
- Executable Format: WebGL

CHAPTER 3
DETAILED CONTENT DESIGN AND PROTOTYPES

3.0. Instructional Media Design Package. The data item description (DID) DI-SESS-81520B, provides the design documentation for the development and production of courseware. The IMDP details and demonstrates the design intent for each module and lesson within a course and describes how the course will achieve the intended learning. The IMDP is a detailed instructional design plan that typically supports the more general plan presented in a TCCD. In some cases, such as in-service training development or multiple course development projects, there may only be one "Master IMDP," and it will not be associated with a TCCD. The Master IMDP will include a complete list of lessons, lesson titles, lesson numbers, and version numbers of all lessons addressed within the Master IMDP. The IMDP will be approved by the CCA before storyboards and a prototype lesson may be delivered for CCA review. Appendix D is provided as an example of an IMDP template.

3.1. Instructional Media Design Package Format. IMDP DID contains the format, content, and intended use information for the data product resulting from the performance requirements and is applicable to the acquisition of training data products. It is not intended that all the requirements contained within be applied to every program or program phase. The IMDP must contain, at a minimum, the following:

a. **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.

b. **Table of contents:** Include major headings and page numbers.

c. **Summary description of training:** Include a brief course description, length of course, prerequisites, security level classification, and target audience.

d. **Course design strategy:** Include descriptions of elements required to design the course.

e. **Course structure outline:** Include the hierarchy of course, module, lesson, and sections.

f. **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 must also be provided.

g. **LOs and instructional strategies:** Include Tos, EOs, and instructional strategies.

h. **Presentation category/interactivity level strategy:** Include the types of presentation used (e.g., decision-based navigation, scenario-bounded branching, etc.), types of interactivities used (e.g., hyperlinks, hotspots, rollovers, etc.), and types of media used (e.g., videos, 2D or 3D animations, user-controlled animations, etc.).

i. **Assessment strategy:** Describe how the LOs will be measured, weighted, and displayed (refer to NAVEDTRA M-142.4 Vol II).

j. **Remediation strategy:** Describe how areas of deficiency will be addressed.

k. **Rollup behavior:** Describe how Navy e-Learning (NeL) will report completion status and scores.

l. **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.

m. **User interface (UI) design:** Provide a graphic depiction of the UIs (e.g., screen captures).

3.2. Test Package. The test package (TP) DID DI-SESS-81525D contains preparation instructions for content and format of test items and test administration materials. If resources allow, creating the IMDP and TP together can enhance the overall quality of the instructional design. The IMDP and TP DID may be combined into one if project requirements allow. Appendix P provides the tailored DID to include the IMDP/TP. Integrating the IMDP with the TP may offer significant advantages:

a. Alignment: Ensuring that the instructional materials and assessments are aligned helps in maintaining consistency in LOs and outcomes.

b. Feedback Loop: By developing them concurrently, you can incorporate assessment feedback directly into the instructional design, making revisions more effective.

c. Efficiency: Working on both packages at the same time can streamline the development process, reducing redundancy and saving time.

d. Holistic View: It allows you to see how learners will interact with both the instructional content and assessments, leading to a more cohesive learning experience.

e. Testing Formats: Designing assessments that complement the instructional materials ensures that they are appropriately challenging and relevant.

NOTE: See NAVEDTRA M-142.4 Vol II for further guidance on TP development.

3.2.1. Testing Plan. The testing program will be outlined in a course testing plan. The testing plan provides documentation of the test procedures for a course. A course testing plan will be maintained, current, and be approved by the CCA (may be delegated to CCMM) for each course. The testing plan often starts as a draft in the design phase and used in conjunction with the content development processes and is finalized during the development phase as an element of the course pilot. The draft testing plan includes the listing of the types and general placement of the various quizzes, tests, practical exercises, etc., in the course that will help in developing the draft CMS. The test plan is a part of the TP DID, but it does not contain all the requirements listed in NAVEDTRA M-142.4 VOL II, *Testing Plan*.

3.3. Storyboard. The purpose of a storyboard is to show the illustrations and explanations of the screens the student or instructor will interact with and navigate through the application. They are a communication tool for CDs, programmers, graphic artists, and SMEs. It provides a detailed description of the instructional design. Storyboards also provide visuals of what the students will see/hear as they transition through the course materials. Figure 3-1 provides an example of a storyboard layout.

3.3.1. Storyboard Considerations. During the development of storyboards, areas to be considered include the GUI, outline and flow of the content, graphic file association, ID notes, background, and textual information such as color and font and any narration.

a. The storyboard information must coordinate the instructor/facilitation guide text with associated visuals, show the sequencing of visual information, and provide directions for development and programming/coding. The information and descriptions provide a blueprint for the development team to reduce or eliminate assumptions, questions, or confusion about the final product.

b. The components of a storyboard depend on the type of application, the complexity of the lesson, and levels of documentation required.

c. Tips for effective storyboarding:

(1) Clarity. Ensure each frame clearly conveys the action and emotion of the scene.

(2) Continuity. Maintain visual and narrative continuity between frames.

(3) Perspective. Use different perspectives and angles to enhance story telling.

(4) Focus. Highlight key actions and important details without cluttering up the frame.

3.3.2. Storyboard Components. The components of a storyboard depend on the type of application, complexity of the lesson, and levels of documentation required. Each storyboard page represents one IMI screen. Basic storyboard templates generally have sections for display area, directions, and a notes panel.

3.3.3. Storyboard Creation. Figures 3-1 to 3-3 are examples of storyboards. For each slide or screen, map out:

a. Visual elements: Sketch or describe the images, diagrams, screenshots, animations, or videos that will explain the technical content. For complex concepts, flowcharts, schematics, or process diagrams may be necessary.

b. Text and audio: Write down the key points, explanations, and instructional dialogue that will appear. If audio narration is included, script it clearly.

c. Instructions and interactions: Include notes about student interactions (e.g., click to reveal, drag-and-drop exercises, simulations). Highlight where technical demonstrations or simulations will be embedded.

d. Callouts and annotations: For technical content, you might want to highlight key areas of diagrams or screenshots with arrows, labels, or callout boxes.

3.3.4. Add Instructional Guidance

a. Real-world scenarios: Incorporate scenarios where students apply technical concepts in practical settings. This reinforces understanding and relevance.

b. Practice opportunities: Build in opportunities for hands-on practice, such as troubleshooting exercises, system navigation tasks, or code execution simulations.

3.3.4. Include Assessments

a. Knowledge checks: Embed quizzes or interactive questions after key sections to test understanding.

b. Practical exercises: For technical training, students often benefit from applied assessments like lab exercises, troubleshooting tasks, or coding challenges.

c. Feedback: Plan for feedback mechanisms where students can see correct answers, explanations, or hints to reinforce learning.

3.3.5. Review and Iterate

a. Review the storyboard: Once completed, review the storyboard to ensure it aligns with LOs, technical accuracy, and course flow.

b. Test with stakeholders: Share with SMEs, instructors, or technical reviewers for feedback. Adjust content, visuals, or interactions as needed.

3.3.6. Finalize the Storyboard. Once reviewed and revised, finalize the storyboard and ensure all necessary details are included for CDs and IDs to build the training.

Course Number	Add CIN here (e.g., A-8G-1234)	Course Title	Long course title (e.g., Drug and Alcohol Program Advisor (DAPA))	Duty title(s)	Retrieve from approved TA should be linked and identified and in a curriculum data system (CDS) and may include more than one duty. CONDUCT administration screening		
Module # / Title	Retrieve from a CDS or IMDP (e.g., Policies & Resources)	Lesson # / title	Retrieve from a CDS or IMDP (e.g., 2. Alcohol and the Navy)	Section # / title	N.O. Objective(s)	Page #	DAPA M2_L2_lodj_010
Delivery method	ILT, IMI or Blended	Graphic file(s)	The file name of release Images. If more than one, "See GUI Note"	Audio file(s)	The file name of released audio	Data page #	Filled-in by media
Objectives **Terminal Learning Objective:** List Terminal Learning Objective here. **Enabling Learning Objectives:** List Enabling Learning Objective(s) here.					Storyboard directions: GUI NOTE: Images: (examples) DAPA M2_L2_lobj_010a.log DAPA M2_L2_lobj_010a.png		
Narration: None required for ILT. Or "Here are the Learning Objectives you are responsible for in this lesson."							

Figure 3-1: Storyboard Screen Layout Example - Objective(s)

Course Number+A2: H21	Add CIN here (e.g., A-8G-1234)	Course Title	Long course title (e.g., Drug and Alcohol Program Advisor (DAPA))	Duty title(s)	Retrieve from approved TA should be linked and identified and in a curriculum data system (CDS) and may include more than one duty. CONDUCT administration screening		
Module # / Title	Retrieve from a CDS or IMDP (e.g., Policies & Resources)	Lesson # / title	Retrieve from a CDS or IMDP (e.g., 2. Alcohol and the Navy)	Section # / title	Retrieve from a CDS or IMDP (e.g., 1. Alcohol Impact)	Page #	DAPA M2_L2_kc_010
Delivery method	ILT, IMI or Blended	Graphic file(s)	The file name of release Images. If more than one, "See GUI Note"	Audio file(s)	The file name of released audio	Data page #	Filled-in by media
Objectives	Add supposed learning objective here (e.g., LOCATE major oceans, seas, island groups, and foreign military bases).			Question (if any)	None		

Knowledge Check (multiple choice)	Storyboard directions:
(Select the best answer from the choices provided and the click submit) Question goes here A. Answer B. Distractor C. Distractor D. Distractor **Submit**	The correct answer is [1] Section 2, DP-12 (Section 17) Highlight the correct response Knowledge Check instructions (Blended or ILT) The learner has two attempts. Connect Response: • Display as described above. Incorrect Response: • First attempt, display incorrect: Try Again • Second attempt, display the correct answer as described above. Images: (examples) DAPA M2_L2_kc_010a.log DAPA M2_L2_kc_010a.png

Narration:
None required for knowledge checks.

Figure 3-2: Storyboard Screen Layout Example - Knowledge Check

Course Number	Add CIN here (e.g., A-8G-1234)	Course Title	Long course title (e.g., Drug and Alcohol Program Advisor (DAPA))	Duty title(s)	Retrieve from approved TA should be linked and identified and in a curriculum data system (CDS) and may include more than one duty. CONDUCT administration screening		
Module # / Title	Retrieve from a CDS or IMDP (e.g., Policies & Resources)	Lesson # / title	Retrieve from a CDS or IMDP (e.g., 2. Alcohol and the Navy)	Section # / title	Retrieve from a Curriculum Authoring System or IMDP (e.g., 1. Alcohol Impact)	Page #	DAPA M2_L2_ref_010
Delivery method	ILT, IMI or Blended	Graphic file(s)	The file name of release Images. If more than one, "See GUI Note"	Audio file(s)	The file name of released audio	Data page #	Filled-in by media
Objectives	Add supposed learning objective here (e.g., LOCATE major oceans, seas, island groups, and foreign military bases).			Question (if any)	Add relevant question for this screen here and in the LP's RIA column (if desired). These questions can be used to start building		
Content/Slides title(i.e., Course Material) Tools: [1] • Foundation [2] • Frames [3] • Bridges [4] Components: [5] • Instructor Guide [6] • Instructional Sheets [7] • Interactive Multimedia Instruction [8] Click a component to learn more [9]					Storyboard directions: GUI NOTE: Provide the GUI with a description of the type of Images. Please chose image collage of various naval missions (i.e., ships, submarines, aircrafts, missiles, medical, special operations). Allow user to navigate each topic in any order, but they must view it all. Please use check marks beside each topic after vidhad. Allow user to navigate topics again, if desired. Please use a button label consent from the come landing xx page listed: Instructor Guide = Button Label 1 (DAPA M2_L2_ao1_010a) Instructional Sheets = Button Label 2 (DAPA M2_L2_ao1_010b) Interactive Multimedia Instruction (IMI) = Button Label (DAPA M2_L2_ao1_010c) Images: (examples) DAPA M2_L2_ref_010a.log DAPA M2_L2_ref_010a.png		
Narration: None required for ILT. If narrated, add required narration here with timing. See example below: Course material are [1] tools used to lay the [2] foundation, prepare the [3] framework, and construct the [4] bridge over which learners must pass to attain the knowledge and skills defined by the learning objectives. [5] Course materials include [6] instructor guides, [7] Instruction sheets, and [8] Interactive Multimedia Instruction (IMI). [9] Click a component to learn more.							

Figure 3-3: Storyboard Screen Layout Example - Content with Graphics Description

3.4. Developing Prototypes. A prototype is an early, tangible representation or model of a product, used to test and validate design concepts, functionality, and usability. It serves as a preliminary version that allows stakeholders to explore, evaluate, and provide feedback before final production or development. This includes developing initial lessons, guides, and multimedia elements (such as videos, graphics, or simulations), and designing assessments that will measure students' understanding of the material. A prototype will be developed for each type of delivery method selected for course development, (e.g., SDIT, IFIT, and performance support). Appendix E provides a guide for prototype lesson development elements.

a. Types:

(1) **Low-Fidelity Prototypes:** These are simple and inexpensive, such as paper sketches or mockups. They are useful for early conceptual testing and brainstorming.

(2) **High-Fidelity Prototypes:** These are more detailed and closer to the final product, often including interactive features and realistic designs. They are used for more comprehensive testing and user feedback.

(3) **Functional Prototypes:** These models are fully operational and used to test the actual functionality and performance of a system or product.

(4) **Visual Prototypes:** These focus on the appearance and layout of a product rather than its functionality, often used in design and UI testing.

b. Benefits:

(1) **Validation:** Prototypes allow IDs and CDs to test concepts and gather feedback early, reducing the risk of major changes later in the development process.

(2) **Improvement:** By identifying problems and limitations in a prototype, teams can make necessary adjustments before final production.

(3) **Communication:** Prototypes help communicate ideas and concepts to stakeholders, users, and team members more effectively than abstract descriptions or documentation.

c. Process:

(1) **Design:** Create a preliminary model or representation based on initial concepts and requirements.

(2) **Test:** Use the prototype to gather feedback, test functionality, and observe user interactions.

(3) **Iterate:** Refine and improve the prototype based on feedback and testing results.

3.4.1. Prototype Requirements. The prototype must represent the UI style, including navigation controls and examples of all screen layouts, to be used in the final course. The prototype must accurately demonstrate the end course, including detection and use of plug-ins, external applications, etc. Prototypes will be evaluated from both the design and technical aspects. Appendix G provides a prototype review checklist for the CD and Appendix H provides a review checklist for the SME. CDs must create one prototype in an approved content authoring tool for each type of content and modality.

a. For courses containing exams, the prototype must demonstrate the exam behavior, including shuffling and randomization. However, it does not need to include all exam questions since they will be included later in the storyboard delivery.

b. The prototype is tested on the system(s) and location(s) in which it will be utilized. All content must be tested in the intended delivery environment to ensure functionality. Appendix F provides a prototype programming review checklist.

3.4.2. Designing Learning Activities. Develop engaging activities that facilitate learning and help students apply the knowledge. This can include interactive exercises, group discussions, case studies, and practical applications.

3.4.3. Drafting Detailed Specifications. Develop comprehensive specifications for each training component, including detailed instructional guides, multimedia scripts, and supporting materials. Ensure clarity, consistency, and alignment with the overall training objectives to enhance learner engagement and effectiveness. This ensures that every element of the training is well-planned and ready for development.

3.5. Navy Training Process Step Six Decision Meeting. The Step 6 Decision Meeting or Gate 4/5 serves as a review and approval of the detailed design concepts and prototype artifacts. Review the comment resolution matrix (CRM) for any actions identified for outstanding task completion tracking. The executing organization documents all meeting minutes in a memorandum for record (MFR) to include any action items identified. Documentation is important to ensure all outstanding tasks are completed. The CCA will approve the MFR to proceed to Step 7 Content Development.

NOTE: For RRL projects, NETC N00R will approve Gate 4/5 and authorize moving to content development. Changes to the approved content design after Gate 4/5 approval must be documented via MFR signed by NETC and approved by the RRL Executive Steering Committee (ESC).

CHAPTER 4
GRAMMER, STYLE, AND FORMATTING

4.0. Introduction. This chapter outlines essential grammatical, stylistic, and formatting guidelines for writing instructional content with clarity and precision. Adhering to these principles will support clear communication and effective instructional delivery.

4.1. Voice. Lessons will have a professional tone and are generally written in the active voice. Use the active voice in the following cases:

a. The agent causing the action is known.

b. The emphasis is on the agent rather than the action.

c. The text consists of steps or sequences that imply you as the agent.

Examples:

(1) Long division uses a vertical grouping.

(2) Pilots must memorize emergency procedures.

(3) Use the following steps to divide proper fractions:

- Invert the divisor.
- Multiply the dividend by the divisor.

4.1.1. Passive voice. Passive voice is acceptable in any of the following cases:

a. The agent is obvious, unknown, or deliberately not specified.

b. The emphasis is on the action rather than the agent.

c. The emphasis is on what is acted upon rather than the agent.

Examples:

(1) The multimeter may be used at various junction points.

(2) The document was written and uploaded to SharePoint.

4.2. Subject and Verb Agreement. Nouns must agree with their associated verbs in a sentence. Subjects and verbs must agree in number; both must be singular or both must be plural.

a. In the example below, the subject is a singular noun (box), so the verb (is) also needs to be singular.

Example: Ensure the box of screws is safely stowed.

b. In the example below, the subject is a plural noun (boxes), so the verb (are) also needs to be plural.

Example: Ensure the boxes of screws are safely stowed.

c. Errors in agreement with verbs can be avoided by determining the noun or pronoun that is the true subject of the sentence and then determining whether it is singular or plural. When a verb has multiple subjects that are connected by *and*, the subject and verb are plural. When a verb has multiple subjects that are connected by *or* or *nor*, the verb agrees with the subject closest to the verb.

d. Indefinite pronouns (e.g., someone, somebody, each, either one, everyone, or anyone) are considered singular.

Examples:

(1) Shantel and John are on their way.

(2) Isabella's or Maria's friends have your car.

(3) Neither the troops nor the general is allowed to disclose the information.

(4) Everyone is asking how the dinner went.

4.3. Noun and Pronoun Agreement. Nouns must agree with their associated pronouns in a sentence.

Examples:

(1) Each aircrew has its own kit.

(2) Officers must wear their safety vests.

4.4. That, Which, Who, or Whom. When using *that, which, who, or whom* to modify or clarify a statement, use the following guidelines:

a. Use *that* or *which* to lead into a clause that modifies or adds information to a statement about a thing or event.

b. Use *who* or *whom* to lead into a clause that modifies or adds information to a statement about a person.

c. *That* is used for a necessary piece of information about its antecedent. Which is used when the next phrase is incidental or supplementary.

d. Use *that* without a comma to add a restrictive or essential clause (a clause that restricts or defines the introductory statement or that cannot be deleted from the sentence without changing the meaning of the introductory statement).

e. In the example below, the use of *that* without a comma is correct because the clause restricts the meaning to positioned units only.

Example: Send a signal to all units *that* are in assigned positions.

f. Sometimes, *that* is unnecessary in the sentence. If it is not grammatically necessary in the sentence, the preferred construction is to omit it.

Examples:

(1) The word processor *that* is used most often is Microsoft (MS) Word (not preferred).

(2) The word processor used most often is MS Word (preferred).

g. Use *which* with a comma to set off a nonrestrictive or nonessential clause (a clause that can be deleted or changed to an independent sentence without changing the basic meaning of the original sentence). In the first example below, the use of *which* with a comma is correct because ensuring that every Commander receives the message can be changed to an independent sentence, apart from sending a signal to all surface ships.

Examples:

(1) The aircraft sends a signal to all surface ships, *which* ensures that every Commander receives the message.

(2) The arm, *which* is made of aluminum, is a three-piece assembly.

h. When using *which* with a preposition (e.g., on *which* or in *which*), the use of a comma depends on, and determines, the meaning of the sentence. The following examples (one restrictive and one nonrestrictive) could be correct, but the use of the comma in the nonrestrictive example changes the implication.

Examples:

(1) Restrictive: Stow the gear in the sail locker in *which* the whipping supplies are kept (this implies there is more than one sail locker; stow the gear in the one that has the whipping supplies).

(2) Non-Restrictive: Stow the gear in the sail locker, in *which* the whipping supplies are kept (this implies there is only one sail locker; stow the gear in it).

4.5. Who and Whom. Use who when a clause restricts or modifies a person or persons. Whether or not to use a comma depends on whether the clause is restrictive (essential) or nonrestrictive (nonessential). The following examples could be correct, depending on the intended implication of the statement.

Examples:

(1) Restrictive: Sailors who wear blue are less visible at night (implies Sailors can wear blue, but do not do so all the time. If they do wear blue, they are less visible at night).

(2) Non-Restrictive: Sailors, who wear blue, are less visible at night (implies all Sailors wear blue all the time; all Sailors are less visible at night regardless of what they wear).

4.5.1. To determine which pronoun to use, check for the word's function within the sentence, question, or clause.

a. *Who* is subjective case and is used for subjects and subject complements of a sentence.

Example: *The students who finished their test early went to the lab.*

b. *Whom* is objective case and is used as the object of verb or preposition.

Example: *The developer, whom you met at the door, is working with the process team.*

4.6. Effect and Affect:

a. *Effect*, when used as a noun, means result. It is rarely used as a verb (meaning to accomplish). Use effect when you can substitute the word result.

b. *Affect*, when used as a verb, means to influence or to change. It is rarely used as a noun (referring to feelings or emotions). Use affect when you can substitute the phrase do something to in the sentence.

4.7. Contractions. Use contractions sparingly. Use *cannot, should not, does not*, and *are not*, rather than their contractions. You may use contractions in certain types of frames (e.g., introductory and summary type frames), in scenario descriptions, and in dialogue.

Examples:

(1) Next, we'll discuss the components of the engine system.

(2) You're at 1,000 ft and a warning alarm sounds.

(3) Do not use contractions in instructional and technical frames.

Do not use contractions in instructional frames.

Example: The fuel pump cannot operate at high temperature.

4.8. E.g., and i.e.,. Use e.g., and i.e., in lowercase and with a period after each letter. These abbreviations have the following meanings:

a. e.g., – "for example" or "such as"

b. i.e., – "that is" or "in other words"

4.8.1. Use. E.g., or i.e., along with the information it introduces, must be enclosed in parentheses. A comma will always follow e.g., or i.e.,.

a. **Example:** Aileron deflection causes a high degree of adverse yaw (e.g., right wing down, nose left) with the flaps fully extended.

b. When in doubt, use the full wording; however, always use the full wording at the beginning of a sentence.

Example: For example, a multimeter is used at various junction points.

4.9. Etcetera. The use of this contraction must be minimized in technical or official government documentation. Typically, complete lists should be provided. The abbreviation etc. is permissible, but not at the beginning of a sentence. Use etc. in lowercase and with a period.

4.9.1. Use. When using etc. as part of a list within a sentence, add a comma and a space before it and a comma after it.

a. **Example:** Personal protective equipment includes gloves, helmets, vests, etc., and should be donned at all times.

b. When using etc. as part of a list at the end of a sentence, add a comma and a space before it. The period at the end of etc. also serves as the period at the end of the sentence.

Example: Personal protective equipment includes gloves, helmets, vests, etc. It should be donned at all times.

NOTE: If using for example, e.g., or i.e., at the beginning of a statement, do not also use etc. at the end of the statement.

4.10. Person. Generally, write using the third person. Third-person pronouns include it, they, their, and them. Third-person nouns include proper names, such as Robert, Nancy, and John. Do not use first person (e.g., I, me, mine, us, or we). Second person (i.e., you and imperative statements) can be used in self-paced courseware, student guides (SG), IGs, direction text, steps, and procedures, etc. Be sure that a noun agrees with its associated pronoun.

First, second, and third person may be used in dialogue.

Examples:

(1) First Person: I joined the team after I learned the results of its last meeting.

(2) Second Person: After completing this topic, you will be able to conduct a RADAR Set System operational test.

(3) Third Person: A pilot must study their flight procedures.

4.11. Imperative Statements. Imperative statements are always treated as complete sentences and must include end punctuation. Imperatives include statements of tasks, responsibilities, and things to do, as well as direct orders.

Examples:

(1) Set the engine to IDLE.

(2) Direct the students to E-2D Device 11H183.

(3) Select Next to continue.

(4) Follow the steps in the fault isolation table until the fault is isolated.

(5) After isolating and correcting the fault, complete the functional test.

4.12. Parallel Construction and Consistent Terminology. Present the same type of information for similar topics in a consistent order and keep multiple elements parallel in form. Use the same words to refer to the same things consistently. Consistency is particularly important when the subject matter is highly technical.

Examples:

(1) **Parallel Construction:** *We need to improve our customer service, streamline our processes, and enhance our marketing strategies*. (In this

sentence, the structure of each part is the same: improve, streamline, and enhance are all verbs in their base form, maintaining parallelism)

(2) **Consistent Terminology:** *During the meeting, we discussed the project timeline, the project budget, and the project team.* (In this sentence, the term "project" is used consistently across all items, ensuring clear and uniform terminology.)

NOTE: This standard includes the consistent use of articles (i.e., a, an, and the) associated with each term.

4.13. Include vs Are. In a sentence that lists a series of items or in a stem that introduces a bulleted list, use include as the verb if the list consists of examples but is not complete.

Example:

(1) Fasteners include nails, screws, and rivets.

(2) The three primary colors of light are red, green, and blue.

4.14. Style and Formatting

4.14.1. Acronyms and Abbreviations. The first time an acronym or abbreviation appears in the body of learning content within a SCO (section), spell out the term, followed by a space, followed by its acronym or abbreviation in parentheses. Thereafter, use only the acronym or abbreviation, and do not alternate between using the acronym or abbreviation and the spelled-out term. When spelling out acronyms or abbreviations, apply title-case standards. The only exceptions are units of measure. If a spelled-out term is plural, add a lowercase *s* to the acronym without an apostrophe. Note that some acronyms represent plural terms and do not require an added *s*.

Examples:

(1) SME

(2) Visual Flight Rules (VFR)

4.14.2. Acronyms and Abbreviations in Instructor Facilitated Interactive Training and Self-Directed Interactive Training. For each section within IFIT and SDIT courseware, first spell out the term, followed by a space, and then followed by its acronym or abbreviation in parentheses. Thereafter, use only the acronym or abbreviation, and do not alternate between using the acronym or abbreviation and the spelled-out term.

First usage may be any of the following:

a. Title (e.g., section or screen)

b. EO

c. Discussion Point (DP) (applies only to IFIT)

d. Instructional content

e. Graphic or other media

If the spelled-out acronym with the acronym in parentheses does not fit the on-screen space the first time it would be used in a title (e.g., module, lesson, section, or screen), use the acronym by itself. Then, spell it out in the instructional content.

4.14.3. Acronyms and Abbreviations in the Instructor Guide and Student Guide. In the IG, spell out acronyms the first time they appear in each section, which includes any of the following: section title' TO and/or EO, and DP.

In SG Outline Sheets, Information Sheets, Assignment Sheets, Job Sheets, Problem Sheets, and Diagram Sheets, spell acronyms out the first time they appear in each sheet. In the SG Outline Sheet, items in the lesson outline match the section names or main-level DPs from the IG but update for acronym use. Use only acronyms that exist in government furnished information (GFI) reference materials.

4.14.4. Acronyms and Abbreviations in Assessments. In assessments, the first time an acronym or abbreviation appears in a question, spell out the term, followed by a space, followed by its acronym or abbreviation in parentheses. Thereafter, use only the acronym or abbreviation, and do not alternate between using the acronym or abbreviation and the spelled-out term. If the first appearance occurs in an answer option, spell out each term in each answer option in which it appears. If an acronym is mentioned only once, it will not be introduced unless it is widely used in the Fleet.

4.14.5. A and An. The proper use of the article *a* or *an* with an acronym depends on the pronunciation when the acronym is spoken. If the spoken version sounds like it begins with a vowel, use an; otherwise, use a.

Examples:

(1) The acronym for "learning objective" is usually spoken by stating each letter separately ("L- O") rather than as the word "low," so write it as "an LO."

(2) The acronym for "Statement of Work" is usually spoken as the word "sow" rather than the separate letters "S-O-W," so write it as "a SOW."

4.14.6. Ampersand. Use and rather than the ampersand (&) in instructional text and screen titles. Use the ampersand only in the following instances:

a. Navy publication titles in which the ampersand is deliberately used

b. Acronyms or phrases in which the ampersand is commonly accepted by the Navy

c. An entity's name if the ampersand is part of the entity's official name

d. Screen titles, media, charts, or tables when space is limited

Examples:

(1) Summary and Review

(2) Naval History & Heritage

(3) Indications and Warnings

4.14.7. Voice Calls. Use all capital letters for voice calls and enclose the voice call in double quotation marks.

Example: The student said "STAND BY UNTIL ALL CLEAR" over the sound-powered phone.

4.14.8. Bulleted and Numbered Lists. A list consists of two or more items that follow an introductory stem. A single item is not considered a list and will not have a bullet symbol or number. Do not use a stem to introduce a single bulleted or numbered item. In such a case, incorporate the item into a sentence.

Precede list items with a bullet symbol when rank or sequence is not important. Precede list items with a number or letter when rank or sequence is important. Numbered lists use a period after the number and one space between the period and the first word, when possible.

Insert a line space after the introductory stem and after each list item. If an item takes up more than one line, then the first letter of the second line must line up with the first letter of the first line. List items vertically down the screen, not horizontally across the screen.

Examples:

(1) The E-2D also has the following secondary flight controls:

- Aileron trim surfaces
- Elevator trim tab
- Rudder trim tab

(2) Perform the following procedure:

1. Hold the brakes.
2. Set the power to IDLE.
3. Set the armament switch to OFF.

(3) Exceptions may include the following:

- For IGs and SGs, a subtopic under a heading may consist of a single bulleted or numbered item.
- For IFIT and SDIT, standard courseware screens may contain a single bulleted item.

4.14.8.1. Introductory Statements for Lists. An introductory statement must end in a colon to introduce the list.

Examples:

(1) The following actions can help determine which phase is faulty:

- Remove external power.
- De-energize the generator.
- Check each bus with an ohmmeter.

(2) To perform a daily inspection:

1. Check for the correct inflation pressure using a tire gauge.
2. Follow the Maintenance Instruction Manuals or the placard attached to the landing gear doors or struts.

4.14.8.2. Capitalization and Punctuation for List Items. Table 3 provides capitalization and punctuation standards. Capitalization and punctuation for list items depend on the type of list, including:

a. Sentence fragment

b. Complete sentence

c. Imperative statement

d. Fragment with complete sentence

e. Fragment with definition

Table 3: Capitalization and Punctuation Standards

List Type	Standard	Example(s)
Sentence fragment: Each list item is a sentence fragment, which may or may not be combined with the introductory stem to make a complete sentence.	Use sentence case. Do not use a period at the end of each item.	In the E-2D, the primary flight controls consist of the: • Ailerons • Elevator • Rudder
Complete sentence: Each list item is a complete sentence that may or may not complete the introductory stem.	Use sentence case. Use a period at the end of each item.	The Chief of Naval Air Training states: • Safety is the primary consideration governing operations and training.
Imperative statement: Each list item is an imperative statement that can be construed as a step, action, task, or responsibility.	Use sentence case. Use a period at the end of each item.	To abort takeoff, follow these steps: 1. Set the power to IDLE. 2. Apply brakes, as required.
Fragment with complete sentence: Each list item begins with a fragment, followed by a complete sentence.	Use sentence case for the fragment and use sentence case for the complete sentence that follows. Use an en dash, with a space on each side, after each fragment. Use a period at the end of the complete sentence.	Be aware of the following range areas: • Firing line – This is the solid or dashed yellow line painted on the range floor, indicating the various distances from the target line. • Downrange area – This is the area on the range between the firing line and the backstop.
Fragment with definition: Each list item is a term with a definition that is not a complete sentence.	Use sentence case for the fragment and begin the definition that follows with a lowercase letter. Use an en dash after each item, with a space on each side. Do not use a period at the end of the definition.	Students may be classified as one of the following: • Novice – no experience • Student – minimum experience • Expert – extensive experience

4.14.8.5. Parallel Structure for List Items. Use parallel structure (similar style and syntax) within a bulleted list for consistency and ease of reading. Generally, ensure that every list item:

a. Is either a fragment or a complete sentence

b. Contains a verb or does not contain a verb

c. Uses the same verb form (e.g., person, number, or tense)

d. Presents a similar amount and type of information

e. Presents similar information in the same order

If each list item begins with the same word or phrase, incorporate the word or phrase into the introductory stem instead.

Example: The E-2D's primary flight controls are the:

- Ailerons
- Elevator
- Rudder

4.14.9. Spacing for Punctuation. Use a single space after a period, question mark, or any other punctuation.

4.14.10. Commas

a. **Commas in a Series.** Use commas to separate three or more items in a sentence series. Include a comma before the conjunction and or preceding the last item in the series. Use the following guidelines:

(1) Use the serial comma to help prevent confusion, ambiguity, and unintended meaning.

(2) If a list item contains internal commas, separate each list item with a semicolon.

(3) When the series contains an item consisting of words paired by their own conjunction within the clause, ensure that the comma placement makes the paired relationship clear.

Examples:

- Frequent visual inspections, periodic operational checks, and mechanical repairs can reduce complications.

- The keys allow the operator to perform a primary hook, which engages the gears; display the menu, which presents several options; and invoke the function, which guides the aircraft.
- Students receive flight training in the front seat to create and build skills in VFR situational awareness, VFR scan, and flight procedures and their execution.

NOTE: When using an extensive series of items in a sentence, a bulleted list may be more appropriate to avoid a run-on sentence.

b. **Comma in a Compound Sentence with a Conjunction.** A compound sentence contains two or more independent clauses; an independent clause contains a subject, a verb, and a complete thought. If a compound sentence contains two independent clauses joined by a coordinating conjunction (e.g., for, and, but) and the clauses have different subjects, there must be a comma before the conjunction.

Examples:

- The pilot flies the E-2D, and the Naval Flight Officer uses the RADAR.
- The latch secures the door, but the knob secures the panel.

c. **Comma for a Deliberate Pause.** If a sentence contains two clauses joined by a conjunction, and the clauses have the same subject, a comma is optional. A comma may be used to indicate a deliberate pause.

NOTE: If a sentence is an imperative, the subject (you) for each independent clause is understood.

Examples:

- The ship departed on the morning tide and soon cleared the harbor (correct with no pause).
- The ship departed on the morning tide, and soon cleared the harbor (correct with a deliberate pause).
- Right-click the image and select Copy (correct with no pause).
- Right-click the image, and select Copy (correct with a deliberate pause).

NOTE: If *and then* is used to join two imperative clauses, a comma must be used before the conjunction.

Example:

If the power is set to IDLE, then apply the brakes.

d. **Comma with Dependent and Independent Clauses**. An independent clause contains a subject, a verb, and expresses a complete thought. A dependent clause contains both a subject and verb but is not a complete sentence because it indicates more to come. If a compound sentence contains a dependent and an independent clause, use the guidelines below.

Use a comma after the first clause if the first clause is dependent.

Example:

When the tide is high, the ship can depart.

Do not use a comma after the first clause if the first clause is independent.

Example:

The ship can depart when the tide is high.

e. **Commas with Introductory Phrases.** Use a comma after transition words or expressions (e.g., then, indeed, nevertheless, however, moreover, of course, next, therefore, eventually, or similarly) when a pause is needed for clarity or for emphasis.

Example:

Nevertheless, John found himself at a loss for words.

Short introductory prepositional phrases do not need to be followed by a comma, except when they are distinctly parenthetical (e.g., explain or modify a thought).

Example:

On Saturday the offices are closed.

4.14.11. Colons. Use colons after an introductory phrase to present a list of bulleted or numerical items or an explanation.

4.14.12. Semicolons

a. Use a semicolon to separate closely related independent clauses.

Example:

The students studied hard for the test; they were motivated by fear.

b. Use a semicolon to separate elements in a list when one or more of those elements already contain a comma.

Example:

There were people from Bangor, Maine; Hartford, Connecticut; and Newport, Rhode Island.

c. Avoid the use of semicolons to separate extensive independent text clauses by writing brief, succinct sentences. Do not use a semicolon to introduce a list.

4.14.13. Forward Slash

a. Use a forward slash in the following cases:

(1) In a Warning, Caution, or Note to keep the text verbatim, as necessary

(2) When one or more scenarios may occur and are not exclusive (specifically, and/or can be used)

(3) When GFI dictates the use of a forward slash in the name of a system or component (e.g., Receiver/Exciter [R/E])

b. When using a forward slash to separate two words, do not insert a space on either side of the slash, unless the content is copied verbatim from a:

(1) Publication title

(2) Equipment label

(3) System display

(4) Software menu

Examples:

- The target audience for the Office of Artesia Operations division is federal employees and/or law enforcement personnel.
- Maritime Warfare/Combat Systems
- SOW (N00189-10-D-Z040 / DO 0008)

4.14.14. Hyphens

a. Use a hyphen to link words to form a compound word. Do not use a hyphen or a double hyphen to indicate a break or pause.

Examples:

- Each unit is identified by a 12-digit alphanumeric code.
- A pop-up dialog box will display upon selection.

b. Never use a hyphen to continue a word from the right edge of a line of text; move the word down to the next line.

c. Use a hyphen to connect words used as compound adjectives preceding nouns. Use a hyphen to create a compound word.

Examples:

- The students used the PTT
- An out-of-date reference

d. When a term of measurement is used as a modifier, put a hyphen between the number and the term of measurement.

Example:

- A 15-foot (ft) board

e. Use a hyphen to add certain prefixes to words, such as when a prefix comes before a capitalized word or when the prefix is capitalized (e.g., non-English or T-formation).

f. Generally, use a hyphen when the prefix ends with the same letter that begins with the word. Do not leave a space between the hyphen and the character on either side of it (e.g., de-emphasize or anti-intellectual).

NOTE: Exceptions include words such as *unnatural or coordinate*. Also, if the use of a hyphen would cause confusion as in the case, +28-VDC, it is permitted not to use the hyphen so it would be written, +28 VDC.

4.14.15. Dashes. The only acceptable dash is the en dash (-). Do not use the em dash (—). Use commas or parentheses, not dashes, to indicate a break or pause in a sentence. Use an en dash to do the following:

a. Indicate a range of numbers; do not include a space on either side of the en dash.

b. Separate a fragment from a definition in a bulleted list; include a space on each side of the en dash.

Examples:

(1) The threat of midair collision is greatly reduced by scanning an area 60–90° to the left and right of center.

(2) Students may be classified as:

- Novice – no experience
- Student – minimum experience

4.14.16. Apostrophes

a. Use an apostrophe before the *s* (’s) to show possession at the end of a singular noun. Use an apostrophe after the *s* (s’) to show possession at the end of a plural noun.

Examples:

- The Sailor’s uniform.
- The Sailors’ duty stations or the United States’ role.

b. Apostrophes are used in contractions to show where letters are omitted.

Example:

- The officer stated, “The Sailor doesn’t wear a cover indoors.”

4.14.17. Italics

a. Use italics for call signs and dialogue.

Examples:

- Their call signs are *Jester, Monster, and Stubby.*
- The officer asked*, “When will construction be completed?”*

b. When a word or term is not used functionally but is referred to as the word or term itself, use italicized text.

Example:

- The term *Bingo* is used to describe minimum fuel for a comfortable and safe return to base.

4.14.18. Quotation Marks. Table 4-2 provides guidelines for double quotation marks. Use double quotation marks for dialogue and when referring to a voice call. Do not use double quotation marks to emphasize a word or phrase in the instructional text or around equipment names or numbers.

NOTE: Do not copy and paste quotation marks from MS Word or any other program, including Notepad, into an authoring tool, because the formatting stays with the character.

CHAPTER 5
GLOBAL CONTENT STANDARDS

5.0. Introduction. This chapter outlines essential formatting, style, and compliance guidelines for the development of instructional and training materials. It establishes standards for text capitalization, title formatting, assessment development, media naming and description conventions, continued screen labeling, hyperlinking, classification markings, and accessibility compliance. By adhering to these conventions, CDs ensure consistency, clarity, and alignment with Department of Defense (DoD) requirements, including Section 508 accessibility standards and Controlled Unclassified Information (CUI) guidelines. These standards support effective communication and facilitate quality assurance during the instructional material development process.

5.1. Text Formatting

5.1.1. Capitalization for Military Terms. Initial capitalize the following:

a. An occupational title when used as a generic term (e.g., Commander, Safety Officer, or Task Force Commander)

b. The words Sailor or Marine when the reference is to a member of the U.S. Navy or the Marine Corps

c. An official title or rank when referring to the officer's command title, such as Pilot, Copilot, RADAR Officer, Combat Information Center Officer, Leading Chief Petty Officer, Leading Petty Officer, or Petty Officer Third Class

d. The name of a Navy or other service unit, such as Training Air Wing Six, Training Squadron Ten, or Training Squadron Eighty-Six

e. The words Navy and Naval when referring to the U.S. Navy

f. When referring to a non-U.S. navy or generic naval activities, lowercase the words navy and naval

g. Titles of the Federal Government, its units, and their shortened forms (e.g., U.S. Government, U.S. Navy, and Federal Government)

h. Names of countries and their divisions when used as proper names, as parts of proper names, or as proper adjectives (e.g., United States, the Nation, the Republic)

i. Names of regions, localities, and geographic features when used as proper names (e.g., the West and the Middle East)

NOTE: Do not capitalize terms used to denote direction, time zone, or position (e.g., north or western).

5.1.2. Capitalization for Titles. Follow these capitalization standards for all screen titles.

a. Initial cap the following:

(1) The first and last words in the title

(2) All nouns, pronouns, adjectives, verbs (including *is* and *are*), and adverbs

(3) Prepositions of four or more letters

(4) Hyphenated compound words (e.g., Low-Level Navigation), unless the word after the hyphen is an article, preposition of three letters or fewer, or conjunction

b. Do not initial cap the following:

(1) Articles (*a, an*, and *the*)

(2) Coordinate conjunctions (*and* and *or*)

(3) Prepositions of three or fewer letters

(4) The word *to* in infinitives (e.g., How to Check the Equipment)

(5) The word *continued* in parentheses when added to the end of the title to indicate the continuation of a concept started on the previous screen

NOTE: This rule applies to lesson titles, screen titles, pop-up titles, document or publication titles, proper nouns, etc.

5.1.3. Capitalization of U.S. Ship Names. Per the Navy Correspondence Manual and SECNAV M-5216.5, U.S. Navy Ship Names will be capitalized.

Example:
Standard Navy Distribution List Entry
COMMANDING OFFICER
USS CHUNG-HOON (DDG 93)
FPO AP 96662-1302

Example:
From: Commanding Officer, USS BLUE RIDGE (LCC 19)

Example:
From: Chief of Naval Operations
To: Commanding Officer, USS JOHN C STENNIS (CVN 74)

5.1.4. Capitalization for Equipment Controls and Menu Options. Reference all controls, indicators, buttons, and switches in the instructional text just as they are labeled on the equipment. Often, these words are in all caps. However, do not use the label format when describing the action or purpose of the label.

Examples:

- *Turn the switch to the START position.*
- *Turn the switch to start the engine.*

NOTE: For software, reference all menu and submenu options in the instructional text just as they appear in the software.

5.1.4.1. Icon Text. If text is used to describe a graphic or icon, the text must precisely describe (be identical to) what appears in the image.

5.1.5. Capitalization for Components, Parts, Systems, and Subsystems. Use title case when referencing major components, parts, systems, subsystems, compartments, and circuit breaker panels. For specific information, refer to GFI. If GFI is inconsistent to the point that you cannot identify a clear preference, title case the term. Title case standards need to be consistent within the lesson.

5.1.6. Capitalization in Graphic Labels and Captions. Follow the same conventions as those for titles when capitalizing the words in a media element. The following are exceptions:

a. For abbreviations in media, such as m for meter, mph for miles per hour, or kW for kilowatt, do not modify capitalization to meet the title case rule.

b. If a graphic label (either for a component of the graphic or the entire graphic) is a complete sentence, use sentence case. End the sentence with a period.

5.1.7. Capitalization for Sections, Tables, Figures, and Steps. Capitalize the term Section, Table, Figure, or Step if followed by a number.

Examples:

- *Section 1*

- *Table 4-5*

5.1.8. Block Diagrams and Schematics. The following standards apply to block diagrams and schematics that are recreated from GFI:

a. A block diagram or schematic that is not interactive and does not require a zooming feature follows the normal acronym or abbreviation rules:

(1) If the acronym or abbreviation is used in the instructional content prior to the schematic displaying, then the acronym or abbreviation alone is used on the schematic.

(2) If the acronym or abbreviation is used for the first time on the schematic, it must be spelled out, followed by the acronym or abbreviation in parentheses, within the schematic. It is not spelled out again in instructional content.

b. A block diagram or schematic that is interactive or requires a zooming feature is developed as follows:

(1) Use all caps for labels.

(2) Incorporate a pop-up box legend to support the acronyms and abbreviations used in the block diagram or schematic. All acronyms and abbreviations are listed in alphabetical order in the legend in all caps, regardless of whether they were previously spelled out in the topic. A CLOSE button is used in the pop-up legend.

(3) If an acronym appears for the first time in a legend, spell it out again (with the acronym in parentheses) the first time it appears in the instructional content.

(4) Display the acronym or abbreviation (not the spelled-out version) on the block diagram or schematic.

(5) Do not use punctuation in the legend or schematic.

5.1.9. Warnings, Cautions, and Notes. Warnings are used to alert the student about an operating procedure, practice, or condition, etc., that may result in injury, death, or loss of system if not carefully observed or followed. Cautions are used to alert the student about an operating procedure, practice, or condition, etc., that may result in damage equipment if not carefully observed or followed. A note is used to highlight essential procedures, conditions, or statements.

a. Warnings are typed in red bold-faced text in all capital letters (e.g., **WARNING**). Separate Warnings from the body of the text with a vertical space before and after.

b. Cautions are typed in yellow bold-faced text in all capital letters (e.g., **CAUTION** – black background only used to make the yellow letters more visible in this document). Separate cautions from the body of the text with a vertical space before and after.

c. A note may either precede or follow the text and is bolded (e.g., **NOTE:**).

For both IFIT and SDIT, warnings, cautions, and notes display in a separate pop-up box. If a combination of warnings, cautions, and notes appears on a single screen, always present them in this order: warnings, cautions, and then notes. See Section 6.3.3.7, Instructional Icons, for examples of warning, caution, and note icons.

5.2. General Assessment Guidelines. Assessments are critical in the development of training material. Assessments create learning events/activities for the student that develop critical thinking and problem-solving skills needed to support the spectrum of the warfighting continuum. Develop testing at the course, module, lesson TO, and/or section EO level of training delivery. Clearly identify all testing and testing strategies in the IMDP and later the testing plan to support the SG, IG, and IMI. Identify key factors during IMDP development to include placement, difficulty, and frequency of testing. The defined testing strategy must be clearly recognizable during content and storyboard development for learning center (LC) review. As part of these testing strategy development efforts, pretests, practice questions, and quizzes using the learning assessment system and/or assignment, problem, and job sheets will be encouraged.

a. Do not use:

(1) Questions that have only true and false as answer options or a multiple-choice question with only two responses.

(2) Questions written in the negative format.

(3) Questions that refer to answer selections such as “both a and c are correct”; answers will be randomized.

(4) End punctuation for answer options that are fragments.

(5) Negative phrases in the stem.

- If a negative phrase must be used, boldface the phrase. Never use a negative phrase with negative options.

(6) *All of the above* or *None of the above* answer options.

b. Title each assessment question screen with the title of the module, lesson, or section being covered. Title each knowledge check question screen with "Knowledge Check." The term "Knowledge Check" is intended only for knowledge checks internal to a SCO.

c. Include the number of the question the student is on out of the total number that will be given: # of ##.

d. Capitalize the first letter of each answer option unless lowercase is needed for a Fill-in-the-Blank question.

e. Use parallel construction for answer options.

f. Make answer options approximately equal length.

g. Use end punctuation in the answer options that are complete sentences (including sentences with implied nouns).

h. Use only one blank, and include any necessary punctuation in the question, not in the answer options for a Fill-in-the-Blank question.

i. Use scenario-based questions where possible.

j. Use the questions to assess the objectives in the lesson.

5.2.1. Types of Testing Data Captured. When building assessments factor these items into the testing strategy:

a. Assigned passing score.

b. Duration of testing.

c. Weights of each test question.

d. Number of tries.

e. Questions with mandatory delivery.

f. Shuffle to re-arrange test questions and responses.

g. Number of assessment items and types.

5.2.2. Types of Assessment Feedback. IFIT and SDIT IMI products will utilize two types of feedback: positive and corrective. Positive feedback informs the student that they answered the question correctly. Corrective feedback, on the other hand, informs the student that they answered the question incorrectly and offers the student remediation. Remediation will include identification of training materials that can be used to review the missed information. This could include identifying and/or linking to the area of the SG, publication, or information sheet that the student can review. To add variety, the

positive and corrective feedback statements will vary from question to question. Table 4 provides sample statements for each type of feedback.

Table 4: Sample Statements for Assessment Feedback

Type	Sample Statements
Positive Feedback	Great job. [Statement about why they got the answer correct] Good job. [Statement about why they got the answer correct] Good work. [Statement about why they got the answer correct] Great work. [Statement about why they got the answer correct] Excellent. [Statement about why they got the answer correct] That is right. [Statement about why they got the answer correct]
Corrective Feedback for Incorrect Answer on First Attempt	That is incorrect. [Here is a hint…]. Try again. That is partially correct. [Here is a hint…]. Try again. That is not entirely correct; some of the items are not matched correctly. [Here is a hint…]. Try again.
Corrective Feedback for Incorrect Answer on Second Attempt	That is incorrect. The correct answer is X. [Provide a rationale for each incorrect answer as applicable.] That is not it. The correct answer is X. [Provide a rationale for each incorrect answer as applicable.] Sorry, that is not right. The correct answer is X. [Provide a rationale for each incorrect answer as applicable.]

5.3. Media File Naming Conventions. For file naming, use alphanumeric characters that represent the structure of the content, down to the screen number, if possible, followed by an underscore and a short description of the graphic.

In the three examples below, the lesson is *C1101*, the screen is *4251*, and the description is *GEN*:

Example: C1101_4251_GEN

For reference media, the media name matches whatever the final file name will be, with an underscore and REF at the end.

Example: C1101_4251_GEN_REF

For remediation media, the media name matches whatever the final file name will be, with an underscore and REM at the end.

Example: C1101_4251_GEN_REM

5.4. Media Descriptions for Reviewers. Write media descriptions in all complete sentences, or all fragments. Adhere to the following guidelines:

a. Identify the type of media (e.g., photo, video, line drawing, or collage).

b. For still media, provide detailed information identifying effects, such as labels, leader lines, highlights, and callouts.

c. For animations, describe the actions of the user, as well as the resulting actions of the animation**.**

5.5. Media Descriptions for Graphic Artists. Write media descriptions in complete sentences, and adhere to the following guidelines:

a. Identify the type of media (e.g., photo, video, line drawing, or collage).

b. Identify the media size and layout.

c. For still media, provide detailed information identifying effects, such as labels, leader lines, highlights, and callouts.

d. For animations, describe the actions of the user, as well as the resulting actions of the animation.

e. Include reference media for the artist.

f. Include the final media file name.

5.6. Continued Screens. If a concept is continued from one screen to the next screen and the screen title is the same, add the word continued in parentheses to the end of the title to indicate the continuation of the concept. Do not enter a comma between the end of the title and the word continued.

Example: Ground Safety (continued)

5.7. Internal Hyperlinks. Use a hyperlink to link instructional text to a branching screen, a pop-up, or an action on the initial screen to provide additional information about a term or concept. Table 5 provides examples of internal hyperlinks. The screen title of a branching screen or pop-up must match the words of the hyperlink on the main content screen. When a hyperlink contains the first occurrence of an acronym or abbreviation, include both the spelled-out term and the acronym or abbreviation in the hyperlink, and include both in the title of the corresponding branching screen or pop-up.

Table 5: Internal Hyperlinks

Hyperlink Text	Branching Screen/Pop-up Title
POWER panel	POWER Panel
Connecting the cable	Connecting the Cable

5.7.1. Formatting and Punctuation for Hyperlinks. Use the default application formatting for hyperlinked text (e.g., underlined, blue text). Do not apply the hyperlink format to punctuation.

Examples:

(1) Active indicators require operator response**.**

(2) Active indicators require operator response**.**

(3) Active indicators require the following operator responses**:**

5.7.2. Hyperlinking Steps. If a procedure is presented as a bulleted list with hyperlinked steps, use the following conventions:

a. Start each step with *Step X* and a colon.

b. Hyperlink the text before the colon.

c. Start each step with a verb unless an initial conditional criterion is required.

d. End each step with a period if it is a complete sentence (including imperative sentences with implied nouns).

e. Use sentence case, not initial caps.

Examples:

Step 1: Locate the battery.

Step 2: Test the battery.

Step 3: Log the results if the battery is within specification.

5.8. Classification Markings. All training material including without limitation, curriculum control documents, training guides, IMI, and any other applicable training material, developed will be marked including portion markings. Marking convention will be in accordance with these DoD instructions (DoDI):

a. DoDI 5200.48, CUI, March 6, 2020

b. DoD CUI Marking Job Aid, CUI Markings, October 18, 2021

c. DoD Manual 5200.01 Volume 2, DoD Information Security Program: Marking of Information, July 28, 2020

5.8.1. Develop content at the appropriate classification level found in the source data, in accordance with these instructions:

a. NETCINST 5510.1F, *Information Protection Policy for NETC Learning Management Systems in Multiple Networks and Application Environments*, 5 APR 2024

b. DoDM 5200.01, Volume 2: *DoD Information Security Program: Marking of Classified Information*, February 24, 2012, Incorporating Change 4, July 28, 2020

c. SECNAV M-5510.36B, *DoN Information Security Program*, 12 July 2019

5.8.2. Templates for all courseware deliverables will be marked as required. Ensure the security classification, classification marking, and metadata align with each other at the paragraph and section level. All courseware will be marked and recorded in metadata at the section level. Banner marking color will be per Table 6.

Table 6: Banner Marking Color

Color	State	Hex Value	RGB Value	Font Color
	Unclassified	#007a33	0, 122, 51	white
	Controlled (CUI)	#502b85	80, 43, 133	white
	Confidential	#0033a0	0, 51, 160	white
	Secret	#c8102e	200, 16, 46	white
	Top Secret	#ff8c00	255, 140, 0	black
	Top Secret//SCI	#fce83a	252, 232, 58	black

5.8.3. Distribution Statement. The Distribution Statement appears at the beginning of each lesson. The distribution statement must correspond to the Security Impact Level of the curriculum and come from *DoDI 5230.24*: *Distribution Statements on Technical Documents*. If the training material is CUI, refer to the CUI registry located at: https://www.dodcui.mil/ to determine the reason to add to the distribution statement. In many cases, it will be Controlled Technical Information, but other categories may

apply. The controlling DoD office is NETC, Attention: N7, 250 Dallas Street (Building 628), Pensacola, Florida 32508-5220. Enter the date the TPP was approved.

5.9. Section 508 Compliance. Section 508 compliance refers to a set of standards and guidelines in the United States that ensure electronic and IT (such as websites, software, and hardware) is accessible to people with disabilities. The requirements are part of the Rehabilitation Act of 1973, specifically Section 508, which mandates that federal agencies and contractors make their electronic information and technology accessible to individuals with various disabilities (e.g., vision, hearing, and motor disabilities). Use the following items to check for Section 508 compliance:

a. Title frames with text that facilitates frame identification and navigation.

b. Apply Alt text equivalents to all images and animations.

c. Highlights, color-indicated hotspots, and meaningful text must use contrasting color from the rest of the images/background unless client style standards prescribe colors.

d. All content must be in English.

e. Headings must be clearly marked per style conventions with a title that facilitates frame identification and navigation.

f. All data tables must have clearly identified row and column headers.

g. Equip all videos and animations with user-controlled, embedded, and synchronized closed captions.

h. Use contrasting colors from the rest of the images/background for all highlights, color-indicated hotspots, and meaningful text unless client style standards prescribe colors.

This list is not all inclusive, refer to: https://dodcio.defense.gov/DODSECTION508.ASPX for additional Section 508 conformance criteria.

CHAPTER 6
CONTENT DEVELOPMENT

6.0. Introduction. The Content Development, Testing and Evaluation, and Content Delivery is Step 7 in Phase III of the NTP process. During this step, formal schoolhouse course materials are developed, tested on the NeL Government Content Acceptance Testing (GCAT) site, instructors are trained, and the new/revised course is piloted. Non-formal training development projects, such as in-service training materials, may be developed during this phase without an approved TPP, training agency, or training task list. The CCA specifies the required deliverables for non-formal schoolhouse training.

6.1. Course Materials. Course materials are the resources used by instructors and students to facilitate learning in a course. Course materials vary based on the subject, format, teaching method, and level of the course. Common types of course materials include:

a. Print Materials: Printed or digital books, articles, and other reading materials that provide foundational knowledge on the subject.

b. IMI: IMI products include instructional software and software management tools used in support of instructional programs.

c. Assignments and Exercises: Tasks, quizzes, problem sets, and other activities designed to check students' understanding and provide practice.

d. Multimedia Resources: Combine multiple forms of media, such as text, images, audio, and video to deliver information or experiences.

e. Online Resources: Digital tools, websites, or learning platforms (like Blackboard, Moodle, or Google Classroom) that host course content, discussions, or additional resources.

f. Instructor and Student Guides: Educational resources designed to facilitate teaching and learning. They provide structured information, instructions, and strategies to help both instructors and students effectively engage with course content.

g. Support Materials: Support materials are resources designed to enhance learning and reinforce concepts. They can cater to different learning styles and are often tailored to the LOs. Examples include:

(1) Visual Aids: Posters, charts, and infographics.

(2) Role-Playing and Scenario Materials: Scripts and prompts, case studies, and flashcards

(3) Collaboration Tools: Discussion boards for group engagement, shared documents, and whiteboards (digital or physical) for brainstorming or visual demonstrations.

6.1.1. Training Materials. Although the terms "course materials" and "training materials" are sometimes used interchangeably, training materials generally refer to resources designed for hands-on skill development and practical application. Course materials tend to focus on building a broad understanding of academic content, whereas training materials emphasize the acquisition of specific, practical skills. Some examples include:

a. TTE: PTTs, lab equipment, simulators, and XR systems.

b. Laboratory or Practical Materials: Handouts, quick reference guides (SPST), equipment, software, or manuals needed for practical exercises.

c. Hands-On Materials: Toolkits, samples, and job aids.

6.2. Instructor Guide. The IG, which is based on the lesson outline that was developed during the design phase must provide specific definition and direction to the instructor on LOs, equipment, instructional media requirements, and the conduct of training. Teaching techniques and methods, exercises, and applications that will enhance the learning process should be included in the IG.

6.2.1. IGs are composed of front matter, modules, lessons, sections, DPs, and related instructor activities (RIA) assembled into unclassified volume(s) where possible.

a. When course is classified, utilize RIA to direct instructors to classified technical references. Classified material must be kept secured per SECNAV M-5510.36B.

b. The IG provides the following:

(1) Primary guidance for conducting training.

(2) Programming for the use of training materials.

(3) LOs (terminal and enabling).

(4) An outline of instructional materials to be taught in a logical and efficient manner.

(5) Specific equipment and instructional media requirements, and guidance for conducting the course.

c. The elements of the IG are based upon Gagne’s Nine Events of Instruction.

(1) Introduction:

(a) Gaining the attention of the students.

(b) Informing the student of the objective.

(c) Stimulating recall of prior learning.

(2) Presentation:

(a) Presenting the content.

(b) Providing learning guidance.

(3) Review and Summary:

(a) Eliciting the performance.

(b) Providing feedback.

(4) Application:

(a) Assessing the performance.

(b) Enhancing retention and transfer.

6.2.2. The IG will reflect IFIT. Instructor provided content delivery mode in which content is deployed via more traditional environments (e.g., classroom), distance learning, or in mobile training systems. A facilitator or instructor presents this content live using skill/knowledge application-based training with student interaction in either in-person or virtual settings. IFIT can take the form of labs (e.g., equipment-based, or virtualized simulations) and is established at FCAs, LSs, or other locations that are immediately accessible to Sailors. Interactive multimedia, as defined below, and/or student exercises (job, assignment, and problem sheets) can be combined and integrated with the instructor to provide an engaging learning event for the student.

6.2.3. Instructor Guide Revision. If components of an IG are modified as part of a revision, an alpha character starting with "A" for the first revision will follow the CIN on the IG cover page and a new publication date will be shown in parentheses under the original publication date. A total list of characters is in the current LMS platform. A new "List of Effective Elements" will be inserted, as all outstanding changes will be picked up by a revision. Revised lesson(s)/section(s) will be printed and replaced as an entirety, with the alpha character appended to the CIN at the top of each page (e.g., A-433-0023A).

6.2.4. Instructor Guide Change. If components of an IG are modified as part of a change, the term "Change," with a number starting with "1" for the first change, will follow the CIN on every page affected by the change. All changes are entered on the "Change Record" page (e.g., A-433-0023 Change 1). Interim changes are entered by the

instructor as part of personalization. Instructors can apply pen-and-ink changes only and cannot delete or modify information. Technical changes are usually received as a package of replacement pages. Each entry is noted on the Change Record page. The CCMM retains all interim and technical changes for inclusion in later revisions or changes as appropriate.

6.3. Student Guide. The SG is a collection of instructional sheets designed to guide students through the course. Instructors utilize various tools to encourage interaction with supplementary materials, helping students organize their notes, translate abstract concepts into concrete images, and apply their newly acquired skills and knowledge. SGs may be available in electronic fillable formats (e.g., . Portable Document Format (pdf)) for use on laptops, tablets, or other electronic devices. The SG contains knowledge and skill objectives the student is to attain upon successful completion of the material. The SG consists of front matter and instruction sheets.

6.3.1. Front Matter. The front matter of the SG consists of the following elements:

a. Student Name Page (Optional).

(1) Optional at the CCMM's or the CCA's direction

(2) Is used to track copies or to hold a student accountable for the SG.

(3) If required, the Student Name Page provides space to record between five and ten student names and class number.

(4) Each volume of the SG may have a Student Name Page or only those volumes which must be controlled.

b. Cover (Optional)

(1) Optional at the CCMM's or the CCA's direction.

(2) Contains the following:

(a) The phrase STUDENT GUIDE for

(b) Course title

(c) CIN

(d) Security classifications (if applicable)

(e) CCMM’s name and address

(f) CCA’s name and address

(g) Date the SG was prepared

(h) An identification seal such as the Navy seal, community logo, or a similar illustration may also be added.

(i) Cover pages are printed on heavy paper stock or equivalent material.

c. Title Page. Contains the following:

(1) The phrase STUDENT GUIDE for

(2) Course title

(3) CIN

(4) Revision number in alpha characters after the CIN (if required)

(5) Change number in Arabic numbers after the CIN (if required)

(6) Volume number if a multi-volume SG

(7) Security classification (if applicable)

(8) Student Name Block (optional)

(9) Name of CCA authorizing publication

(10) Name of CCMM

d. Change Record

(1) Under the heading change record, provide space for recording information related to each training material modification incorporated into the SG after it is approved for implementation.

(2) The change record provides space to record:

(a) Number and description of change.

(b) Person inserting the change.

(c) Date change entered.

e. Table of Contents Page(s)

(1) Under the heading Table of Contents, for a single volume SG, list:

(a) Front matter elements, such as, change record, security notice.

(b) Each instruction sheet by module, lesson, section number and complete instruction sheet title in the order they are used.

(2) Under the heading Table of Contents, for a multiple volume, list:

(a) In the first volume, a complete listing of the contents of all volumes in the SG.

(b) The table of contents will not be listed as an entry.

(c) In subsequent volumes, list only the contents of the respective volume.

NOTE: It is very unusual for the SG to be multiple volumes. If multiple volumes are required, it is usually because one volume is classified.

f. Security Awareness Notice Page(s)

(1) States whether or not classified material is contained in the course.

(2) Describes procedures for handling and safeguarding classified materials in the course.

(3) Each SG must bear the highest security classification demanded by its contents.

(4) Refer to the instructions listed in section 5.8 of this manual to ensure that all training materials are marked and handled per the latest policy guidance.

(5) This notice does not relieve the developer from the responsibility of incorporating security requirements throughout the course.

g. Safety/Hazard Awareness Notice Page(s)

(1) Identifies hazards to personnel and equipment.

(2) Identifies special directions to personnel concerning safety.

(3) Provides safety precautions for the protection of personnel and equipment.

(4) Provides instructions for the reporting of workplace safety and hazard violations.

(5) Provides specific policy on training time out.

(6) Provides for designated high risk course policy on drop on request.

NOTE: The developer must refer to the latest NETCINST 5100.1 (NETC Safety Management System and Safety and Occupational Health Program), NETCINST 1500.13 (NETC High and Moderate Risk Training Safey Program), and NETCINST 1500.16 (Firefighting Training Safety Program) instructions on training safety to ensure that the latest policy guidance incorporated into this section.

NOTE: The Safety/Hazard Awareness Notice does not relieve the developer from the responsibility of incorporating safety throughout the course.

h. How To Use Your STUDENT GUIDE Page(s)

(1) These pages include a general description of the composition, function, and use of the instruction sheets and the SG.

(2) Under the heading How to Use Your STUDENT GUIDE, list:

(a) The types of instruction sheets contained in the SG.

(b) How to use the instruction sheets.

(c) The types of examinations and quizzes administered in the course.

(d) The course divisions.

i. TOs Page(s). Under the heading TERMINAL OBJECTIVES, list the TOs in numeric sequence.

j. CMS (Optional)

(1) CMS will be made available to each student as a handout, part of the SG, or posted in a conspicuous place.

(2) If included in the SG, under the heading CMS:

(a) List the lessons and sections by number and title in instructional sequence by day and period.

(b) Indicate when tests will be administered, and which lesson/section topics will be covered.

(3) CMS in the SG is usually identical to the CMS prepared for the TCCD.

6. 3. 2. Instruction Sheets. Instruction sheets are organized by lessons and sections. Instruction sheets include outline, assignment, information, job, problem, and diagram sheets. Lessons and sections are listed in the table of contents in the front matter for organizational purposes but there are no lesson or section topic pages. Instruction sheets are arranged according to the sequence in which they are used within the lesson/section they support. All instruction sheets are developed to support instructions as presented in the IG.

a. Outline Sheets. To ensure students remain engaged and absorb key concepts during lessons, it's essential to strike a balance between writing and active listening. If they concentrate too much on taking notes, they may overlook important elements of the discussion. Conversely, if they are only passively

listening, they risk losing interest entirely. The preferred approach is using guided notes. This method allows students to fill in key points and prompts while actively listening, helping them stay engaged and focused on the material. By combining notetaking with active participation, students can enhance their understanding and retention of the lesson. Outline sheets must have the following:

(1) Titled the same as the section title in the IG.

(2) Under the heading Introduction, has statements concerning the overall scope and content of the section topic.

(3) Under the heading ENABLING OBJECTIVES, lists the EOs that apply to the section.

(4) Under the heading outline, presents an outline of the major points to be covered in the section.

(5) Only key words or phrases should be entered by the student.

(6) Usually, space will not be provided for note taking.

b. Assignment Sheets:

(1) Titled to describe the subject matter of the sheet.

(2) Under the heading INTRODUCTION, has statements concerning the overall scope and content of the assignment.

(3) Under the heading ENABLING OBJECTIVES, lists the EOs that apply to the section.

NOTE: If both an outline sheet and an assignment sheet are used to support a lesson, the LOs will be listed only on the outline sheet.

(4) Under the heading STUDY ASSIGNMENT, list material to be studied by the student before the presentation of the next section topic. This can be given as a homework assignment.

(a) Applicable documentation is identified by paragraph, page, figure, or diagram numbers.

(b) Specific study instructions, including preferred sequence of study may be included.

(5) Under the heading STUDY ASSIGNMENT, list material to be studied by the student before the presentation of the next section topic. This can be given as a homework assignment.

(a) Applicable documentation is identified by paragraph, page, figure, or diagram numbers.

(b) Specific study instructions, including preferred sequence of study may be included.

(6) Under the heading STUDY QUESTIONS, lists questions which assess understanding of what was studied or tests the ability to apply information.

c. Information Sheets:

(1) Titled to describe the subject matter of the sheet.

(2) Under the heading INTRODUCTION, provide a general explanation of how or why an understanding of the covered material benefits the student.

(3) Under the heading REFERENCES, list all publications used to develop the information section of the Information sheet. Each reference is listed by number, volume, part, and complete title.

(4) Under the heading INFORMATION, provide:

(a) Reference to technical manuals or other approved publications citing specific paragraphs, figures, tables, etc.

(b) Information sheets should not reproduce information contained in texts or references readily available at the level required for instructional purposes.

(c) Information on new concepts.

(d) Background information.

(e) Clarifying information.

d. Problem Sheets:

(1) Titled to describe the subject matter of the sheet.

(2) Normally used for paperwork troubleshooting when the equipment is not available.

(3) Under the heading PROBLEMS, problems are presented which:

(a) Are organized in any reasonable manner that promotes problem-solving abilities.

(b) Provide a clear statement of the problem(s), the conditions, and parameters affecting the problem(s).

(4) Under the heading DIRECTIONS, the directions and procedures for the solution to the problem are provided.

(5) Incorporate drawings/diagrams, if required, as part of the problem sheet, not as a diagram sheet.

e. Job Sheets:

(1) Titled to describe the subject matter of the sheet.

(2) Under the heading INTRODUCTION, the purpose of the job sheet and student benefits are explained.

(3) Under the heading EQUIPMENT, a complete listing of all equipment required for use by the student to accomplish the job is provided. Reference to official documentation which lists the equipment may be substituted.

(4) Under the heading REFERENCES, all publications required to perform the job sheet are listed. Each reference will fully identify the document by number, volume, part, and complete title.

(5) Under the heading SAFETY PRECAUTIONS, state safety precautions that apply to the overall job. If there are no safety precautions related to the overall job, enter "Not Applicable" or "None."

(6)Under the heading JOB STEPS, procedures for performing operation, maintenance, troubleshooting, or repair of equipment are listed. Do not duplicate the procedures listed in the reference. Include specific safety precautions in the job steps unless they are called out in the supporting technical manuals/references and cited in the step. Steps may consist of either general or discrete step-by-step procedures for performing tasks associated with a job. Provide sufficient space under each job step to record information.

(7) Under the heading SELF-TEST QUESTIONS, or after individual job steps, questions are provided which:

(a) Are easily understood and grammatically correct.

(b) Are technically correct and have direct application to the task being performed.

(c) Require analysis and thought similar to that required in the actual job situation.

NOTE: Administration of a performance test is accomplished by using an administrator's guide and job sheets.

f. Diagram Sheets:

(1) Titled to describe the subject matter of the sheet.

(2) Under the heading DIAGRAM, provides diagrams, schematics, or charts.

(a) Organized in any reasonable manner to accomplish the topic objectives.

(b) May range from foldout schematics or block diagrams to a simplified schematic.

(c) Should be large enough so the student can make pertinent notations.

NOTES: The SG and IG are usually created in sync. The SG sheets are referenced in the "Related Instructor Activities" in the IG, to alert the instructor when to direct the students to use SG content.

6.3.3. Student Guide Revision. If components of a SG are revised as part of a revision, an alpha character starting with A for the first revision will follow the CIN on the title page and a new publication date will be shown in parentheses under the original publication date. The entire instruction sheet will be printed with the revised CIN. No entry will be made on the change record page.

6.3.4. Student Guide Change. If components of an SG are changed as part of a change, the term "Change", with a number starting with "1" for the first change, will follow the CIN on every page affected by the change. All changes are entered on the "Change Record" page (e.g., A-433-0023 Change 1).

6.3.5. Interim and Technical Changes. Interim and technical changes are entered on the change record page. The CCMM will retain all Interim and technical changes for inclusion in later revisions or changes as appropriate.

6.4. Instructional Visual Aids. Instructional visual aids are tools or materials that enhance teaching and learning by presenting information visually. They help clarify complex concepts, engage students, and improve retention. Here are some key types of instructional visual aids:

a. Charts and Graphs: Visual representations of data that help illustrate trends, comparisons, and relationships.

b. Diagrams: Simplified drawings that show the parts of a whole or illustrate processes, such as flowcharts or concept maps.

c. Infographics: Visual summaries that combine text and images to convey information quickly and effectively.

d. Posters: Large-format visuals that present key information, themes, or concepts in an eye-catching way.

e. Whiteboards/Smartboards/Visual Aid Panels (VAP): Tools for interactive teaching, allowing educators to illustrate concepts in real time.

f. Models and 3D Objects: Tangible representations of concepts, useful in subjects like science or math.

g. Photographs: Real-life images that provide context and relevance to the material being discussed.

h. Interactive Apps and Web sites: Digital resources that allow students to engage with content through simulations or visual exercises.

6.5. Interactive Multimedia Instruction Development. Developing IMI will require CDs to create the most effective instructional strategies possible using a vast array of products to include courseware authoring and delivery systems, visual, audio, and tactile media. Each product or system is driven by different specifications and architecture that must be planned for during the plan, analyze, and design phases. Other course materials that may be delivered using IMI applications include the IG, SG with instruction sheets, support materials, and test administrative materials.

NOTE: The development processes for the IG, SG, and testing items usually occur in parallel. It's recommended to familiarize yourself with all three elements before starting the process. As technology changes, the development tool may change – but the basic structure and required elements for the IG will remain the same. Check with the CCA prior to development to determine the preferred development tool.

6.5.1. Interactive Multimedia Instruction Development General Design Guidance. Writing instructionally sound content for IMI presents unique challenges. A delicate balance needs to be achieved between including just enough instruction to convey important concepts and keeping the learning experience interesting and engaging. The following are some recommendations:

a. Vary the format or rhythm.

b. Make it relevant; ask a question or include a quotation, an example, or a narrative.

c. Include images, diagrams, and other visuals that support the text.

d. Avoid redundancy; however, strategic repetition can be a helpful memory aid.

e. Address one concept, procedure, or item of instruction on each screen and limit text on each screen to avoid overloading the student.

f. Use familiar words and avoid the use of jargon and contractions.

g. When describing an action or task that has a natural order or sequence, structure the content so that the sequence is obvious and consistent. Make the chronology clear.

h. If emphasis is required, try to convey the emphasis through clear expression rather than highlighted text. If highlighted text is desired:

(1) Avoid excessive use of bolding.

(2) Do not use italics (they are hard to read on-screen).

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

(4) Reserve quotation marks for citations and dialogue.

(5) Avoid using all capital letters to convey emphasis (online, all-cap words are interpreted as shouting).

6.5.2. Interactive Multimedia Instruction Design Considerations for Procedural Tasks. Table 7 provides strategy for presenting a procedure. Procedures (e.g., how to complete a task) will generally be presented as part of demonstration strategies using one of the following presentation techniques:

a. Present all steps in a step-action table on the same screen.

b. Present all steps using a slideshow function on the same screen.

c. Present all steps using a series of stepped video vignettes or animations on the same page.

d. Present each step separately on its own screen.

e. Present all steps using selectable thumbnails that will be hyperlinked to graphical pop-up boxes or Hypertext Markup Language (HTML) 5 branches that will present additional information.

Table 7: Strategy Guidelines for Presenting a Procedure

If the procedure	Then
Has five or fewer steps with minimal information related to each step	a. Present all the steps on a single screen in a step-action table. b. Present all steps using a series of stepped video vignettes or animations on the same page.
Has five or fewer steps with considerable information related to each step	1. Present each step on a separate screen in a linear sequence. 2. Display all steps using selectable thumbnails that will be hyperlinked to graphical pop-up boxes or HTML5 branches that will present additional information. 3. Present the steps in a slideshow series.
Has more than five steps	Split the steps evenly on two or more screens (unless the content dictates a different split).
Spans more than one screen	Avoid placing a colon between instructional screens that contain the steps for a long procedure, unless it makes instructional sense to do so.
Is long	Add a review screen at the end of the procedure listing the entire procedure again.

6.5.3. Reveal, Dim, and Collapse Convention. If you have multiple steps on a screen, the grayed out previous steps must not include the sub-steps:

Screen 1

Step 2: The Step

a. Sub-step

b. Sub-step

c. Sub-step

Screen 2

Step 2: The Step

Step 3: The Next Step

a. Sub-step

b. Sub-step

6.5.4. Interactive Multimedia Instruction Graphical User Interface Design and Conventions. The following sections describe general design conventions that are applicable to all levels of IMI products, including mobile-optimized content.

6.5.4.1. Interactive Multimedia Instruction Color Palette. Table 8 below specifies the color palette used in the graphical UI (GUI) design of IMI products.

Table 8: Interactive Multimedia Instruction Color Palette

Color	Properties	Example
Black	Red – 0 Green – 0 Blue – 0	
Dark Blue	Red – 1 Green – 30 Blue – 53	
Stone Blue	Red – 76 Green – 114 Blue – 142	
Sky Blue	Red – 123 Green – 189 Blue – 238	
Arctic Blue	Red – 57 Green – 197 Blue – 255	
Gray	Red – 139 Green – 155 Blue – 167	
Light Blue	Red – 214 Green – 233 Blue – 247	
Light Gray	Red – 246 Green – 246 Blue – 246	
White	Red – 255 Green – 255 Blue – 255	

6.5.5. Interactive Multimedia Instruction General Text and Media Formatting. Table 9 below provides type and spacing standards for IMI. Text color standards specified below have been selected to ensure sufficient contrast with the backgrounds currently specified in the standard screen layouts; alternative color conventions may be selected if instructional needs dictate the development of additional screen layouts.

Table 9: Interactive Multimedia Instruction General Text Formatting

Type	Font	Size	Style	Color	Line Spacing
Course Title Header	Arial	70 - 100 characters: 48 pixel (PX) 36 – 70 characters: 60px 1 – 36 characters: 72px	Regular	White 255,255,255	1
Lesson Title Header (Course Title Screen)	Arial	40	Regular	White 255,255,255	1
Lesson Title Header (All Other Slides)	Arial	18	Bold	White 255,255,255	1
Screen Title Header	Arial	16	Bold	Black 0,0,0	1
Student Prompt	Arial	20	Regular	Black 0,0,0	1
Instructional Text	Arial	26	Regular	Black 0,0,0	1.5
Hyperlinks, dark blue background	Arial	26	Underline Single Solid	White 255,255,255	1.5
Hyperlinks, all other backgrounds	Arial	26	Underline Single Solid	Blue 51,102,187	1.5
Text for Graphical Pop-ups	Arial	26	Regular	Black 0,0,0	1.5

6.5.6. Interactive Multimedia Instruction Screen Standards. The goal of the GUI design is to provide an easy-to-use, intuitive GUI, which is critical to the initial perception of the system. Screen design standards ensure consistency while enhancing the presentation of the instruction. The figure below represents the basic GUI that includes several standard areas that are also compatible with mobile delivery such as tablets or mobile phones. IMI outputs provide scalable HTML5 content with no loss of functionality if mobile capability is a consideration. Table 10 below provides the screen standards pertaining to the baseline GUI design.

Table 10: Screen Standards

Element	Setting
Screen Resolution	1920 x 1080 using scalable HTML5
Dots per Square Inch (DPI) Setting	72
Task Bar	Custom overlay Table of Contents (TOC) on left side of screen
Screen Size	Full
Favorites Toolbar	Hidden

6.5.7. Interactive Multimedia Instruction Non-Interactive Elements. Table 11 below provides descriptions for all the non-interactive elements in the GUI design.

Table 11: Non-Interactive Elements

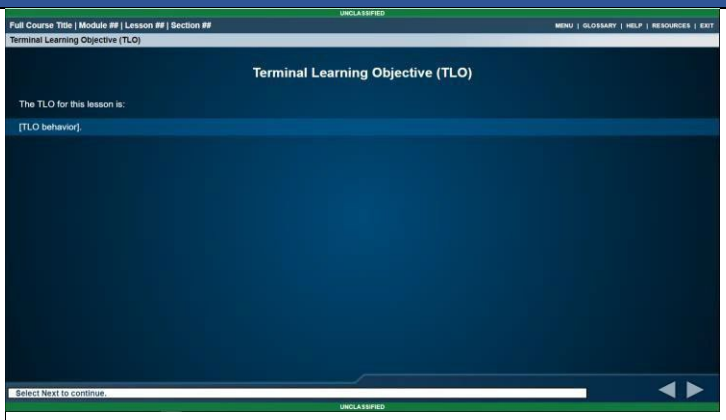
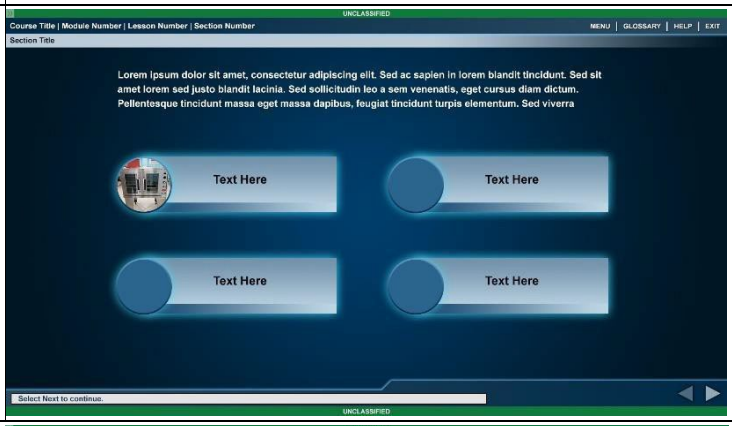
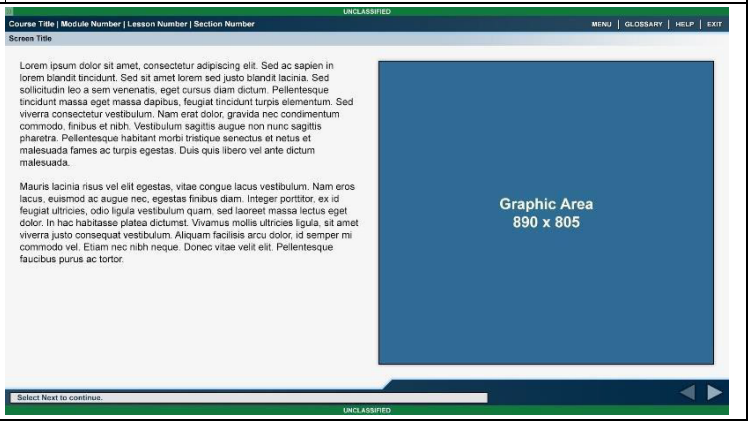
Element	Description
SCO Breadcrumbs	Located in the top left of the GUI in the dark blue bar; written as Lesson Title | Section Title. The breadcrumb text is a navigational trail used in the interface to keep track of the location within the courseware.
Frame Title	Located in the top left of the GUI in the light blue bar, underneath the SCO breadcrumbs, provides a descriptive title for the frame content.
Frame Counter	Located in the top right of the GUI in the light blue bar, underneath the upper menu GUI buttons, provides the current frame number out of the total number of frames.

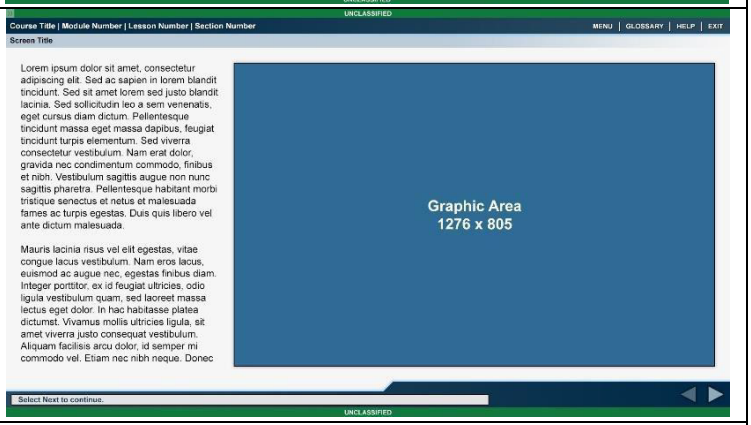
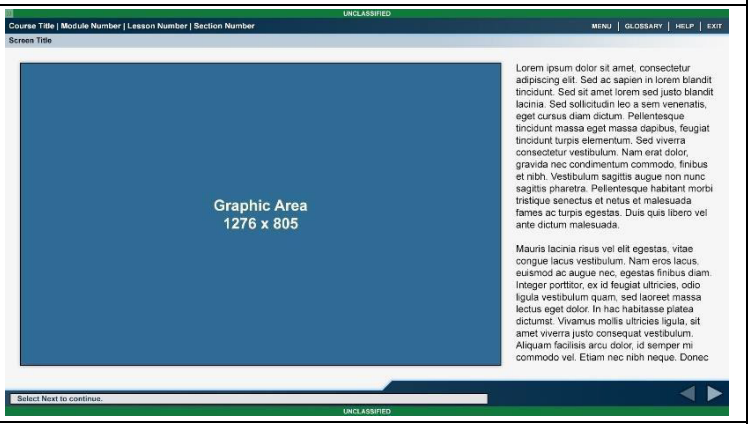
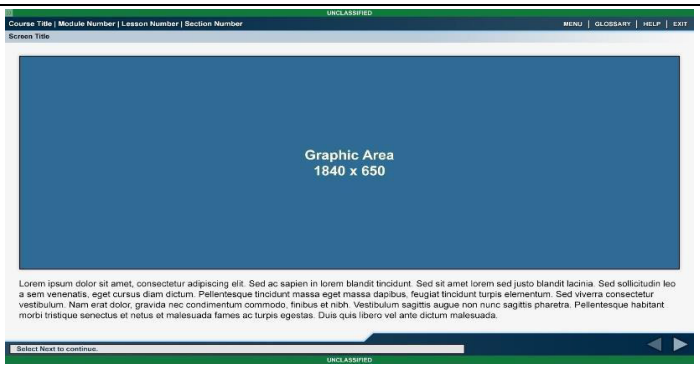
Element	Description
On-Screen Directional Text	Located in the bottom of the GUI in a white box, underneath the on-screen instructional content; guides the student through the courseware.
Classification Bar	Located at the very top and bottom of the GUI in a bar across the entire GUI screen, displays the classification of the courseware.

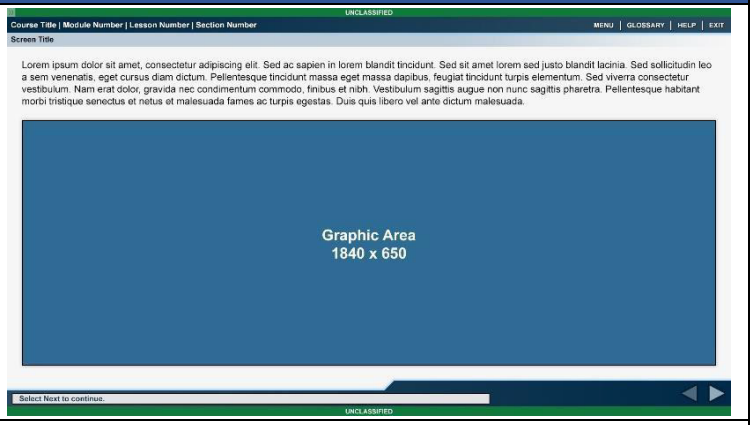
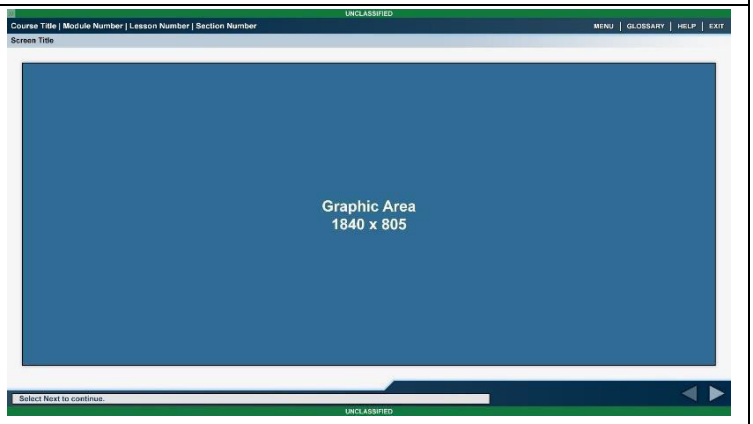
6.5.8. Interactive Multimedia Instruction Screen Layouts. The table below provides detailed descriptions for all the types of screen layouts that will be used in IMI products. The following table represents the baseline screen types only, but all layouts feature the flexibility to accommodate IMI interactions at any level. The following pages contain Table 12 IMI Screen Layouts:

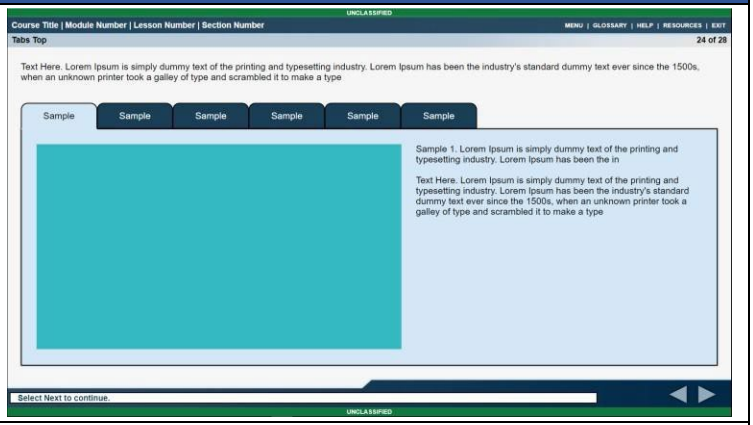
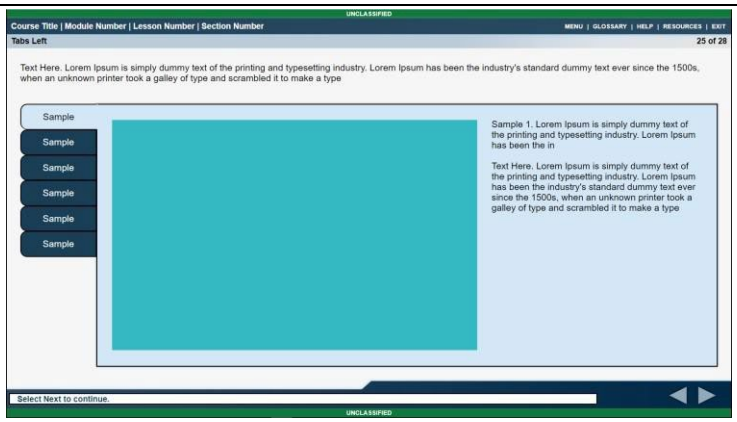
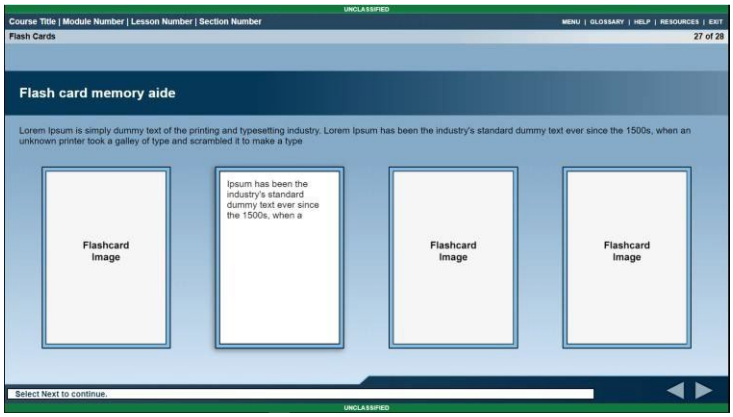
Table 12: Interactive Multimedia Instruction Screen Layouts

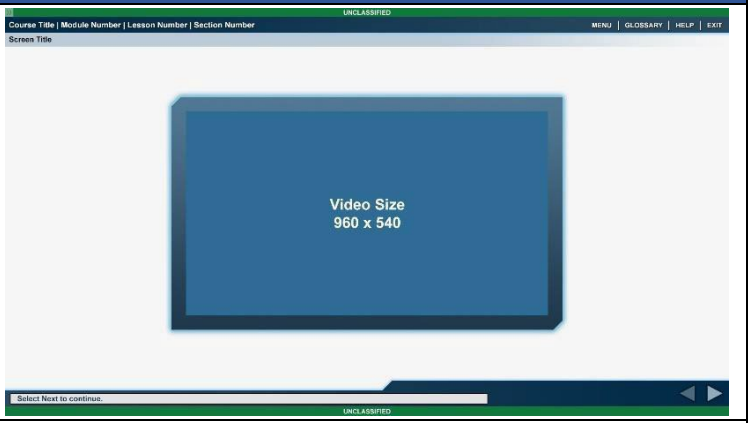
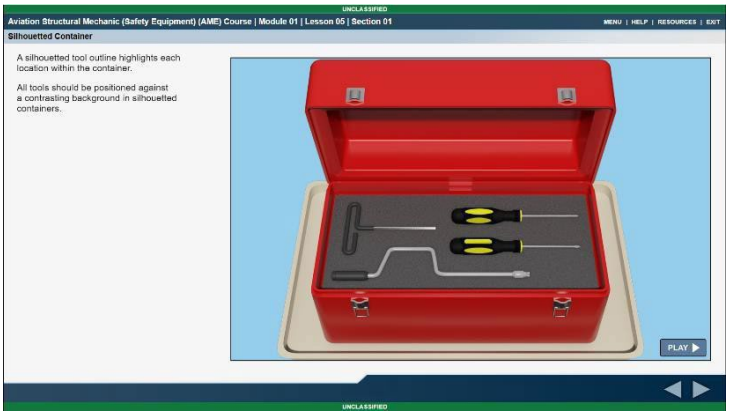
Description	Illustration
Course Screen	
Lesson or Section Intro Screen	

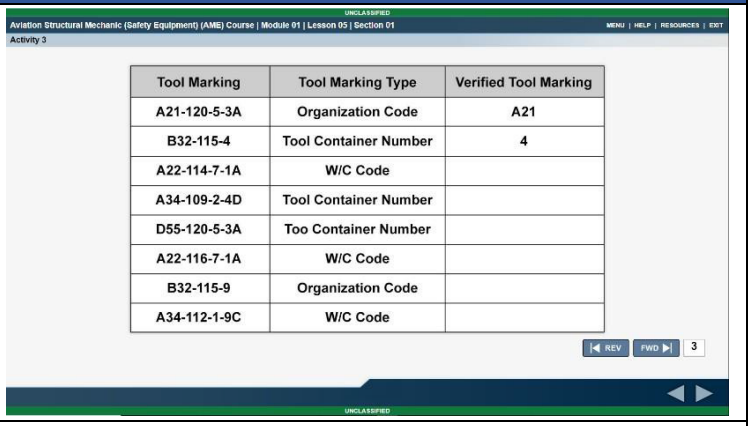
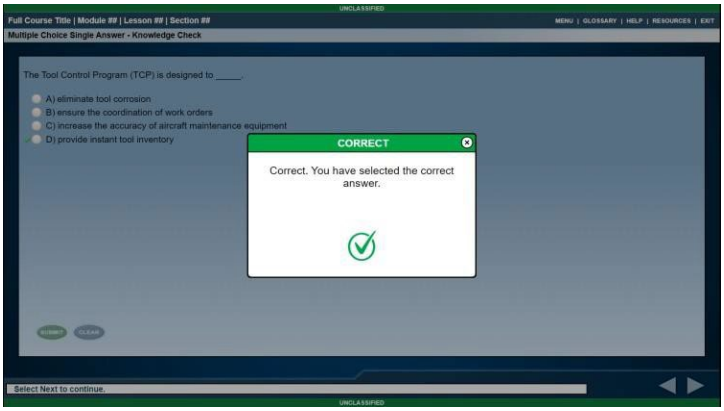
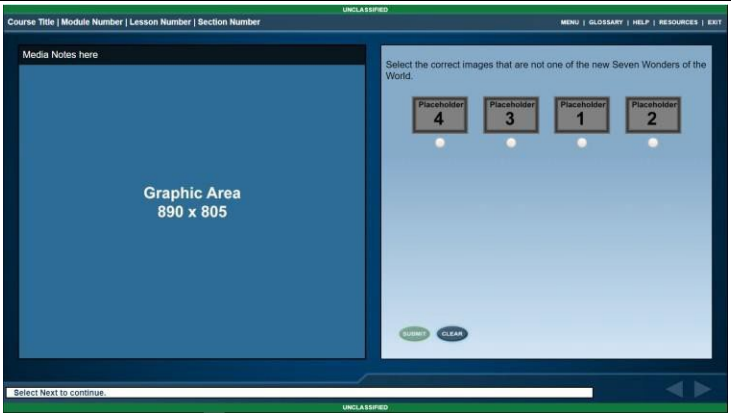
Description	Illustration
LOs Screen	
Embedded Menu	
Text and Graphic Right 50%	

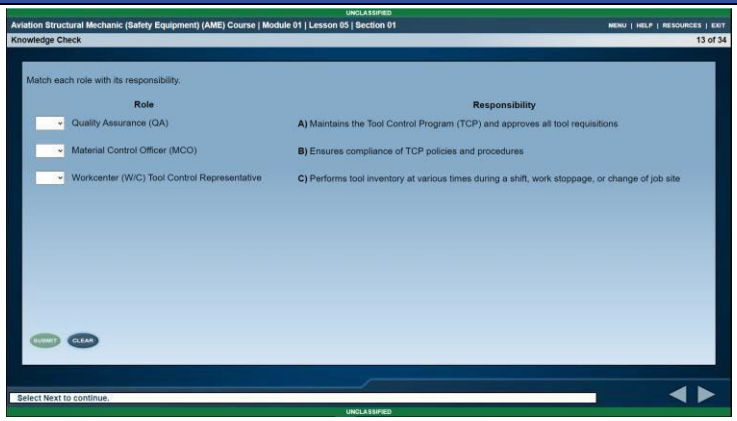
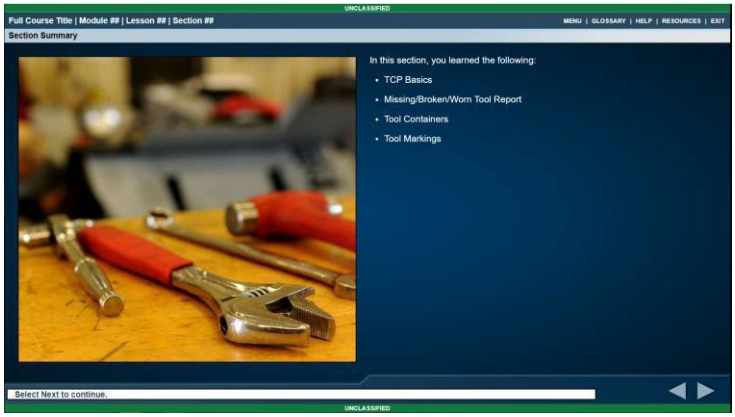
Description	Illustration
Text and Graphic Left 50%	
Text and Graphic Right 80%	
Text and Graphic Left 80%	
Text and Graphic Top 80%	

Description	Illustration
Text and Graphic Bottom 80%	
Graphic Only **NOTE:** When this screen type is used for complex media (e.g., IMI level 3), it will contain additional embedded interactive features to support student interaction.	
Full Screen Graphic **NOTE:** When using this screen type for complex media (blueprints, schematics, etc.), it will contain the capability to hover the mouse over the graphic to enlarge the details or allow the media to be enlarged and moved around the screen in order to read the fine details.	

Description	Illustration
Tabs Top	
Tabs Left	
Flash Cards Text and Image	

Description	Illustration
Video Only	
Video Right 75%	
Animation	

Description	Illustration
Slide Show	
Multiple-Choice Text	
Multiple-Choice Graphics	

Description	Illustration
Matching	
Course or Lesson Summary	

6.5.8. Standard Buttons. Table 13 below describes the functionality of the standard buttons located on the IMI screens.

Table 13: Standard Buttons

Button	Function	Description
	MENU	Located on the top right-hand corner of the GUI; lists each screen title and allows the user to navigate throughout the section.
	GLOSSARY	Located on the top right-hand corner of the GUI for SDIT sections only; displays relevant acronyms and definitions.
	HELP	Located on the top right-hand corner of the GUI; displays the quick help information on how to use the IMI.
	RESOURCES	Located on the top right-hand corner of the GUI; displays the relevant reference list for the section.
	EXIT	Located on the top right-hand corner of the GUI; causes the instruction to close after confirmation by the student.
	NEXT	Located on the bottom right-hand corner of the GUI; displays the next screen in the presentation sequence. **NOTE:** In SDIT sections, the Next button will be dimmed until all available interactions or branch outs have been completed.
	BACK	Located on the bottom right-hand corner of the GUI; displays the previous screen in the presentation sequence.
	CLEAR	Located on all question screens; allows students to clear interaction inputs. **Used for SDIT only.**
	SUBMIT	Located on all question screens; allows students to indicate they have completed an interaction and are ready for feedback. **Used for SDIT only.**

6.5.9. Instructional Icons. Table 14 below represents the functionality of instructional icons that may be used in IMI level 2 and 3 products. All icons are used in both IFIT and SDIT IMI except for the LO icon, as noted below.

Table 14: Instructional Icons

Button	Function	Description
	WARNING	This icon appears on any screen where a warning statement associated with a task or procedure needs to be emphasized.
	CAUTION	This icon appears on any screen where a cautionary statement associated with a task or procedure needs to be emphasized.
	NOTE	This icon appears on any screen where a note statement associated with a task or procedure needs to be emphasized.
	FORWARD	This icon appears in interactions to allow students to move forward in a slide show.
	REVERSE	This icon appears in interactions to allow students to move backward in a slide show.
	PLAY	This icon appears in interactions to allow students to play an animation or video.
	REPLAY	This icon appears in interactions to allow students to replay an animation or video that has already played.
	RESET	This icon appears in interactions to allow students to return to the first slide of a slide show.
	TOOLBOX	This icon appears in IMI level 3 interactions where tools are needed to perform steps in a procedure within the interaction.
	IETM (Interactive Electronic Technical Manual)	This icon appears in IMI level 3 interactions where an IETM or other technical manual is necessary to reference for performance steps.
	LEARNING OBJECTIVE	This icon appears in IMI level 3 interactions to provide the related LO for a given performance interaction.
	HELP	This icon appears in IMI level 3 interactions to provide help information on how to use the interaction.
	PAUSE	This icon appears in the bottom right-hand corner of IMI level 3 interactions to allow students to pause the interaction.

6.5.10. Logos. Do not enlarge large versions of logos to a size that distorts the images or text. Ensure there is clear space around logos. Keep the area surrounding the logo free of competing text or graphic elements. The graphic must be in a vector-based format.

6.5.11. Scrolling. A best practice is to avoid horizontal and vertical scrolling. If the graphic requires scrolling, it may be used in limited cases where images must be large for readability purposes (e.g., if an entire reference page from an almanac must be included).

6.5.12. Graphical Pop-Ups. Graphical pop-ups can be used to present information that is indirectly related to a concept on the main instructional screen. They can also be used to present notes (linked from instructional icons) and glossary terms (linked from a word or phrase in the text). Generally, graphical pop-up windows contain more information than is appropriate for a rollover. However, if there is too much information in the graphical pop-up window (e.g., introduces scroll bars in the screen), the content must be located on its own instructional screen.

6.5.13. Table Conventions. Color word tables in accordance with the approved course branding and marketing schema as shown in Table 15.

Table 15: Color Conventions for Word Tables

Term/Phrase	Definition/Usage	Example(s)
Body copy	Arial, 10 pt, black	Used for text throughout all training documents.
X Heading 1	Arial, 14 pt, black	Used for chapter headings.
X.X Heading 2	Arial, 12 pt, black	Used for section headings.
X.X.X Heading 3	Arial, 11 pt, black	Used for subsection headings.

6.5.14. Color Conventions. Color tables in IMI products per the approved course branding and marketing schema as shown below in Table 16.

Table 16: Color Conventions for Interactive Multimedia Instruction Products

Term/Phrase	Definition/Usage	Example(s)
IMI Table Column Heading Background	Blue (R=0, G=22, B=74)	Used for IMI table column background.
IMI Table Column Heading Font	Arial 12, Bold, White (R=255, G=255, B=255)	Used for IMI table column heading font.
IMI Table Text	Arial, 10 pt, black	Used for IMI table text.

6.5.15. Differences between Self-Directed Interactive Training and Instructor-Facilitated Interactive Training Functionality. Lock navigation of SDIT lessons until all required elements on screen are selected. Navigation of IFIT lessons is not restricted, so the instructor may move freely through the content. In addition, the SDIT GUI includes a Glossary.

6.5.16. Interactive Media Instruction Programming Standards. CDs must use the following programming guidance standards:

a. Courseware must be programmed with bookmarks.

b. Completion status must show completion upon exit from the last screen of each SCO/end of lesson. During navigation through the courseware, the menu tracks visited frames by changing the color of the dot to the left of the frame title from red to green. Slide numbers are tracked in the upper right of the GUI.

c. If there are no graded assessments, the success status must remain unknown. If the SCO/lesson is a graded assessment, the success status must show “Passed” or “Failed” with the correct score.

d. If the courseware contains more than one graded assessment, the final score must reflect a composite score and a passed or failed status.

e. Last session time within the topic will be tracked. Total time in lesson will be tracked.

6.6. Instructor-Facilitated Interactive Training and Self-Directed Interactive Training Content Standards. IFIT and SDIT screens require direction text on every screen, with the exception of pop-up boxes**.**

6.6.1. Standard Wording for Instructor-Facilitated Interactive Training and Self-Directed Interactive Training Direction Text. In addition to SDIT screens, IFIT screens require direction text on every screen, with the exception of pop-up boxes. The RIA column (right side) of the IG provides directions for the instructor. Use Table 17 for standard wording for both IFIT and SDIT. The following pages contain Table 6-11 Text Conventions for IFIT and SDIT.

NOTE: For direction text relating to selecting a GUI icon or button (e.g., selecting NEXT to advance screens in the on-screen courseware), ensure the direction text uses the exact wording of the button or describes the icon if there is no text in the icon (e.g., Select NEXT to continue.).

Table 17: Text Conventions for Instructor-Facilitated Interactive Training and Self-Directed Interactive Training

Screen Type	Student Direction Text
Content screen with no hyperlinks	Select NEXT to continue.
Last screen of lesson	Select NEXT to return to the [*course title screen*].
Content screen with button or icon	Select the [*XYZ*] [*button/icon*]; then, select NEXT to continue.
Content screen with multiple tabs	Select each tab for more information; then, select NEXT to continue.
Content screen with one hyperlink (text)	Select the hyperlink; then, select NEXT to continue.
Content screen with multiple hyperlinks (text)	Select each hyperlink; then, select NEXT to continue.
Content screen with hyperlinked text and a button or icon	Select [*the/each*] hyperlink and the [*XYZ*] [*button/icon*]; then, select NEXT to continue.
Content screen with image map with one hotspot	Select the image; then, select Next to continue. OR Select the label; then, select NEXT to continue.
Content screen with image map with multiple hotspots	Select each image; then, select NEXT to continue. OR Select each label; then, select NEXT to continue.

Screen Type	Student Direction Text
Content screen with image map and button or icon	Select the image and the [*XYZ*] [*button/icon*]. Then, select NEXT to continue.
Content screen with rollover	Using your mouse, roll over the [*item name*]; then, select NEXT to continue.
Content screen with multiple rollovers	Using your mouse, roll over each highlighted item; then, select NEXT to continue.
Animation with control bar	Select Play to view the animation; then, select NEXT to continue.
Animation with navigation arrows	Select Play to begin the animation, and then select the forward arrow after each step is completed; then, select NEXT to continue.
Video with control bar	Select Play to view the video; then, select NEXT to continue.
Custom HTML5 interaction	Select [*description of what user selects*] to [*description of what the user will be doing*]; then, select NEXT to continue. OR Follow the instructions in the interaction to [*description of what the procedure/action is*]; then, select NEXT to continue.
Content screen with slideshow that contains navigation arrows	Select the arrows below the image for more information; then, select NEXT to continue.
Content screen with slideshow (no text; images only)	Select Play to display the slideshow; then, select NEXT to continue.

Screen Type	Student Direction Text
Content screen with a Warning, Caution, and/or Note **NOTE:** If a combination of Warnings, Cautions, and Notes appears on a single screen, always present them in this order: Warnings, Cautions, and then Notes.	Select WARNING to view additional information; then, select NEXT to continue. Select CAUTION to view additional information; then, select NEXT to continue. Select NOTE to view additional information; then, select NEXT to continue. Select WARNING and NOTE to view additional information; then, select NEXT to continue. Select WARNING, CAUTION, and NOTE to view additional information; then, select NEXT to continue.
Content screen with zoomable image	Using your mouse, move the zoom slider to magnify the image; then, select NEXT to continue.
Content screen that requires printing a document	Select CTRL + P to print the [*name of document*] then, select NEXT to continue.
Content screen with branching hyperlinks	Select the [*button/icon*] to continue. *After all branching interactions are selected, swap the direction text to:* Select NEXT to continue.
First-level branching screen (except last screen in series)	Select NEXT to continue.
Last pop-up screen in branching series	Select [*the/each*] hyperlink to view additional information; then, select NEXT to return to [*title of parent screen*].
Last screen in branching series	Select NEXT to return to [*title of parent screen*].

Screen Type	Student Direction Text
Pop-up box with CLOSE button	No student direction text is provided unless there is an interaction on the screen. If there is an interaction on the screen, use the standard wording.
Last screen before Knowledge Checks	Select NEXT to continue. (This activity can include multiple recall questions.)
Last screen before an exercise	Select NEXT to complete a practice exercise. (Exercises are generally scenario-based and include multiple questions.)

6.6.2. Instructor-Facilitated Interactive Training and Self-Directed Interactive Training Assessments. Course knowledge tests/assessments will be given online. Performance tests/assessments will be executed electronically if possible. Embedded knowledge checks must be included for IFIT and SDIT to assess the student's knowledge of the EOs. An option for IFIT is to consider using student response devices along with knowledge checks.

Consider adding aspects of learning science into test design such as retrieval practice, spaced practice, interleaving, and elaboration (Van Schaack, 2021).

(1) **Retrieval Practice -** Instructors should use a number of low-stakes oral and written quizzes throughout their lessons that will encourage students to retrieve information from memory.

(2) **Spaced Practice -** Rather than having students try to cram during long study sessions it is better to use spaced practice to distribute study time over several short periods to help students produce a better long-term memory.

(3) **Interleaving -** Rather than teach each topic by itself utilize Interleaving to weave in material and problems from previous training material to help improve the transfer of knowledge and skills.

(4) **Elaboration -** Have Instructors utilize questions that start with "how, why, and what if" to help students relate new training material to material already known therefore making the new information more memorable.

6.6.2.1. Instructor-Facilitated Interactive Training and Self-Directed Interactive Training Knowledge Checks and Test Questions. Learning theory shows, most people can recall five, plus or minus two, facts at a given time. It is a good practice to include a knowledge check after every five to seven facts (where possible). Good practice is to write a minimum of three questions per EO, with five questions preferred; however, more questions may be required when factoring in module level and cumulative posttests. Do not use multiple-choice questions where the answer is "all of the above" or "none of the above." This is a poor question choice and does not identify that the student understands the LO. Refer to the NAVEDTRA M-142.4 NTP Phase IV Course Fielding - Volume II Testing Manual, for further guidance on question development.

6.6.2.2. Knowledge Test Questions. Questions take one of several formats which are dependent on curriculum design and are related to the knowledge proficiency level the student is expected to achieve. True/False test items or any test instrument that results in a 50/50 guess will not be utilized as they do not reflect that a student has achieved the objective being tested. Refer to the NAVEDTRA M-142.4 NTP Phase IV Course Fielding - Volume II Testing Manual, for further guidance on question development.

Below is a description of knowledge test items:

a. **Multiple choice:** One of the most common test instruments which are common in IFIT and SDIT. The student is generally tasked to select the correct answer from a group of responses with 3-4 incorrect answers, referred to as distractors. Multiple choice test items can be very challenging to construct properly during development, requiring SME and test developer's attention to detail. Test item analysis is critical to ensure that multiple choice test items remain aligned to LOs and are not compromised over time.

b. **Matching:** These test items are generally the hardest to construct. Matching test items are defined as two lists of connected words, phrases, pictures, or symbols. Every item in one list is paired with at least one item in the other list. Students must match elements on one list with the associated element from the other list based upon specific instructions.

c. **Completion:** These test items are free response test items in which the student must supply the missing information from memory. For completion test items, students provide required answers such as part names, procedural steps, etc. The advantage of completion test items over multiple choice test items is that they require more than simple recognition of information. Completion test items eliminate the possibility of guessing.

d. **Labeling/Identification/Hot Spot/Drag and Drop:** These test items are used to measure a student's ability to recall facts and label parts in pictures, schematics, diagrams, or drawings. This form of test item is most often used to measure recognition of equipment components or other concrete objects.

6.6.3. Self-Directed Interactive Training Glossaries. The following are standards for glossaries in SDIT courseware:

a. Arrange the glossary terms alphabetically in the following order: terms that begin with a special character, terms that begin with a number, and terms that begin with a letter.

b. Glossary terms that are not proper nouns are lowercase.

c. State each glossary term that is a noun as singular.

NOTE: The exceptions are terms that are always in plural form in the instructional material.

d. Definitions are very brief (similar to dictionary listings) and match or paraphrase the information in the instructional material.

e. Write each definition in accordance with this style guide.

f. The first word of each definition begins with a capital letter.

g. The first word of each definition is an article.

NOTE: The exceptions are definitions of terms that are plural nouns, terms that are not nouns and definitions that begin with the word "See."

h. Each definition includes appropriate articles.

i. Each definition begins with a fragment that ends with a period.

NOTE: The only definitions that do not begin with a fragment are those that begin with "See."

j. If a full sentence follows the fragment, a period and a single space separate the fragment from the full sentence. The full sentence ends with a period.

k. If a term has two or more meanings, the definition reads "1. [*First definition*]. 2. [*Second definition*]."

l. Each acronym or abbreviation has two entries, one for the acronym or abbreviation and one for the spelled-out term. For the first entry, word the definition as "See [*spelled-out term (acronym or abbreviation)*]." The second entry is the spelled-out term followed by the acronym or abbreviation in

parentheses. The exception is a spelled-out term that has no separate definition, such as – Office of the Chief of Naval Operations.

m. If an acronym or abbreviation has two or more meanings, the definition reads "See: 1. [*First spelled-out term (acronym or abbreviation)*]. 2. [*Second spelled-out term (acronym or abbreviation)*]."

n. If a term that has an acronym or abbreviation appears in the definition of another term, spell out the term followed by the acronym or abbreviation in parentheses.

6.7. Instructor-Facilitated Interactive Training Content Standards

6.7.1. Conventions for Instructor Facilitated Interactive Training Curriculum Materials Development

6.7.1.1. Instructor-Facilitated Interactive Training Curriculum Materials. All IFIT curriculum materials to include IGs, and SGs will be generated from the current curriculum data system, and their formats will comply with established NETC standards.

6.7.1.2. Visual/Electronic Media. Use IMI products as media to accompany instructor classroom presentations. Presentations will be well organized. Color schemes will provide adequate contrast between backgrounds and text or graphics so they can be easily seen and read by the student. Color scheme will comply with the specifications laid out in Section 6.3.3.1.

6.7.1.3. Branding Nomenclature. Branding and use of logos will comply with each LC's specific guidance as directed by NETC.

6.7.1.4. Interactive Multimedia Instruction Presentation Layouts. Section 6.3 shows the IMI presentation layouts in detail. The following is a list of general presentation components:

a. Course Screen

b. Lesson Intro Screen

c. Motivating Statement Screen

d. Text With Graphic Screen

e. Text With Photo Screen

f. Group Discussion Screen

g. Animation or Video Only Screen

h. Check on Learning Screen

i. Practice Exercise Screen

j. Course or Lesson Summary Screen

6.7.2. Instructor-Facilitated Interactive Training Text Formatting

6.7.2.1. Capitalization Guidelines for Discussion Points. Use the following capitalization standards for DPs:

a. Level 1 DPs:

(1) Treat Level 1 DPs as headings.

(2) Use title case.

(3) Omit end punctuation.

b. Level 2 and Level 3 DPs that are headings:

(1) Use title case.

(2) Omit end punctuation.

c. Level 2 and Level 3 DPs that are complete sentences or stems to lists:

(1) Use sentence case and end punctuation (period or colon).

(2) Begin each item in a line entry in the LP with a capital letter.

6.7.3. Related Instructor Activity Student Direction Text. The RIA column (right side) of the IG provides directions for the instructor. In addition, IFIT screens require instructor and student direction text on every screen, with the exception of pop-up boxes.

6.7.3.1. Standard Wording. When the IFIT contains an interactive element, such as an animation or pop-up box, use the wording in Table 18 in the RIA column.

NOTE: For direction text relating to selecting a GUI icon or button (e.g., selecting Next to advance screens in the on-screen courseware), ensure the direction text uses the exact wording of the button or describes the icon if there is no text in the icon (e.g., Select Next to continue.).

Table 18: Standard Wording in Instructor-Facilitated Interactive Training Related Instructor Activity

Screen Type	Wording
Content screen with no hyperlinks	Select Next to continue.
Last screen of section (for lessons with more than one section, except for the last section)	Select EXIT to close this section.
Last screen of lesson	Select EXIT to leave this lesson.
Content screen with one hyperlink (text)	Select the hyperlink to display additional information.
Content screen with multiple hyperlinks (text)	Select each hyperlink to display additional information.
Content screen with multiple tabs	Select each tab to display additional information.
Content screen with image map with one hotspot	Select the image to display additional information. OR Select the label to display additional information.
Content screen with image map with multiple hotspots	Select each image to display additional information. OR Select each label to display additional information.
Content screen with rollover	Using your mouse, roll over the [*item name]*.
Content screen with multiple rollovers	Using your mouse, roll over each highlighted item.
Animation with control bar	Select PLAY to display the animation.
Animation with embedded navigation	Select PLAY to begin the animation. Then, select FWD after each step is completed.
Video with control bar	Select PLAY to display the video.

Screen Type	Wording
Custom HTML5 interaction (Use when instructor direction text goes directly into the HTML5 file)	Select [*description of what the user selects*] to [*description of what they will be doing*].
Content screen with slide show (no text; images only)	Select PLAY to display the slide show.
Content screen with slide show (with text below or next to images)	Select FWD to display additional information.
Content screen with zoomable image	Using your mouse, move the zoom slider to magnify the image.
Content screen with a Warning, Caution, and/or Note	Select WARNING to display additional information. Select CAUTION to display additional information. Select NOTE to display additional information.

6.8. Sailor Performance Support Tool Content Standards

6.8.1. Sailor Performance Support Tool Strategies. SPST is a resource available to Sailors in their work environment to provide guidance or support such, as Microlearning. Microlearning is delivering 3-5 minutes of content at the point of need. It is accessible and useful at the time of need, tailored directly to the activity being supported. Note that Sailors cannot use these SPST products to perform maintenance tasks unless they have been validated by the technical authority and approved for use. Include a statement on all training SPST products stating that they are **"For Training Purposes Only."** If the SPST has been validated and approved by the technical authority, include a statement stating, "Approved by (Technical Authority) for use on (insert date)." Sailors can use them to learn procedures but performing actual maintenance or operations must be completed in accordance with the technical manual or Maintenance Requirement Cards, unless approved by the technical authority and so stated. The following table provides a listing of SPST media options that can be combined with other course delivery modalities:

6.8.2. Sailor Performance Support Tool Text Conventions. Each SPST must utilize Arial font for header and body text. The font size will vary depending on how the text is used. The formatting conventions for SPST are called out in Table 19.

Table 19: Sailor Performance Support Tool Text Conventions

Type	Font	Size	Style
SPST Document Header	Arial	Various	Bold
SPST Document Footer	Arial	Various	Regular
Table Text	Arial	No smaller than 8 pt	Various (bold, italics, etc.)
Diagram Text	Arial	No smaller than 8 pt	Various (bold, italics, etc.)
Text	Arial	No smaller than 8 pt	Various (bold, italics, etc.)

6.8.3. Sailor Performance Support Tool Media Considerations. SPST will use a variety of media types to provide optimum support to the presented task. The range of media can include text, photographs, images, animation, audio, and video.

6.8.4. Access Details. Design SPST tools for maximum accessibility and portability for land-based and shipboard environments.

6.9. Contractual Deliverables for Training. Most training developed for the Navy is produced through contracts with specialized vendors and training providers. This approach allows the Navy to leverage external expertise in instructional design, multimedia development, and subject matter knowledge, ensuring that training programs are tailored to the complex and evolving needs of Naval operations. Contracted training solutions often include the design and delivery of comprehensive training packages, such as IMPs, TSSD, and TCSD. By working with contracted partners, the Navy can access cutting-edge technologies and methodologies to maintain the readiness and proficiency of its personnel. A DID is a standardization document that defines the data required of a contractor. The DIDs, as tailored in Appendix P, contain the preparation instructions, format, and content information needed to produce the products defined in the following sections.

6.9.1. Instructional Media Package. The IMP, DI-SESS-81526C, encompasses all the materials used to deliver training, including IG, SG, IMI, handouts, workbooks, and the fully integrated instructional media presentation package. The following guidance is provided for instructional media package (IMP) creation:

a. The IMP must cover all delivery methods agreed upon.

b. Ensure that the content is logically structured, aligned with LOs, and adheres to adult learning principles.

c. All multimedia materials (videos, animations, graphics) must be in the correct format and compatible with the delivery platform.

d. Materials must be easily uploaded into the LMS and comply with SCORM or other relevant standards.

e. Ensure a review and approval process is in place to validate that the materials align with the training goals and meet the necessary quality standards.

6.9.2. Training System Support Document. The TSSD, DI-PSSS-81527D, provides complete procedures for utilization of all software utility programs, support software file generation, and system performance characteristics verification for life cycle maintenance. This document serves as a guide to understanding the overall training system, how it operates, and how each component works together. It often includes technical specifications, operational instructions, and system capabilities. Guidance for TSSD:

a. Provide a comprehensive overview of the training system, including any software, hardware, or tools being utilized.

b. Detail the technical requirements of the system (e.g., system compatibility, hardware requirements, network specifications).

c. Include step-by-step instructions on how to install, configure, and operate the system components.

d. Provide guidance for maintaining the system, including updates, trouble-shooting, and potential integrations with other systems.

e. Provide user manuals for both administrators and learners, detailing how to interact with the system.

f. Outline any security protocols that need to be followed, including data protection measures and compliance with any relevant regulations.

6.9.3. Training Conduct Support Document. The TCSD, DI-PSSS-81523D, provides specific definition and direction to the instructor and students on LOs, equipment, and instructional media for use during the conduct of training. This document supports the actual conduct of training, detailing how to facilitate the course, manage learners, and ensure smooth delivery. Guidance for TCSD:

a. Provide a detailed guide for instructors or facilitators, including course objectives, timing, and specific instructions for activities and assessments.

b. Provide instructions on classroom or virtual room setup, including equipment needs and software configurations.

c. Outline how to manage student participation, attendance, and progress, both in-person and online.

d. Provide guidelines on how to assess learner performance (e.g., quizzes, tests, practical exercises) and how to record and evaluate these assessments.

e. Include a section on common issues (technical or instructional) that may arise during training and how to resolve them.

6.10. Final Risk Assessment. During the design phase, an initial review of the LOs will be conducted to determine possible risks and mitigation efforts. A NETC established risk assessment format must be developed and validated in Step 7 using the approved Enterprise Safety Applications Management System Risk Assessment form located here (common access card (CAC)-enabled): https://esams.cnic.navy.mil/ESAMS_GEN_2/n/esams/resources/local-resources. Risk assessment criteria must be performed as prescribed by NETCINST 1500.13F. An assignment of any initial risk assessment code (RAC) of 1 or 2, as well as an assignment of RAC 3 in severity level I (death or loss of asset) or severity level II (severe injury or damage), although the "probability" of an injury or loss is "unlikely (E)" or "seldom (D)," must be considered High Risk Training (HRT) and reported to NETC N00X**.**

a. Ensure NETC N00X is notified, as soon as possible, when new HRT courses are being developed, or existing HRT courses are being modified, and additional risk is anticipated. No new or modified HRT course that introduces additional risk will convene without NETC N00X concurrence. Additionally, NETC N00X must be notified prior to new trainers, training platforms, or training facilities being used.

b. A validated and approved risk assessment must be completed prior to T3 events.

c. It is widely accepted that administrative training (classroom only) does not pose a reasonable element of risk to the staff and students; thus, a risk assessment may not be necessary. However, if the classroom environment introduces equipment or items that will be handled by students, then a risk assessment must be conducted for this portion of the training.

6.11. Training Course Control Document. The TCCD serves as the primary development and management document for a course. Significant portions of the TCCD will have been drafted in the NTP Phase II and finalized during Phase III Step 7. Prior to developing the TCCD, determine the current development tools and format. The curriculum development project team reviews the TCCD throughout the development phase for currency, adequacy, and accuracy. Changes in subsequent documents, such as changes in LOs that may be made during the development of course materials, will impact the TCCD. As a result, the TCCD is updated to incorporate these changes. The TCCD will be developed in the approved NETC authoring system.

6.11.1. Training Course Control Document Front Matter: Cover Page. The cover page contains the same information as the TPP cover page, with the identifier "Training Course Control Document for (course title)." The cover will be page "1" in the table of contents, but the number will not be printed on the cover page. The cover will carry the original and revised publication dates as appropriate.

a. Foreword. Not required but serves as a place to explain to reviewers any unique aspects of the course which may not be apparent from the basic data.

b. Course Data Page. This data must reflect the course as will be taught from implementation onward. Most times the course data will be the same as the "planned" course data in the TPP.

c. Student Data. Consists of the following:

(1) Personnel Physical Requirements. Physical requirement for a rating (YN, RP, AT, etc.) may be found in the Manual of Navy Enlisted Manpower and Personnel Classification and Occupational Standards, NAVPERS 18068 (Series).

(2) Additional physical requirements may be imposed by specialty groups (aircrew, submarine, diver, etc.) which involve many ratings.

(3) The specific physical requirement for each of the current specialty groups is found in the Manual for the Medical Department, NAVMED P-117.

(4) Physical requirements for training are entered in the Catalog of Navy Training Courses (CANTRAC) and revised as necessary.

d. Security clearance. This is the security clearance necessary for the course. It is also possible that, and should be noted if, a higher security clearance is required by the teaching site.

e. Prerequisites. List the prerequisites required of the students that are scheduled to attend the course. Prerequisites may be equipment, rate or rating specific, basic skills, or course specific. Prerequisites normally relate to prior training or skills.

f. Obligated service. This information is available in Navy Military Personnel Command manuals. An entry of "In accordance with the Enlisted Transfer Manual" may also be used.

g. Navy Officer Billet Classification/Navy Enlisted Classification/Military Occupational Specialties (MOS) earned. This information may be copied from the same entry on the Course Data Page.

6.11.2. Training Course Control Document Course Outline of Instruction. The COI serves as a comprehensive roadmap for a course, detailing essential components such as:

a. Course structure to include module, lesson, and section titles.

b. TOs and EOs.

c. Assessment methods including test types.

d. Delivery method.

e. Content type.

6.11.3. Training Course Control Document Annexes: TCCD annexes provide the resource requirements and time allocation for the course.

a. Resource Requirements List. The Resource Requirements List is a composite listing of all the material needed to conduct training.

b. CMS. The CMS provides the sections and assessments into a time schedule with student to instructor ratios. The summary is located on the master schedule summary sheet.

(1) Try to keep closely related lesson topics grouped so that one topic is not left to the next day or over a weekend.

(2) Tests are usually placed at approximately 40-50 instructional hour intervals throughout the course or at any point in the course deemed necessary to properly evaluate knowledge/skill level.

(3) The hours shown for each section contain the total course hours required to present the section. Here, it is important to differentiate between curriculum hours (the unconstrained time that would be

required to teach the section classroom and labs, as shown in the IG) and course hours (the hours needed to teach all portions of the class, including bottleneck periods). Curriculum hours do not include testing. The total course length will be the sum of the course hours, testing hours, and authorized administrative hours.

(4) Courses are not required to have graduation events. Those that do will have no more than 120 minutes to complete this event. Course and instructor critiques can be completed during this event. This time will not be counted as curriculum time but will be added to course time.

(5) Courses are allowed one hour of administration time for a course introduction/in-processing. This time will not be counted as curriculum time but is added to course time.

(6) The development of the CMS and CMS summary sheet are important because of their use for instructor/support personnel computations.

6.12. Limited Fielding. With course updates and modernization, there are instances where long-lead requirements such as TTE, facilities, or other resources take significantly longer to procure than the development of the courseware itself. If a mitigation plan can be implemented to exclude these longer-lead requirements while ensuring that the remaining instruction meets or exceeds the previous LO requirements, then approval for a limited fielding situation should be considered. The TYCOM for the training requirement is the approval authority for limited fielding considerations.

a. Limited fielding decisions must be annotated on the Authorization to Teach Letter approved by the CCA.

b. For RRL, NETC N00R will conduct a Limited Fielding Gate 5.5 to discuss and approve limited fielding.

c. Limited Fielding is defined in three levels:

(1) Limited Fielding 1 – Media

(2) Limited Fielding 2 – IT

(3) Limited Fielding 3 – TTE and/or Facilities

6.13. Step 7 Decision Meeting. The Step 7 Decision Meeting or Gate 6 serves as a review and approval of course artifacts by all stakeholders. The executing organization documents all meeting minutes in an MFR to include any action items identified. Cost,

schedule, and performance changes must be presented for review. The CCA approves the MFR to proceed to T3 or Course Pilot. Refer to Chapter 13 of this manual for detailed process steps.

NOTE: For RRL projects, NETC N00R approves Gate 6 and authorizes moving to T3. Changes to the approved pre-pilot artifacts after Gate 6 approval must be documented via MFR, signed by NETC, and approved by the RRL ESC.

CHAPTER 7
MEDIA STYLES AND SETTINGS

7.0. Introduction. This chapter is designed to provide the media styles and settings. Specific standards for graphics must be developed and approved during model product review. Any specific standards not covered will be added as necessary in the next revision of this manual.

7.1. Responsive Web Design. Responsive web design is the approach that suggests that design and development should respond to the user's behavior and environment based on screen size, platform, and orientation. It involves using flexible layouts, images, and cascading style sheets (CSS) media queries to create a single site that provides an optimal viewing experience across different platforms. As the user switches from desktop to tablet, the screen will automatically switch to accommodate for resolution, image size, and scripting abilities.

7.1.1. Key features of Responsive Web Design include. By using the following techniques, responsive design improves usability and accessibility and reduces the need for separate mobile versions of a site:

a. Fluid Grids: Layouts that use relative units (like percentages) rather than fixed units (like PXs) to create a flexible structure that adjusts to the screen size.

b. Flexible Images: Images that resize within their containing elements to prevent overflow and maintain proper aspect ratios.

c. Media Queries: CSS techniques that apply different styles based on the device's characteristics, such as its width, height, or resolution.

7.2. Design for Reduction in Bandwidth. Considerations must be given to design implementations to reduce training network (TRANET) Virtual Desktop Initiative (VDI) bandwidth usage. For content designed to run on the TRANET VDI classroom training environments, the media developer must ensure training content stops all motion or graphic screen changes in the background image/animation while the training is waiting for user input (e.g., answer a question or wait for a keyboard input to continue the training). The media developer must design for command line launch options to force a specific resolution, force windowed or full screen and force a specific graphics quality. The media developer must implement the following content development best practices while still meeting training requirements:

a. Screen resolution must auto-scale to function properly for 16:9, 5:4 and 4:3 monitors starting at 1024x768.

b. Support command line specified resolutions and graphics quality settings.

c. Enable absolute mouse and be consistent throughout the content.

d. Keep the polygon count low as possible.

e. Use particle effects instead of edge blending.

f. Do not use anti-aliasing.

g. Keep the texture resolutions of models low to meet training requirements.

h. Do not use 4K texture resolutions when 2K texture or lower resolutions are adequate for the training requirements.

i. Use as low of an update rate as possible to meet training requirements (Utilize 30 frames per second (FPS) maximum rate and recommended rate of 15 FPS or lower for most content).

j. Utilize baked lighting where possible and minimize dynamic lighting.

k. Limit the total number of light sources and if possible, use one light source to represent multiple light sources.

l. Utilize occlusion culling, if possible, to reduce the number of objects being rendered at any given time.

m. Utilize the lowest number of materials per single mesh as possible.

n. Utilize the lowest number of unique assets within the project as possible.

o. Minimize use of complex shades and avoid complex fragment shades.

p. Minimize use of total number of meshes per scene.

q. Maximize use of simple meshes for rendering and collision detection.

r. Limit use of scripts/code updating per frame execution.

s. Limit code that relies on time-based milestones for execution due to potential timing-based issues on VDI network.

t. Reduce number of overlapping objects that cannot be automatically sorted in the graphical rendering queue.

u. Minimize transparent/translucent UI elements and materials.

v. Minimize overlapping UI elements.

w. Minimize un-optimized particles.

x. Minimize use of post-processing effects on cameras.

y. Texture compression should be used whenever possible.

z. Reduce number of vertex processing required.

aa. Reduce number of vertices in models.

bb. Utilize normal mapping of vertices where possible.

cc. Utilize level of detail where possible.

dd. Ensure applications are set to not run in the background or cease to hold resources when minimized.

ee. Limit movement of UI and background objects to reduce PX changes.

7.3. Media Sizes. The media size assumes a screen resolution of 1920 x 1080px. A project may use up to five media sizes when creating the layout for the content area. Table 20 contains standards for each media size.

Table 20: Media Size Standards

Media Layout	Media Size (px)
Right Large	1276 x 805
Right Small	890 x 805
Bottom Large	1840 x 650
Bottom Medium	1840 x 588
Full Screen	1840 x 805
Graphic Only	1920 x 910
Course Title Graphic	578 x 345

7.3.1. Pop-up Media Sizes. A project may use up to four media sizes in a pop-up. Pop-up media will be readable and minimize blockage of important instructional information. Table 21 contains standards for pop-up media sizes.

Table 21: Pop-Up Media Size Standards

Media Layout	Media Size (px)
Media Right	627 x 567
Media Left	627 x 567
Media Top	989 x 362
Media Bottom	989 x 362

7.4. Image Resolution. All graphics must be created at 72 dpi resolution.

7.5. Background Standards. The following background standards will be used for courseware: Light Gray:

a. Hexadecimal Code: #F6F6F6

b. RGB: 246,246,246

7.6. Text Standards. The following standards will be used for text on graphics:

a. Title text

(1) Color: Black (#000000 or 0,0,0)

(2) Font: Arial Bold

(3) Size: 32 pt

(4) Anti-Aliasing: Smooth

(5) Leading: Auto

(6) Tracking: 0

b. Label text

(1) Color: Black (#000000or0,0,0)

(2) Size: 26 pt

(3) Anti-Aliasing: Smooth

(4) Leading: Auto

(5) Tracking: 0

c. Paragraph text

(1) Color: Black (#000000 or 0,0,0)

(2) Font: Arial Regular

(3) Size: 26 pt

(4) Anti-Aliasing: Smooth

(5) Leading: Auto

(6) Tracking: 0

7.7. Drop Shadow Standards. The following are specifications for drop shadows:

a. Blend Mode: Multiply

b. Color: Black (#000000 or 0,0,0)

c. Opacity: 30%

d. Distance: 0

e. Spread: 0

f. Size: 10px

NOTE: Use text drop shadows only when necessary.

7.8. Border Standards. Border standards are as follows: Stroke effect:

a. Size: 2px

b. Position: Inside

c. Blend Mode: Normal

d. Opacity: 100%

e. Color: Black (#000000 or 0,0,0)

NOTE: Do not use a border on media that has a transparent background.

7.9. Highlight Standards. Specifications for highlights are the following:

a. Interactive highlight:

(1) Solid Stroke

(2) Fill Color: Aqua (#00FFFF or 0,255,255)

(3) Size: 4-6px

(4) Position: Normal

(5) Blend Mode: Normal

(6) Opacity: 100%

(7) Drop Shadow:

(a) Opacity: 20%

(b) Angle: 9°

(c) Distance: 0px

(d) Spread: 0%

(e) Size: 3px

b. Non-interactive highlight:

(1) Solid Stroke

(2) Fill Color: Yellow (#feef03 or 254,239,3)

(3) Size: 4-6px

(4) Position: Center

(5) Blend Mode: Normal

(6) Opacity: 100%

(7) Drop Shadow:

(a) Opacity: 20%

(b) Angle: 9°

(c) Distance: 0px

(d) Spread: 0%

(e) Size: 3px

7.10. Collage Standards. The following are specifications for collages: Layer effect - Stroke:

a. Size: 2px

b. Color: Black (#000000 or 0,0,0)

c. Opacity: 100%

d. Drop Shadow: See Drop Shadow Standards subtopic

NOTE: Align images on a grid even if overlapping.

7.11. Diagram Standards

a. The following are specifications for diagram shapes in Adobe illustrator:

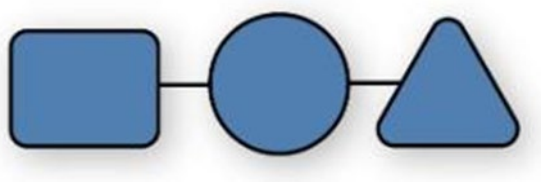


Figure 7-1: Diagram Shapes

(1) Shape layer:

(a) Rounded Corners: 0.125 inches | 9px on all sides to round sharp edges

(b) Background color: medium blue (#517FB2)

(c) Stroke: 2px, black (#000000)

(d) Line Weight: 2px, black (#000000)

(e) Drop Shadow:

- Mode: multiply
- Opacity: 30%
- X Offset: 4.5px
- Y Offset: 4.5px
- Blur: 9px
- Color: black (#000000)

(2) Text:

(a) Font: Arial

(b) Font Size: adjust to fit all text inside the shape

(c) Color: white (#FFFFFF)

(d) Positioning: center

b. Numbers/Labels:

(1) Font: Arial

(2) Font Size: min 8px; adjust size as needed for legibility

c. Arrows:

(1) Style: Arrow 9

(2) Stroke: 2px-3px

(3) Cap: Round

d. Bar Graphs

(1) Font Style: Arial Regular (if regular is illegible, bold)

(2) Line Weight: 1px

(3) Main Background

(a) Color: white

(b) Border: 1pt, black (#000000), solid

Figure 7-2: Arrow Types

(4) Bars:

(a) Gap Width: 55%

(b) Border: no line

(5) Transparency: 30%

(6) Size: 100%

(7) Blur: 9pt

(8) Angel: 45^0

(9) Distance: 4pt

e. Bar Labels:

(1) Label Color: contrast bar color (e.g., black background = white color)

(2) Background Color: none

(3) Position: inside end

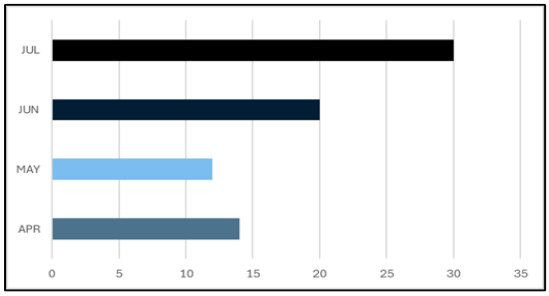


Figure 7-3: Bar Graph

7.12. Flow Color Standards. Use the following standards for flow colors. If an alternative flow color is required request approval from NETC N71.

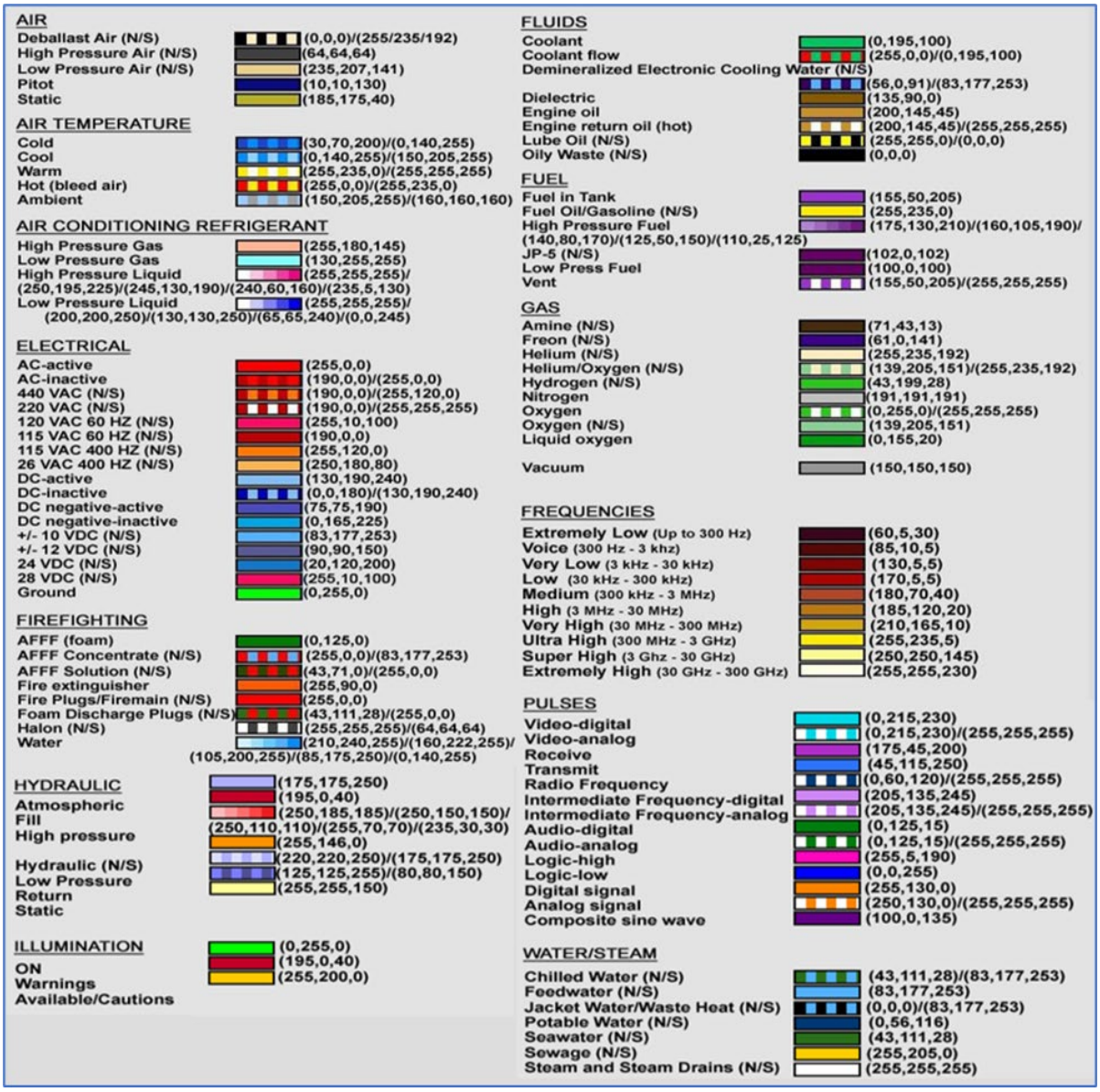


Figure 7-4: Animation Flow Colors

7.13. Table Standards. Specifications for tables are the following:

a. Table Properties

(1) 5 px padding on all sides

(2) Border

(a) Outer Border

- Size: 2 px solid
- Color: Black (#000000 or 0,0,0)

(b) Inner Border (row separation)

- Size: 2 px solid
- Color: Black (#000000 or 0,0,0)

b. Table Header

(1) Font: Arial

(2) Style: Bold

(3) Size: 16 pt

(4) Tracking: -2 px

(5) Font Color: White (#FFFFFF or 255,255,255)

(6) Background Color: Blue (#5B7A9B or 91,122,155)

c. Table Rows

(1) Font Style: See Section 7.5.

(2) Background Color: Light Gray (#F2F2F2 or 242,242,242)

7.14. Three-Dimensional Specifications. It is vitally important to work in real world scale when developing 3D models. Unreliable model sizes can produce a variety of problems. Due to unreliable size information, an imported 3D model will typically normalize the model size. Disregarding absolute size creates confusion between many categories of objects where absolute size is required. By providing reliable physical sizes for 3D models, absolute size information can be assured across all projects and platform. Define the following settings when creating 3D graphics:

a. **Renderer:**

(1) Arnold Renderer (minimum version 4.0.4.36)

(2) Sampling and Ray Depth – Camera (AA): 5 (minimum setting)

(3) Filtering – Type: Gaussian (default), Width: 2.0

(4) Clamping (Firefly Filtering) – AA Max Value: 0.9, Indirect Max Value: 0.1

(5) Legacy 3ds Max Map Support – Enabled

(6) Threads – Autodetect Threads: Disabled, Threads: -1

b. **Denoiser – Optix Denoiser:** Disabled

NOTE: The Arnold renderer includes an optional 3ds Max object level scene modifier labeled *Arnold Properties*, which allows overriding various Arnold render settings

(visibility, lights include/exclude, shadows include/exclude, etc.) per object in the scene. An *Arnold Properties* modifier is placed at the top position in the 3ds max modifier stack and will remain even if the modifier stack is collapsed.

c. **Camera:**

(1) Camera – Physical Camera

(2) Camera Preset – 35mm (Full Frame)

(3) Camera Aperture – f/8.0

(4) Camera Shutter – Type: Frames

d. **Environment:**

(1) Environment – Physically-Based

(2) Environment Map – OSL: HDRI Environment

(3) Appearance – Exposure 0.25

(4) Viewport – Viewport 0.5

(5) Contrast – Contrast 0.5

(6) Clamp – Enabled

e. **Scene Display:**

(1) Display Mode – High Quality

(2) Viewport Configuration – Display Performance: Texture Maps: 99999

(3) Viewport Configuration – Display Performance: Background/Environment: 1024

(4) Viewport Configuration – Background: Synchronize with Display Mode

f. **Scene Units:**

(1) Units Setup – Display Unit Scale: Metric: Meters

(2) System Unit Setup – System Unit Scale: 1 Unit = 1.0 Meters

(3) Lighting Units – International

g. **Lighting:**

(1) Object Type – Arnold Light

(2) Color/Intensity – Color RGB 255,255,255 (White)

(3) Intensity – Intensity: 12.0, Exposure: 6.0

(4) Intensity – Normalize Energy: Enabled

(5) Rendering – Samples: 3, Volume Samples: 3

(6) Shadows – Cast Shadows: Enabled

(7) Shadows – Atmospheric Shadows: Enabled

(8) Shadows – Color RGB 0,0,0 (Black)

(9) Shadows – Density: 1.0

(10) Shadows – Contribution: Max Bounces: 999

(11) Shadows – Contribution: Affect Viewport: Enabled

h. **Object Materials Physically Based Renderer (PBR):**

(1) Material Type – General: Physical Material

(2) Coating Parameters – Clearcoat: 0.0

(3) Basic Parameters – Base Color: Diffuse PBR Texture (Gamma: Automatic)

(4) Basic Parameters – Roughness – Roughness PBR Texture (Gamma: 1.0)

(5) Basic Parameters – Metalness – Metalness PBR Texture (Gamma: 1.0)

(6) Special Maps – Bump Map – Normal PBR Texture (Gamma: 1.0)

(7) Emission – Color RGB 0,0,0 (Black)

(8) Emission – Luminance: 1500 cd/m2

(9) Emission – Kelvin: 6500

(10) Transparency Map – Opacity PBR Texture: (enabled if transparency required)

i. **Animation Setting:**

(1) Frame Rate – 15 to 30 FPS (as required)

(2) Output Size – HDTV (video): 1920 x 1080

(3) Advanced Lighting – Use Advanced Lighting: Enabled

(4) Render Output File – Type: PNG

(5) Render Output File – PNG Configuration: RGB 24 bit (16.7 million)

(6) Render Output File – Alpha: Enable (transparency required)

(7) Render Output File – Alpha: Disable (no transparency required)

NOTE: Animation files will be saved via individual PNG sequences. Optionally, the 3ds Max RAM Player can be used to save them into a movie. This method is the recommended choice, as it gives more control over the file size and quality of the output. In addition, if there are frames that have artifacts or other errors, they can be easily corrected. Frame rate will remain between 15 and 30 FPS as needed to control file size. No animation or video will play at more than 30 FPS.

NOTE: These settings can be defined in a *.cfg file or by using Max's Maxstart.max file as a baseline that includes all of these settings. The user can reset Max, which will load all default settings defined within Maxstart.max.

7.15. Physically Based Renderer Texture Specifications. Instructional design projects must use Substance 3D Painter version 10.1 software or newer to create PBR materials. Materials are created at 4K standard base resolution of 4096 px x 4096 px. Texture resolution may be downscaled when required by a power of 2 (2048 x 2048, 1024 x 1024, 512 x 512, etc.). The Metalness workflow includes the following four base channel maps:

a. Diffuse (Albedo) Map – Base color input, which is the most important map, giving information about the color of the object. This is applied to a 3ds Max Physical Material with a Gamma setting of Automatic or 2.2.

b. Metalness Map – Saved as a grayscale and controls the amount of reflectivity of a surface. The white translates into a pure metal surface, while the black translates to non- metallic surfaces. This is applied to a 3ds Max Physical Material with a Gamma setting of 1.0.

c. Roughness Map – Works similarly to the glossiness in the specular workflow. It is also in grayscale and stores the same information yet is inverted. This means that the black color in this map will have a sharp shiny finish, while the white has a matte finish. This is applied to a 3ds Max Physical Material with a Gamma setting of 1.0.

d. Normal Map – Determines the number of dents and bumps an object has. The normal map is saved in RGB format, containing its information in XYZ axes. This is applied to a 3ds Max Physical Material with a Gamma setting of 1.0.

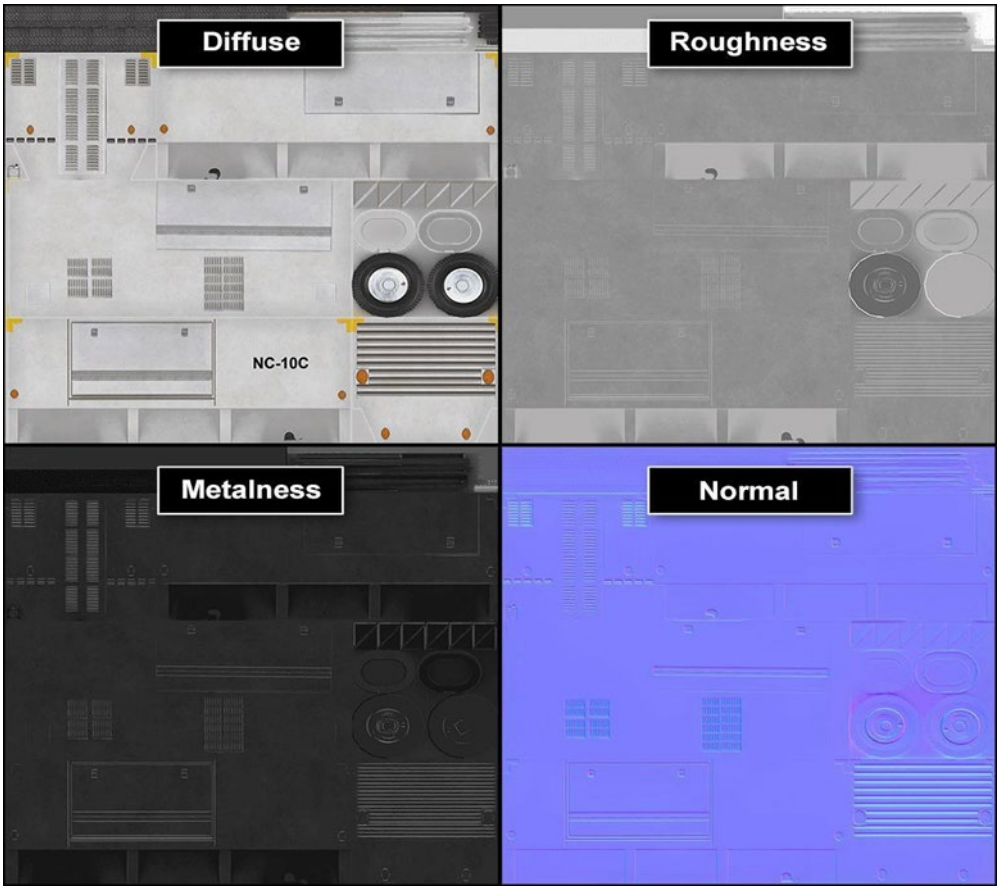


Figure 7-5: Physically Based Renderer Texture Specifications

7.15.1. Physically Based Renderer Settings. Define the following settings when creating PBR materials utilizing the Metalness workflow:

a. Material Channels (PBR):

(1) Base Color Map – sRGB8 Diffuse texture (diff)

(2) Metalness Map – L8 Metalness texture (metal)

(3) Roughness Map – L8 Roughness texture (rough)

(4) Normal Map – RGB16f Normal texture (norm)

(5) Emission Map – sRGB8 Emissive texture (emis) (self-illumination if required)

(6) Opacity Map – L8 Opacity texture (transparency if required)

b. Project Settings:

(1) Template – PBR – Metallic Roughness (allegorithmic)

(2) Document Resolution – 4096

(3) Normal Map Format – DirectX

(4) Normal Map – Normal texture

(5) Normal Mixing – Combine

(6) UV Padding – 2D UV Space Neighbor

(7) Bake Mesh Maps – Default Settings (no change)

(8) Environment Opacity – 0.0

(9) Environment Exposure (EV) – 1.0

c. Export Textures:

(1) Output Template – PBR – Metallic Roughness

(2) File Type – PNG 8 bits

(3) Size – Based on each Texture Set's size (or 4096)

(4) Padding – Dilation + diffusion 16

(5) Export shaders parameters – Disabled

7.15.2. Resolution Identifiers. Exported texture filenames are to include a resolution identifier at the end of the name to distinguish resolution size requirements per real time element. The following resolution identifiers will be defined when creating PBR textures, as these examples indicate:

a. fa_18f_super_hornet_fuselage_diff_512.png (for diffuse map at 512 x 512)

b. fa_18f_super_hornet_fuselage_metal_1024.png (for metallic map at 1024 x 1024)

c. fa_18f_super_hornet_fuselage_rough_2048.png (for roughness map at 2048 x 2048)

d. fa_18f_super_hornet_fuselage_norm_4096.png (for normal map at 4096 x 4096)

7.16. File Names. Media files must be well organized and labeled correctly so that they are identifiable and accessible by all employees. Review the following considerations before naming a media file:

a. Do not use special characters in a file name, such as \ / : * ? " < > | [ ] & $.

b. Use underscores instead of periods or spaces.

c. Use abbreviations, if necessary, to limit the number of characters in the file name.

d. Include all necessary descriptive information independent of where it is stored.

e. Order the elements from general to specific (e.g., Unit, Lesson, Topic, and Screen).

f. Use prefixes when necessary.

g. Ensure that the source file name matches the final output file name.

7.17. Media Sources. Ensure media is up to date and has no embedded personally identifiable information shown. Media showing Sailors will ensure they are in the correct uniform and are following the correct grooming standards. While these are not all-inclusive sources of media, refer to any of the following for military-related photos:

a. Joint Chiefs of Staff Media at http://www.jcs.mil/Media/Photos.aspx.

b. Navy.mil at https://www.navy.mil/Resources/Photo-Gallery/.

CHAPTER 8
SOFTWARE TERMINOLOGY AND FORMAT

8.0. Introduction. In the evolving landscape of educational technology, IMI plays a pivotal role in delivering engaging and effective training experiences. IMI integrates advanced simulations, multimedia elements, and dynamic learner interactions to foster immersive learning environments. The following sections outline key terms and definitions related to IMI, focusing on various levels of fidelity, interactivity, and complex media. By understanding these concepts, IDs can better tailor interactive media tools to create robust learning experiences that not only teach theoretical knowledge but also provide hands-on practice in realistic, immersive environments.

This framework sets the stage for the development of training systems that go beyond traditional learning methods, incorporating virtual simulations and XR technologies to enhance both learner engagement and performance.

8.1. Terms and Definitions

8.1.1. Interactive Multimedia Instruction - A term applied to a group of predominantly interactive, electronically delivered training and training support products. IMI products include instructional software (e.g., content) and software management tools (e.g., LMS, Learning Record Store (LRS)) used in support of instructional programs. Commonly referenced as Level 1, 2 or 3 IMI and often used interchangeably with computer based training and interactive courseware (ICW). In context for RRL, “IMI” is the preferred term and must be interpreted generically as electronic media, replacing both “ICW” and “Instructor Led Training - Computer Aided Instruction (CAI)” as terms regardless of whether the product is instructor-led or student-led, and including considerations for software management tools (e.g., LMS, LRS).

8.1.2. Levels of Fidelity - defined as:

a. **A (Low)** – Use for familiarization, recall, and application. Contains still graphics, cutaways, and vector-based animations. Models’ system functionality, but not system states. Provides only fault-free system simulation. The simulation is based on empirical inference.

b. **B (Medium)** – Use for application, analysis, synthesis, problem solving, and transfer. Contains 2D/3D animations. Offers both fault and fault-free simulation of system components. Has correct modeling of system states within actual system tolerances. Simulation depicts some dynamic system states.

c. **C (High) -** Use for problem-solving, transfer, and as a job performance aid. Contains complex equipment modeling. Has a mathematically correct component-based model. Accurately simulates dynamic states, faults, and fault effects of individual components. Replicated system static and dynamic response is within tolerances prescribed for actual equipment.

8.1.3. Levels of Interactivity - a two-way communication in which stimuli/response between the student and the instructional delivery system is direct and continual. Interactivity describes the degree of student involvement/interactivity with the delivery system in the instructional activity. The four levels are:

a. **Passive.** The student acts solely as a receiver of information presented by the delivery system (e.g., watching a video, observing an instructor-led presentation).

b. **Limited participation.** The student makes simple responses to instructional cues presented by the delivery system.

c. **Complex participation.** The student makes a variety of responses using varied techniques in response to instructional cues presented by the delivery system.

d. **Real-time participation.** The student is directly involved in a life-like set of complex cues and responses presented by the delivery system.

8.1.3.1. Levels of Interactivity Defined:

a. **Level 1 IMI (e.g., ICW-1).** Given current technology and training practices there is almost no practical situation where student-controlled level 1 IMI would apply. This level would more likely apply to the instructor-facilitated presentation of mostly linear training material.

(1) **Instructor Interactions:** Low to moderate; performs basic interactions with the delivery system (e.g., paging through content, interacting with objects, hotspots, hyperlinks).

(2) **Student Interactions:** Passive to limited participation; may perform basic interactions with the delivery system as directed.

(3) **Audiovisual Media:** Text; photos; video/audio (if customer-supplied or if minimal production and postproduction is required, (e.g., can be recorded using simple devices and little or no editing necessary)); 2D/3D Graphics (not complex): repurposed or customer-supplied complex graphics (where no editing or revision is necessary): interactive GUI (menus; sub-

menus); minimal hyperlinks/hotspots; customer-supplied animations; simple animations of parts/equipment/process flows; check-on-learning animations.

(4) **Menu/Path Includes:** Navigation is primarily linear with occasional simple menus/submenus to one or two paths and then return (e.g., moving page-to-page by clicking on the “Next” button or on objects that advance the presentation in a linear path (e.g., page-turner)); however, may be designed for the user to be able to respond to instructional cues (e.g., objects on the screen such as point-and-click objects, rollover objects, and drag-and-drop objects). Using hotspots to advance the screen is the same as clicking "Next" to advance (still essentially a linear progression). Designed as an Information-Only or an Information-Plus-Demonstration strategy.

(5) **Learning Activities:** (Include but are not limited to) Practice activities with feedback are limited to recall of information presented or are separately directed as lab activities.

(6) **Comprehension Checks:** (Include but are not limited to) Multiple choice, matching, etc., with immediate instructor feedback or system-generated feedback as appropriate.

b. **Level 2 IMI (e.g., ICW-2).** May include Personal Computer (PC)/Desktop Simulation Type I at Immersion Level 1 and Fidelity Level A. Given current technology and considering the most basic computer use, almost all self-paced IMI falls into Level 2, which relies heavily on Level 1 elements (e.g., mostly linear presentation and simple menus to one or two paths) but with audiovisual elements developed at a more complex level. The exception would be Level 2 IMI with embedded Level 3 learning activities (e.g., Virtual Simulation (VSIM) to perform procedural skills, or application of principles such as tactics, or a VSIM as a lab activity).

(1) **Student Interactivity:** Moderate to complex participation; performs moderate to complex interactions with the delivery system.

(2) **Audiovisual Media:** Video/audio (if minimal production and postproduction is required (e.g., can be recorded using simple device and little editing necessary)); 3D Graphics; Interactive GUI (menus, submenus); hyperlinks/hotspots; animations of parts/equipment/process flows; check-on-learning animations.

(3) **Menu/Path Includes:** Navigation is based on instructional cues (e.g., student prompts, presentation of stimulus). The learner makes simple responses to instructional cues and interacts with objects on the screen, such as point-and-click objects, rollover objects, and drag-and-drop objects (e.g., simple item selection, procedural response). Interaction offers feedback and remediation. The learner has more control over navigation with two or three menu/path capabilities. Designed as an information-only or an information-plus-demonstration strategy.

(4) **Learning Activities:** (Include but are not limited to) Procedural skills demonstrated by the courseware and procedural skills via previously encountered scenarios, both with immediate feedback.

(5) **Comprehension Checks:** (Include but are not limited to) Multiple choice, matching, etc., with immediate system-generated feedback and previously encountered procedural skills scenarios.

c. **Level 3 IMI (e.g., ICW-3).** May include PC/Desktop Simulation Type I at Immersion Level 1 and Fidelity Level B.

(1) **Student Interactions:** Complex participation; performs complex interactions with the delivery system.

(2) **Audiovisual Media:** Video/audio; 2D/3D Graphics (complex); interactive GUI; coded activities (e.g., guided practice, emulation, games, simulation of parts of systems, animations, and Check on Learning).

(3) **Menu/Path Includes:** This level of interactivity most often applies to specific learning activities within a Level 2 lesson (e.g., a learning activity to perform procedural skills, or application of principles such as tactics, or a VSIM as a lab activity). Involves simulated activities such as a how-to guide for learning software, simulated activities depicting diagnostic procedures, simulated operational procedures, and simulated activities for troubleshooting. The learner controls the learning experience by responding to instructional cues (e.g., presentation of stimulus) which may involve open-ended navigation. The learner is encouraged to branch (test out or otherwise skip content already mastered), make decisions, alter paths, and receive constructive feedback. The learner uses varied techniques in response to instructional cues involving complex concepts, procedures, and evaluation. A lesson may present complex operation and

maintenance procedure scenarios. Designed as an information plus demonstration plus application strategy or as a whole task-centered with demonstration application strategy.

(4) **Learning Activities:** (Include but are not limited to) Practice with immediate feedback is mostly application of procedural skills, with multiple opportunities to practice, but not with free play.

(5) **Comprehension Checks:** (Include but are not limited to) Testing with tailored remediation; and adaptive branching based on pretest performance.

d. **Complex Media (e.g., VSIM).** A computer-based representation of the function and operation of one or more systems or subsystems using system models that replicate physical processes in context of an operational environment. VSIM uses mathematically accurate system models that replicate physical processes and duplicate system response (indicators) in real time based on physics-based modeling of student inputs (controls). Interaction with system simulation is generally conducted through realistic representations of the actual system control panels or interfaces. Simulation is a model-based environment that describes the correct state of any element in the environment through the definition of relationships and attributes.

(1) Depending on specific requirements for capabilities and functionality, VSIM:

(a) Models system functionality, but not system states – provides only fault-free system simulation (i.e., models one or more normal operation conditions).

(b) Models system static states within actual system tolerances and depicts some dynamic system states – offers both fault and fault-free simulation of system components (e.g., models more than one normal operation conditions plus more than one fault conditions and/or degraded modes of operation).

(c) Models complex equipment using mathematically correct component-based model – replicated system static and dynamic response is within tolerances prescribed for actual equipment. Accurately simulates dynamic states, faults, and fault effects of individual components.

(2) **Student Interactions:** Complex participation; performs complex interactions with the delivery system.

(3) **Audiovisual Media:** Video/audio; 2D/3D Graphics and animations (complex) activities (e.g., demonstration, practice, and assessments) are the primary focal point of the simulation, not embedded in an otherwise linear navigation path.

(4) **Menu/Path Includes:** This level of interactivity applies to specific performance activities such as performing procedural skills or application of principles such as tactics. Often involves simulated activities depicting operational procedures, diagnostic procedures, and troubleshooting. The learner controls the learning experience by responding to instructional cues (e.g., presentation of stimulus) which may involve open-ended navigation. The learner is encouraged to make decisions, alter paths, and receive feedback. The learner uses varied techniques in response to instructional cues involving complex concepts, procedures, and evaluation. A learning event may present complex operation and maintenance procedure scenarios. Designed as a demonstration plus application strategy, or as a whole task-centered with demonstration application strategy.

(5) **Learning Activities:** (Include but are not limited to) Demonstration and application of procedural skills (with ample opportunities to practice) including performance of normal operations, fault conditions (e.g., troubleshooting and repair), and degraded modes of operation. Free-play is often allowed, though perhaps with some restrictions.

(6) **Comprehension Checks:** (Include but are not limited to) performance assessments.

e. **Extended Reality and Immersive Virtual Environment (IVE).** AR, MR, VR, and IVE types of complex media do not align with the requirements and characteristics of VSIM described within this section and are defined separately. Any design for training with this type of complexity will follow a blended software engineering (SE) and instructional systems design (ISD) process and will therefore require a linked combination of specific SE and ISD Contract Data Requirements List.

8.2. Interactive Multimedia Instruction 3 Scenario/Simulation Types. For each LO recommended for a level of complexity at IMI 3, the contractor must design and develop

the SCO using one or more of the following scenario types, as appropriate, to teach (present instruction), practice (with relevant feedback), and test the LO:

a. **Analysis/Apply Rules/Problem Solving -** dealing with unknown or previously unencountered situations; responding/interpreting; demonstrating mental preparedness to encode operational cues as indicators of normal, abnormal, and emergency conditions associated with the performance of an operational procedure.

b. **Procedural Knowledge/Follow Procedures -** Following step-by-step instructions.

c. **Demonstrate/Perform/Complete a Task -** Performing an operator task, maintenance task (e.g., service, maintain, repair, remove/install), or troubleshooting task on a system or component of a system. The SCO models normal operating state and pre-set fault condition(s) (not the same as complex media, which also models fault conditions that are not pre-sets).

d. **Apply a Theory / Demonstrate Conceptual Knowledge and Act on It -** Categorizing knowledge by attributes.

e. **Cause and Effect (Stimulus/Response) Demonstration -** for example, manipulating an object to see the reaction (e.g., push the lever down and the weight goes up; normal operation of a system and/or its components).

8.2.1. Each Interactive Multimedia Instruction 3 scenario type (e.g., shareable content object) must exhibit these media characteristics at a minimum:

a. **Item Selection**

b. **Procedural Response**

c. **Object Modeling -** the SCO presents 2D and/or 3D object model(s) which the student can manipulate to perform the work or learn the concept.

(1) Model is embedded as an interactive event within the navigation path. Model's navigation controls are separate from the overall GUI's navigation controls.

(2) Model is developed to teach, practice, or assess a single task or procedure within a single interactive event.

(3) Event is often approached as guided practice with only one possible correct navigation path and immediate, or three-attempts corrective feedback.

NOTE: There is no requirement that limits the IMI 3 event to a guided practice – it can be other than guided practice too.

(4) There is no requirement that limits the assessment activity to repeat the guided practice. Ideally, the assessment will be a different scenario rather than a repeat of the guided practice.

d. **Complex Controls (via GUI and navigation structure) -** the SCO allows interaction with the courseware via various input methods with various feedback or responses from the SCO for the different inputs.

e. **Complex Controls (Interactive Objects) -** the SCO provides or simulates complex controls that the student needs to interact with in order to simulate performing the work (e.g., one or more control elements that allow actual or simulated system inputs with feedback or system responses relative to the scenario).

f. **Complex Scenarios -** the SCO allows student actions to impact the scenario, where the scenario can change based on student inputs, resulting in multiple ways the LO can be executed. The SCO provides scenario(s) needed to practice the work (e.g., the SCO requires the student to perform multiple, simultaneous actions or to respond to a variety of variables or conditions).

NOTE: Text-based multiple choice or decision tree type scenarios are not considered complex scenarios since they do not simulate actions.

g. **Multi-path Navigation -** the User Experience (UX) design and UI of the SCO allows navigation that includes access to all parts of the SCO via the use of menus, hyperlinks, pop-ups, multiple navigation panes, etc. Practice activities may be guided or unguided, as appropriate, for the scenario(s) and LO. Performance tests will not repeat the practice activity unless there is only one correct way to perform the LO, and no alternate scenario(s) would be appropriate. Navigation down an incorrect path must be corrected within two steps.

8.3. Media Characteristics. Tables 22 to 26 provide media characteristics for each level of IMI.

Table 22: Level 1 Interactive Multimedia Instruction Media Characteristics

Level 1 IMI Media Characteristics		
IMI 1	**Media Characteristic**	**Definition**
	Text	(Self-explanatory)
	Audio	Can include voiceover narration and sounds corresponding with visual presentations, animations, audio clip recordings, mechanical sounds (e.g., beeps, buzzes, clicks) and replications of natural environmental sounds.
	2D Graphic	Highly detailed image. High resolution (2D graphics). High level of detail and focus on visual representation/replication. Can be depicted in a 2D or 3D graphic.
	3D Graphic	Exploded view and/or view all sides of object (e.g., system, component). Provide a visual depiction in an X-Y-Z scale (width, height, depth) to depict components within a larger system ("exploded" view) or to provide a rotational view of all sides of a component or system. Unlike object modeling, a 3D graphic is static and does not allow user interaction with the image.
	Motion Graphic/Video	(Self-explanatory)

Table 23: Level 2 Interactive Multimedia Instruction Media Characteristics

Level 2 IMI Media Characteristics		
	Media Characteristic	**Definition**
IMI 2	**Item Selection**	Interaction with courseware (e.g., menus, hotspots, modeled objects, etc.) requires inputs/selections to occur one at a time.
	Procedural Response	Input actions performed in sequence or step-by-step.
	Object Modeling	**1. Static Models -** 3D models that look the same as if in a live setting, with realistic proportions, color, textural appearance, etc. **Interaction with static models** allows functionality such as rotation of the model to see all angles and points of view, selecting hotspots to see a close-up view of a component or a popup text box, etc**.** **2. Active Models -** 3D models that include all the features of static models and that include motion to react and function as they would in a live setting, with the correct speed, acceleration, trajectory, etc. *Interaction with active models at the IMI 2 level allows manipulating the model and/or interacting with it in a demonstration mode (e.g., to identify components and their locations, identify controls and indicators, etc. and to see their basic functions in normal operation mode).*

Table 24: Level 3 Interactive Multimedia Instruction Media Characteristics

Level 3 IMI Media Characteristics		
	Media Characteristic	**Definition**
IMI 3	**Object Modeling**	1. **Static Models -** same as IMI 2. 2. **Active Models -** same as IMI 2, but interaction with active models at the IMI 3 level allows manipulating the model and/or interacting with it in a performance mode (e.g., to perform an operation or maintenance task, etc.). a. The model is embedded as an interactive event within the navigation path. The model's navigation controls are separate from the overall GUI's navigation controls. b. The model is developed to teach, practice, or assess a single task or procedure, or multiple tasks one-at-a-time. c. The event is often approached as guided practice with only one possible correct navigation path and immediate, or three-attempts, corrective feedback. There is no requirement that limits the event to a guided practice–it can be other than guided practice too. d. There is no requirement that limits the assessment activity to repeat the guided practice. Ideally, the assessment will be a different scenario rather than a repeat of the guided practice.
	Complex Controls (Interactive Objects)	Student interaction with courseware, object models, and/or simulated controls that allows actual or simulated system inputs with feedback or system responses relative to the scenario (e.g., interacting with a modeled object or simulated controls to perform a task, interacting with simulated tools and their controls in addition to the primary modeled object, and interacting with multiple submenus or icons on a given screen that each provide additional information to the scenario, etc.). Such interactions will include more than merely selecting or manipulating objects in a linear sequence, especially when prompted by direction text and there is only one possible active selection area at a time.

Level 3 IMI Media Characteristics (Cont.)		
	Media Characteristic	**Definition**
IMI 3	**Complex Scenarios**	Student inputs impact the scenario and cause the scenario to change, resulting in multiple ways an LO can be executed. Complex scenarios are not restricted to a linear sequence, such as a lock- step guided practice activity with a stimulus-response-reward approach. Performance based complex scenarios should not rely on multiple choice questions to advance the scenario.
	Multi-path Navigation	The UX and UI allow navigation that includes access to all parts of the SCO via the use of menus, hyperlinks, pop- ups, multiple navigation panes, etc. Practice activities may be guided or unguided. Performance tests will not repeat the practice activity unless there is only one correct way to perform the LO, and no alternate scenario(s) would be appropriate. Navigation down an incorrect path must be corrected within two steps.
	Realistic Physics (object being modeled)	Modeled objects behave realistically in response to gravity, friction, or force. Objects convey accurate and realistic, natural, physical laws (not gaming properties), such as seeing the gravity effect on a flange safety shield being unwrapped around a pipe.
	Out of tolerance Feedback	The required actions to execute the LO are constrained by limiting factors, impacting the way the LO is performed. These limiting factors must be considered and accounted for in performance of the LO (e.g., actions must be taken within a specific time frame; performed with a specific amount of pressure; occur within other defined thresholds).
	Structured Faults	Discrepancies that cause divergence from normal functioning of the system or scenario being used, requiring corrective action from the student to return the system to normal functions. Multiple structured faults can also be required to complete the scenario.

Level 3 IMI Media Characteristics (Cont.)		
IMI 3	**Media Characteristic**	**Definition**
	3D Space/Object	3D field-of-view. Provides an extended horizontal and vertical field-of-view (beyond the 180° field seen on standard flat-screen projections). This extend field of view is different from simply rotating the object or viewing the object inside a simulated environment (e.g., being able to go inside a toolbox and interact with the components).
	Visual Motion Awareness	Sensation of moving through an environment relative to other objects.

Table 25: Complex Media Characteristics

Complex Media Characteristics		
Complex Media	**Media Characteristic**	**Definition**
	Object Modeling	**Active Models -** same as IMI 3 (especially with complex controls, complex scenarios, and multi-path navigation), but adds one or more of the complex media characteristics, which increases the fidelity of interactions with the model. The model is developed to teach, practice, and assess more than one task or procedure. **Interaction with active models at the complex media level allows manipulating the model and/or interacting with it in a performance mode (e.g., to perform operation and maintenance of multiple tasks in multiple modes).** • The model is the primary focal point of instruction, practice, or assessment. It is not embedded as an interactive event within an otherwise linear navigation path. • The model is developed to teach (demonstrate), practice, troubleshoot, calculate or assess multiple tasks or procedures. The model's primary navigation controls are part of the model (e.g., use the simulated system controls to interact with the system), with multiple active hotspots or touch points at the same time.

Complex Media Characteristics (Cont.)		
	Media Characteristic	**Definition**
Complex Media	**Relevant Physics** (pertaining to the object being modeled)	Modeled objects behave realistically in response to gravity, friction, or force. Objects convey accurate and realistic, natural, physical laws (not gaming properties). Modeled objects respond to gravity, collisions and friction in the same way they would in the real world.
	Out-of-Tolerance Feedback	The required actions to execute the LO are constrained by limiting factors, impacting the way the LO is performed. These limiting factors must be considered and accounted for in performance of the LO (e.g., actions must be taken within a specific time frame, at precise times or locations, performed with a specific amount of pressure or at a certain pace or rhythm, occur within other defined thresholds, etc.).
	Structured Faults	Structured faults are discrepancies that each cause divergence from normal functioning of the system or scenario being used, requiring corrective action from the student to return the system to normal functions. Multiple structured faults can also be required to complete the scenario.
	3D Immersive Environment	3D Immersive field-of-view. Provides an extended horizontal and vertical field-of-view (beyond the 180° field seen on standard flat-screen projections). This extended field of view is different from simply rotating the object, or viewing the object inside a simulated environment. It is an extended view of the space (e.g., room) and capability to move within that space on an X, Y, and Z axis (e.g., simulates the student moving through the space or having peripheral vision within the space beyond the normal field of view).
	Realistic Terrain	Environmental surroundings that impact responses or reactions. Replicates specific terrain because the type of terrain impacts how the LO must be executed.
	Physical Environmental Effects (the natural environment modeled object is placed)	Environmental objects behave realistically in response to gravity, friction, or force and thereby impact the modeled object (e.g., sea state and weather affects the small boat, etc.). Convey accurate and realistic, natural, physical laws (not gaming properties). *Environmental objects respond to gravity, collisions, and friction in the same way they would in the real world.*

Complex Media Characteristics (Cont.)		
	Media Characteristic	**Definition**
Complex Media	**Reporting Capabilities**	The ability to view, review, or document responses during practice or performance of an LO. *Reporting capabilities are more than a mere checklist of process completed.*
	Complex Controls (Interactive Objects)	Student interaction with courseware, object models, and/or simulated controls that allows actual or simulated system inputs with feedback or system responses relative to the scenario (e.g., interacting with a modeled object or simulated controls to perform a task, interacting with simulated tools and their controls in addition to the primary modeled object, and interacting with multiple submenus or icons on a given screen that each provide additional information to the scenario). Such interactions will include more than selecting or manipulating objects in a linear sequence, especially when prompted by direction text and there is only one possible active selection area at a time.
	Complex Scenarios	Student inputs impact the scenario and cause the scenario to change, resulting in multiple ways an LO can be executed (e.g., complex scenarios allow a student to perform multiple, simultaneous actions (inputs), or to respond to a variety of variables or conditions, with system-generated feedback (responses) dependent upon the combined inputs). Complex scenarios are not restricted to a linear sequence, such as a lockstep guided practice activity with a stimulus-response-reward approach. Performance based complex scenarios will not rely on multiple choice questions to advance the scenario.
	Multi-path Navigation	The UX and UI allow navigation that includes access to all parts of the SCO via the use of menus, hyperlinks, pop- ups, multiple navigation panes, etc. Practice activities may be guided or unguided, as appropriate, for the scenario(s) and LO. Performance tests will not repeat the practice activity unless there is only one correct way to perform the LO, and no alternate scenario(s) would be appropriate. Navigation down an incorrect path must be corrected within two steps.
	Visual Motion Awareness	Sensation of moving through an environment relative to other objects.

Table 26: Complex Media with Hardware Characteristics

Complex Media (with Hardware) Characteristics		
Complex Media with Hardware	**Media Characteristic**	**Definition**
	Tactile, Feel, and Haptics	Tactile, feel and/or haptic responses convey accurate and realistic representation of the sensations produced by physical contact of an object, instrument or natural element in the environment (e.g., surface contact, pressure, feedback, etc.).
	Actual Controls	The actual or operational equipment/controls must be available as part of the training package or a high-fidelity simulation of the control characteristics needs to be developed for training.
	Training Equipment	Actual (Operational) Equipment; Modified Operational Equipment

8.4. Page and System Terms. Table 27 addresses the terminology for the major elements associated with the IFIT and SDIT products. Certain conventions for system terms illustrated below, particularly bold and italicized formatting, may not be reflected in the outputs from certain U.S. Government systems (e.g., Authoring Instructional Materials (AIM) Content Planning Module (CPM)/LO Metadata (LOM)).

NOTE: The Submarine Force uses the Doctrine for Submarine Communications for naming conventions and phraseology.

Table 27: Page and System Terms Definition and Examples

Term/Phrase	Definition/Usage	Example(s)/Notes
Boldface	Indicates that the word or phrase names a screen element the user will select; this convention may not be reflected in the outputs of certain U.S. Government systems (e.g., AIM CPM/LOM).	From the **Go To** drop-down list, select **Administration.** Select **OK** to complete the transaction.

Term/Phrase	Definition/Usage	Example(s)/Notes
Double quotations	Do not use double quotes to indicate text to be typed into a field. Bold text to be typed into a field.	**Correct:** Type **AM223** in this field. **Incorrect:** Type "AM223" in this field.
System Name (SHORT NAME)	Use instead of *System*, *Application*, or *Program*. **NOTE:** "The SHORT NAME system" is sometimes redundant when spoken.	**Correct:** CPM pre-fills the date fields. **Incorrect:** The date is created by the system.
Name Department of [_____] Logo	Use instead of *icon* or *picture*. Always use *Name Department of [___]* and *Logo* together, never just *Logo*. *Logo* is capitalized. *Name Department of [_] Logo* is bold.	**Correct:** Select the **Department of [___] Logo** to return to the System Name Home Page. **Incorrect:** Select the CPM Home Page.
Calendar icon	Use for the calendars usually located next to date text boxes. Instruct the user to select the drop-down calendar to view, and then to select a certain date. The phrase *drop-down calendar* is not capitalized. The date to select is bold.	**Correct:** Select the **Calendar** icon, and then select **01/01/2023.** **Incorrect:** Next to the **Graduation Date** text boxes, select the drop-down calendar to view. Select **01/01/2023.**

Term/Phrase	Definition/Usage	Example(s)/Notes
Button	With the exception of radio buttons, discussed below, do not use *button* if possible, for efficiency of language. **NOTE:** *Button* is not capitalized. The button label is bolded. For directional text, match case of the button with text. For the instructional icons listed in Section 5.2.7, use “icon” rather than “button.” If the SUBMIT button is uppercase, have the directional text match. If the next button is title case, have the directional text match.	**Correct:** Select **Submit** to complete the application. **Incorrect:** Select the **Submit** button to complete the application. **Correct:** Select the **Mentor Tip** icon; then select **Nex**t to continue. **Incorrect:** Select the **Worksheet** button. **Correct:** Select **SUBMIT** to complete the application. Select **Next** to continue.
Checkbox(es)	Use instead of *check box*, *check-box,* or *box*. The word *checkbox* is not capitalized. The checkbox label is bold.	**Correct:** Select the corresponding checkbox. Select the **Yes** checkbox. **Incorrect:** Select the **Yes** box.

Term/Phrase	Definition/Usage	Example(s)/Notes
Disabled	Use to describe an element that is grayed out and unavailable. The word *disabled* is not capitalized.	**Correct:** The **Alias Name** tab is disabled unless you indicate an alias exists. **Incorrect:** The **Alias Name** tab is grayed out unless you indicate an alias exists.
Double-click	Use a hyphen between double and click, if used.	**Correct:** Double-click **Incorrect:** Double click or DoubleClick
Drop-down list	Use for boxes that use a drop- down arrow to display a list of items the user can select. Do not use *list box*, *list,* or *menu*. The phrase *drop-down list* is not capitalized. The drop- down list label is bold.	**Correct:** From the **Dwelling Type** drop-down list, select **Apartment.** **Incorrect:** Select the **Dwelling Type** menu, and then choose **Apartment.**
Field	Fields are fixed areas in SHORT NAME in which certain data is displayed. The word *field* is not capitalized. The field label is bold.	**Correct:** In the header, the **Case Status** field displays whether the case is pending or not. **Incorrect:** In the **First** field, type in **Mary.**

Term/Phrase	Definition/Usage	Example(s)/Notes
Header	Located at the top of some SHORT NAME pages, the header usually displays under the page title and pre-fills with case information. The word *header* is not capitalized.	**Correct:** In the header, select the **Case #** hyperlink. **Incorrect:** Notice the Case Action at the top of the page.
Help desk	Use two words. Lowercase H and D.	**Correct:** help desk **Incorrect:** Help-desk helpdesk Help Desk
Home Page	The opening page in SHORT NAME, referred to as the SHORT NAME Home Page. *Home Page*, when used with SHORT NAME, is capitalized and bold. **NOTE:** The logo used in this example refers to the blue, official [_] logo. The SHORT NAME logo is described below.	**Correct:** Select the **Department of [___] Logo** to return to the **SHORT NAME Home Page.** **Incorrect:** Select the **SHORT NAME Logo** to return to the desktop.

Term/Phrase	Definition/Usage	Example(s)/Notes

Hyperlink	Use instead of *link*. Do not underline. The word *hyperlink* is not capitalized. The hyperlink label is bold.	**Correct:** In the header, select the **Case #** hyperlink to open the **Case – Search/Summary** page. **Incorrect:** Select the link to the Case# to see the Search/Summary page.
Icon	Use instead of *symbol* or *picture*. The word *icon* is not capitalized. The icon label is bold.	**Correct:** Select the **Edit** icon to open the record. **Incorrect:** Select the pencil to open the record.
Internet	Use uppercase for the first letter.	**Correct:** Internet **Incorrect:** internet
Intranet	Use lowercase for the first letter, unless at the beginning of a sentence.	**Correct:** intranet **Incorrect:** Intranet
Label	Names of fields, text boxes, hyperlinks, drop-down lists, buttons, checkboxes, radio buttons, tabs, etc. The actual word *label* is not used. The label name itself is bold.	**Correct:** In the **First** text box, type in **Mary.** **Incorrect:** In the text box labeled First, type in Mary.
Lesson	Lessons are the main components of the courses.	The lessons in the Eligibility course include Introduction, Search & Inquiry, Data Collection, and many more.

Term/Phrase	Definition/Usage	Example(s)/Notes

Logo	Select the **SHORT NAME Logo** to return to the Home Page.	Add logo
Menu path	Use chevrons with one space before and after the symbol when identifying a menu path.	Left Navigation > Data Collection > Individual Information
Message	Some actions in **SHORT NAME** will display a message at the top of the page in green font. The word *message* is not capitalized or bold. The actual message is put in quotes.	**Correct:** If no matches are found, **SHORT NAME** will display the following message, "No matches found." **Incorrect:** If no matches are found, a No Matches found message appears.
Page	**SHORT NAME** is made up of pages. Do not use *screens* or *windows*. *Page* is not capitalized. The page name is bold.	**Correct:** The **Initiate Action** page displays. **Incorrect:** The Initiate Action screen appears.
Queue	To support the Process Model, tasks are created and sent to Queues, or units that do specific processes. *Queue* is capitalized, as well as the Queue name.	**Correct:** The **Application Registration** Queue begins the intake process. **Incorrect:** The application registration unit begins the intake queue.

Term/Phrase	Definition/Usage	Example(s)/Notes

Radio button	The round buttons used to select one item from a group of items. Only one radio button can be selected. The phrase *radio button* is not capitalized. The radio button label is bold.	○ **Correct:** Select the **Yes** radio button. **Incorrect:** Select the Yes circle.
Read-only	Hyphenate and do not capitalize this phrase. *Read- only* is not bold.	**Correct:** The **Summary** page is read-only. **Incorrect:** The Summary page is **Read-Only.**
Sections (course materials)	Section headings are not centered in modern business writing; they are aligned flush left. Capitalize all words in headlines, sections headings, and subheadings.	**Correct:** Module 5: Applications **Incorrect:** Module 5: Applications
Subsections	There may be several subsections within each section of a given lesson's IG.	Subsection 9.1 in the Introduction Lesson gives an overview of the types of online help available to workers in **SHORT NAME.** Subsection 9.2 goes into further detail.
Tab	Bold the tab name.	**Correct:** Select the **Purposes** tab. **Incorrect:** Select the Purposes tab.

8.5. System Operation and Maintenance Action Terms. Table 28 provides the correct usage of commonly used action terms and phrases.

Table 28: System Operation and Maintenance Action Terms

Term/Phrase	Definition/Usage	Example(s)/Notes
Check/Uncheck	Do not use *check* and *uncheck* as verbs meaning to add and remove a check in a checkbox. Use *select* and *clear* instead.	**Correct:** In the **Roles** checkbox, select **Parent.** **Incorrect:** In the **Roles** checkbox, check **Parent.**
Display	Use *display* to refer to messages or other information that users can see on pages. Do not use *appears*.	**Correct:** An error message displays. **Incorrect:** An error message appears.
Location and Action	When providing steps or describing processes, state location first and action second.	**Correct:** On the Left Navigation menu, select **Data Collection.** **Incorrect:** Select **Data Collection** from the Left Navigation menu.
Expand	The action to open a menu. Select the plus sign to expand the menu selection.	**Correct:** Select the plus sign to the left of the menu title to expand the menu selection. **Incorrect:** Select the box to the left of the menu title to open the menu selections.

Term/Phrase	Definition/Usage	Example(s)/Notes
Enter	Do not use this term, except for a general reference to an action. Use *type* or *select*, depending on the user action. However, use *enter* to describe general instructions or a combination of instructions. Use *type* for specific instructions when using a keyboard to enter data.	**Correct:** In the **Name** text box, type **Melissa Smith.** **Correct:** You can enter the city by either selecting a name from the **City** list or typing the name in the **City** text box. **Incorrect:** In the **Name** text box, enter **Melissa Smith.**
Fill in/Fill out	Use when referring to a specific item of data.	**Correct:** Fill out the **name** field. Fill in the date in the **Rec'd** field. **Incorrect:** Fill out the customer checklist. Fill in the receiving information.
Pre-fill	Use to describe the action when data is placed into a box automatically. Hyphenate. Do not use *populate*.	**Correct:** **SHORT NAME** pre-fills the **Referrer** name box based on information previously supplied. **Incorrect:** **SHORT NAME** populates the **Referrer** name based on information you supplied.

Term/Phrase	Definition/Usage	Example(s)/Notes
Refer to	Directs the user to another section or topic. Do not use *go to* or *jump to*.	**Correct:** Refer to System Overview for navigation information. **Incorrect:** Go to System Overview for navigation information.
Repeat	Directs the user to duplicate steps.	**Correct:** Repeat steps for each additional dependent. **Incorrect:** Continue steps for each additional dependent.
Search	Use to refer to the *Search* button. Use bold. It is a common button, so do not call it a button.	**Correct:** Type the participant's first and last name, and then select **Search.** **Incorrect:** Do a name search.

Term/Phrase	Definition/Usage	Example(s)/Notes
Select	Use *select* to describe using buttons, commands, and options and to define what the user does. Use *select* instead of *click*, *press*, etc. Use to choose a checkbox. Use to describe the act of choosing options from a list. Use to choose a radio button.	**Correct:** Select the **Subject** checkbox. Select the **City** list, and then select **Hartford**. Select the radio button for Toni's address. **Incorrect:** In the **Roles** checkbox, select **Subject.** Choose **Portland** in the **City** list. **Correct:** Select **OK.** **Incorrect:** Press **OK.**
Type	Describes the user action to enter text in a text box. Do not use *enter*.	**Correct**: In the **Name** text box, type **Melissa Smith.** **Incorrect:** In the **Name** text box, enter **Melissa Smith.**
Verify	The action of assuring or validating information. Do not use *prove* or *check*.	**Correct:** Verify dates of employment. **Incorrect:** Check dates of employment.

8.6. Metadata. Metadata based on LOM version 1.0 (LOMv1.0) must be created for each SCO level. All metadata attributes must conform to the current Institute of Electrical

and Electronics Engineers Standard for Learning Metadata with outlook to the updated P2881 Standard. This standard specifies a conceptual data schema that defines the structure of a metadata instance. This conceptual data schema specifies the data elements, which compose a metadata instance for multiple learning types. For specific requirements, refer to the Course Metadata Requirements Guide at (CAC enabled): https://lms.nel.navy.mil/help/lmsfiles/NeL_Course_Metadata_Requirements_ Guide.pdf.

8.7. Shareable Content Object Reference Model Content Package. The SCORM integrates a set of related technical standards, specifications, and guidelines designed to meet the high-level requirements of accessibility, reusability, interoperability, and durability of web-based content and systems. SCOs are units of information delivered to students via the LMS and are the smallest unit of information that can communicate with the LMS to track student performance or interactions. SCOs are roughly equivalent to lesson sections, learning objects such as simulations or other complex activities, instructional methods that stand as a unit, or lessons and modules, although they can be, and often are, smaller chunks of instruction.

a. CDs must work closely with Programmers to ensure all content is in full compliance to all SCORM and metadata requirements.

b. Refer to https://www.adlnet.gov/past-projects/scorm/#scorm-versions-and-resources for SCORM 2004, 4th Edition references and guidance.

c. All SDIT and IFIT course materials created for delivery through the LMS must be compliant with the latest version of SCORM supported by the LMS.

d. Course materials planned for LMS delivery must be bundled into SCORM content packages, based on SCORM 2004 4th Edition specification, at the EO level. In addition, each SCORM package must contain a working/operational “begin_here.htm” file as an initial point of entry to launch the course content in standalone mode, without using the LMS. SCORM packages must not contain any executable files (e.g., .exe, .msi, etc.) within the package.

NOTE: Due to cybersecurity requirements regarding Multipurpose Internet Mail Extensions (MIME), NeL will block .exe, .dll, .com, .bat, and .csh programs.

8.8. xAPI Statement Model. The xAPI standard describes a statement model. When viewing a statement, individual properties can be seen in the statement’s JSON (JavaScript Object Notation) structure. The actor, verb, and object properties are required in all xAPI statements, which conveys, “somebody did something.” Statements also typically include additional information in the result and context objects to add more

meaning or details about the learning experience. A high-level diagram of the primary parts of the xAPI Statement Model is provided below.

8.8.1. xAPI Library. NETC has created a set of xAPI Profiles to drive commonality and best practices in the implementation of xAPI across communities. All LRS administrators will review and reference the Navy's Profiles, which are available via the Navy xAPI Library: (use this link) https://w3id.org/xapi/navy. Interactive media, IMI 1-3 training products, complex media products, simulations, PDF files, or all other common instructional material developed will only use NETC approved xAPI statements and profiles. The specific use of xAPI statements, placement, and implementation strategy must be defined in the IMDP and the specific types identified during storyboard development for review. Those statements are found in the xAPI Library.

NOTE: Refer to the LRS Content Developer guidance. This guidance enables Navy content CDs to track a wide range of learning experiences, interactions, and performance for any type of content. The guidance is found in the xAPI Library: https://w3id.org/xapi/navy.

8.9. cmi5 Future Vision. The cmi5 specification includes an xAPI profile and allows for the functionality of SCORM. The cmi5 specification will replace SCORM as the de-facto format of online and computer-based instruction. It will enable packaging and delivery of distributed learning materials from an LMS to elsewhere in a browser environment or outside of a web-browser with mobile applications or simulation content. It will bridge the SCORM and xAPI divide by defining interoperability rules, to include launch, authorization, reporting, and course structure, which defines how an LMS and xAPI learning activities will communicate. Products that fully support cmi5 will also support xAPI. The cmi5 specification allows for tracking newer technologies and for modernization of training delivery methods. There are open-source tools and templates available at this link: https://github.com/adlnet/CATAPULT. More information is available at this link: https://aicc.github.io/CMI-5_Spec_Current/.

CHAPTER 9
CONTENT TESTING AND EVALUATION

9.0. Navy e-Learning Overview. NeL offers a comprehensive web-based training production environment for managing administration, documentation, tracking, and reporting of Navy training programs, which includes:

a. Classroom and online training events.

b. Efficient delivery of training content.

c. Hosting of over 9,000 courses and supports Navy "A" and "C" schools with e-learning content and learning management services.

d. A training continuum that encompasses professional development, Common Military Training, professional military education, and refresher training.

9.1. Navy e-Learning Hosting Environments. NeL content is primarily hosted for users in the unclassified Navy Internet Protocol Router Network (NIPR) web-based environments, with exceptions for submarines delivering unclassified content in secure settings. All NeL environments require CAC authentication, including those used for testing. Sponsors must ensure that CDs and Reviewers possess a CAC before requesting accounts. Please note that NeL does not provide CAC sponsorship.

9.2. Content Hosting and Reports Management Service. Web-based service that provides sponsors (primary and secondary), CDs, reviewers, and NeL the ability to document and track content lifecycle (start of contract, validation, hosting, revisions and retirement). It provides real-time reporting of content status and notifications for content movement and discussion threads.

9.2.1. Account Access. Sponsor, CDs, and SMEs will request Content Hosting and Reports Management Service (CHaRMS), and GCAT accounts here at (CAC enabled): https://learning.nel.navy.mil/ELIAAS v2p/ev2Account RequestPortal.xhtml and may also be accessed from the NeL login page by clicking “Request Additional Access.” This request is for NeL U.S. Government content (e-learning) sponsors and their content CDs (either government or contracted vendors). Government sponsors will be U.S. Active/Reserve Duty Military or U.S. Civil Service. CDs/vendors must list a valid government sponsor for approval for access to CHaRMS. After account approval the content sponsor will be able to submit the required “Content Announcement” and “Content Submissions” forms and will have access to content hosting milestones.

9.3. Government Content Acceptance Testing Access. GCAT is designed for final review of content for functional performance within an application and production-like

environment. Government sponsor performs acceptance prior to the NeL production environment hosting. Prior to content hosting, transcripts are verified by NeL and sponsors must acknowledge approval in CHaRMS. Prior to GCAT testing, all aspects of content beta testing must be completed by CDs/reviewers via NeL GCAT site (CAC-enforced).

a. Any government contractor in need of access must first obtain approval through the government course sponsor.

b. After processing and notification message has been received the requestor must log in through NeL login path: https://learning.nel.navy.mil and select "GCAT" link.

c. In compliance with DoD mandates, ensure you have logged into Navy eLearning site within 30 days prior to requesting account or immediately upon receiving "Approved" GCAT request e-mail notification.

d. If no log in date has been registered, system will inactivate GCAT link the next day.

e. NeL users experiencing account or course access problems will contact the Navy Enterprise Service Desk (NESD):

NESD Digital Workplace Portal link: https://nesd-dwp.onbmc.mil
Phone: 1-833-NESD-NOW or 1-833-637-3669
E-mail: nesd@nesd-mail.onbmc.mil

9.4. Government Content Sponsor Responsibilities. The government sponsor is the person/organization ultimately responsible for validity of training materials and life cycle maintenance of content and is the primary point of contact for content under development and communications with NeL Content Management Team. The government sponsor will:

a. Obtain and review content hosting requirements.

b. Ensure CDs have/obtain a CAC.

c. Facilitate all communications with CDs.

d. Obtain CHaRMS account and begin the content hosting tracking process.

e. Work with CDs to ensure all requirements for CHaRMS are fulfilled and life-cycle stages finalized.

f. Obtain GCAT account for final functional testing and acceptance of course within NeL LMS application.

g. Ensure validation checks are performed in GCAT by themselves or designated representative that may be a SME. Validation includes ensuring course functions as required and generates a course completion transcript record as expected when passed/failed.

h. Complete and finalize sponsor approval GCAT content review checklist(s) in CHaRMS.

i. Ensure content relevancy, technical accuracy, and operability within changing environments/emerging technologies.

9.5. Content Developer Responsibilities. The content developer will work collaboratively with government sponsor during the development process to ensure delivery requirements are met. The content developer will:

a. Ensure proper SCORM sequencing, navigation, bookmarking, course completion roll-up logic/code, workstation/browser conformance, and required course functionality are achieved.
b. Obtain CHaRMS account and provide required data for hosting stages as applicable.
c. Notify Sponsor when ready to release content to NeL for GCAT review.
d. Obtain GCAT account.
e. Work collaboratively with sponsor and test content as necessary in GCAT environment.
f. Obtain CHaRMS account and provide testing feedback as applicable.
g. Participate in CHaRMS discussion threads as part of the content validation and hosting team.
h. Utilize the NeL Acknowledgement Checklist located in NeL: https://lms.nel.navy.mil/help/lmsfiles/pdf/NeL-Developer-Ack_Chklist.pdf.

9.6. Content Package Requirements. All courses to be placed on the NeL LMS must comply with and adhere to the following:

a. Rehabilitation Act (29 U.S.C. §794d) Section 508 standards
b. SCORM 2004 4th Edition requirements
c. Metadata Requirements: https://lms.nel.navy.mil/help/lmsfiles/NeL_Course_Metadata_Requirements_Guide.pdf
d. NETCINST 5510.1F, Information Protection Policy for NETC LMS in Multiple Networks and Application Environments

e. Navy Marine Corps Intranet (NMCI) Core Build specifications (CAC enabled): https://flankspeed.sharepoint-mil.us/sites/NAVWAR_NMCI_Homeport/NMCI_Info/SitePages/Services/Core.aspx

f. Copyright requirements as detailed in SECNAVINST 5870.9 SCORM content package structure requirements

g. Standalone Package:

(1) Each SCORM package must contain a working/operational "begin_here.htm" file as an initial point of entry to launch the course content in standalone mode, without using the LMS.

(2) Per Defense Information Systems Agency Security Technical Implementation Guide (STIG), executing MIME types such as .exe, .dll, .com, .bat, and .csh programs within the web content damage the security posture of the training system. ISO 27001 and National Institute of Standards and Technology security policies and compliance frameworks advise against allowing executable files within the web content to prevent malware exploit cyberattacks. To maintain cybersecurity compliance, the LMS will block the invocation of executable files.

9.6.1. Linking to Content. To meet SCORM and Learning Stack requirements, be sure that all the elements that are linked as graphical pop-ups or branches from topic content are contained within that topic. Do not link to content external to the LMS, or in other topics (even if it is identical). Copy the element as a new element into your topic. Hyperlinks to PDF files within the SCO are allowed; however, hyperlinks to the Internet or anything outside of the SCO are not permitted.

9.7. Required Content Deliverables. All content deliverables submitted to the NeL Content Administration and Support Team must include the following:

a. Course packages must adhere to NETC LMS requirements. Current LMS requirements for NeL are provided in the "Developers Information" section on the NeL web site. Each SCORM-compliant content package will be delivered electronically as a Program Information File in the .zip-format via GCAT or DoD SAFE to the LMS content administration team.

b. Upon completion of final tests in NeL GCAT, the metadata file (course_metadata.xml) and validation logs must be submitted to the NeL Content Administration and Support Team.

c. NeL LMS content Section 508 standards. Compliance to Section 508 standards will be indicated on the Sponsor GCAT Content Testing Checklist.

NOTE: The World Wide Web Consortium (https://www.w3.org) Web Content Accessibility Guidelines (https://www.wcag.com/resource/what-is-wcag) maintains a listing of web accessibility evaluation tools.

d. CDs must provide answers for all knowledge checks and 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.

e. Once content has passed sponsor review, a copy of all final deliverable material used for content development (e.g., storyboards, lesson designs, source files, etc.) will be provided as a separate electronic deliverable and mailed to the associated LC at the appropriate address, as well as the NETC N73 Branch at:

ATTN: N73
Naval Education and Training Command
250 Dallas St
Pensacola, FL 32508-5268

f. Digital Video Disk submission (NIPR unclassified only) may be sent to:

Navy e-Learning Content Team ATTN: POC (Content team member Assigned to) NETC/NeL BLDG 839, RM 113 6490 Saufley Field Road Pensacola, FL 32509-5239

NOTE: The CCA will retain a copy of all materials as a life-cycle resource for future reference.

9.8. Government Content Acceptance Testing. GCAT is a testing environment closely representative of the NeL Production environment; used by Sponsors and NeL to perform final functional validation of the course within targeted application that is identical to the LMS production environment. Once content is approved by sponsor/LC, it will be moved into the production environment. NeL GCAT is a Navy-specific testing environment that provides a metadata editor 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.

9.9. Navy e-Learning Review and Approval. Once the 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 Developer Checklist. See Figure 9-1 for details.

a. Once the course materials pass NeL Content Administration and Support Team review, the materials are made available for CCA/LC review. The CCA is notified via CHaRMS when the course material is ready for review. The CCA or designee will complete the Content Sponsor NeL GCAT Validation Checklist to use when performing the course review and correcting any issues of the course before placing it into the GCAT. Once the course materials are on the GCAT server, the materials will be available to those given permission to access the course. If issues are found, content will be unapproved and returned to the developer to correct. When corrected, the developer will re-submit content for review.

b. At the end of the testing period, having resolved any known technical issues, the CCA will complete the Sponsor GCAT Content Testing Course Approval step, including the Final Acceptance Review Checklist in CHaRMS.

c. The CCA ensures the course materials meet the criteria outlined within the checklist. Upon successful review of the course, the CCA digitally signs and returns the Sponsor GCAT Checklist to the NeL Content Administration and Support team.

d. Upon receipt of the course approval and signed checklist, the NeL Content Administration and Support team conducts one final review. Upon successful completion of this review, the course material is moved to the NeL LMS.

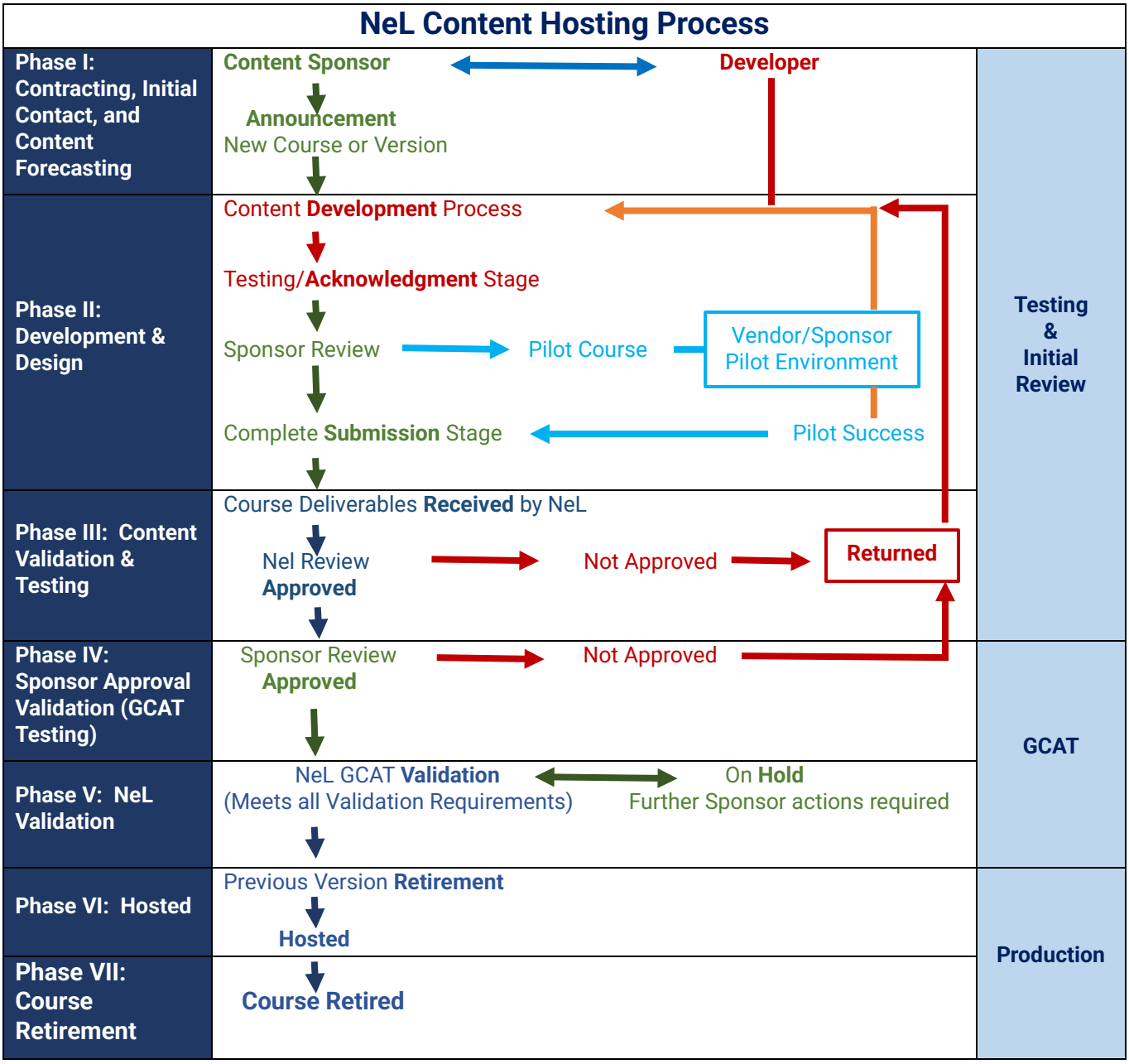


Figure 9-1: Navy e-Learning Hosting Process

9.9.1. Pilot on Navy e-Learning. 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 student effectiveness in attaining the LOs. A detailed redlined copy will identify changes that must be incorporated in the corrected version. Course materials include those delivered via the NeL LMS during the pilot.

Every effort must be taken to ensure the course materials are free of all errors prior to course pilot.

a. The method 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.

b. 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 students participating only in the course pilot. See Chapter 12 for course pilot information.

c. Status of the materials will not be changed until the Authorization to Teach Letter is issued after a successful course pilot. Once the letter 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 the established standards. The retired pilot materials are then removed from the NeL LMS to reduce the storage requirements of the system.

9.10. Information Assurance Certification. Course materials may be Information Assurance (IA) or IA-enabled, as defined in the IA Implementation Instruction (DoDI 8500.1 Ch 1 and DoDI 8510.01). For IA or IA-enabled course materials, the CCA will comply with the appropriate security configuration requirements provided in DoDI 8500.1 Ch 1 and DoDI 8510.01. An IA Manager designated by the CCA will assist with meeting these requirements. The two principal IA requirements are:

a. Common Criteria Evaluation and Validation Scheme – All IA and IA-enabled products must be common criteria certified.

b. STIG and DoD Cyber Exchange – Appropriate STIGs (or equivalent) must be used to configure all IA and IA-enabled products. Refer to the DoD for certification guidance.

CHAPTER 10
TRAIN-THE-TRAINER

10.0. Introduction. T3 is step 8 in Phase III of the NTP process. Step 8 ensures standardized preparation, execution, and follow-up actions occur. T3 events are essential for ensuring that those responsible for instructing or facilitating training programs are equipped with the right knowledge, skills, and tools to deliver effective learning experiences. Appendix I provides a checklist for the inputs and outputs of T3 events. Not all projects require a T3; the following are common situations where a T3 event is necessary:

a. Rollout of new systems, equipment, tools, or software. Instructors need to fully understand the new system to teach others how to use it efficiently. A T3 event ensures they can confidently handle the new equipment, answer questions, and troubleshoot common issues.

b. New learning technologies or platforms. The adoption of new learning software, eLearning tools, or virtual classroom technologies may require a T3 event.

c. Implementation of new processes or procedures. For a smooth transition, instructors must be prepared to teach others how new processes, workflows, or standard operating procedures are applied.

10.1. Review and Feedback. T3 is an opportunity to review all the modernized course material, TTE, and TDs in execution and to provide critical feedback (e.g., redlines) to the developer and other stakeholders for adjudication and correction. For courses undergoing modernization efforts through RRL, the CRM is the official method to document discrepancies and convey instructor, CCMM, CCA, and other stakeholder's feedback to improve and correct the course material. The CCA, in such cases, is responsible for submitting the T3 CRM following the conclusion of the event. This helps identify improvements across CDs, vendors, and government technical representatives. For other curriculum development projects, a CRM may be used, however, a feedback process between contractor and CCMM/CCA must be agreed to prior to T3 start.

10.2. Train-the-Trainer Procedures. The objective of a T3 event is to educate and familiarize the assigned instructors on the proper delivery, sequence, and approach to a course using the actual training equipment and technologies in both the classroom and lab. Conducting a T3 event is a structured process that involves preparing the instructors, delivering relevant content, and ensuring that the instructors can effectively pass on knowledge and skills to their students. T3 event will be conducted in the NETC approved

GCAT environment. Exception may be granted by NETC N73 on a case-by-case basis to facilitate business operational requirements. Steps to conduct an effective T3 are listed below:

a. Define Clear Objectives and Outcomes. Before beginning, it's crucial to identify goals of the T3 event. Consider the following:

   (1) Objective: What knowledge, skills, or behavior does the instructor need to acquire?

   (2) Outcomes: What will the instructor be able to do after the training (e.g., deliver a particular module, facilitate a discussion, use a new tool, etc.)?

b. Develop Supplemental Training Materials. Utilize the content created in the NTP step 7 to familiarize the instructor with the material as much as possible. Additionally, create any necessary supplemental training materials to support the T3 event. If new tools or systems will be introduced, include detailed instructions or demonstrations on how to use them.

c. Select and Prepare Trainers. Select experienced individuals who have deep knowledge of the content and the ability to communicate effectively. These individuals could be manufacturer's subject-matter experts, initial instructor cadre, or external consultants.

d. Plan and Organize Event Logistics. CCMM will schedule the T3 event to allow sufficient time for both content delivery and practical exercises. Ensure that the selected location supports the chosen delivery methods, such as IMI, simulations, and visual presentations.

e. Conduct T3 event. The focus of this event is to teach instructors how to effectively deliver the newly developed training. This includes changes to equipment, applications, and content. Provide immediate feedback during the training session to gauge how well participants are grasping the content. The following are best practices:

   (1) Present content clearly and confidently, using a variety of teaching methods (lecture, demo, interactive exercises).

   (2) Encourage participation and interaction. Ask questions and foster group discussions to reinforce learning.

(3) Use real-life examples or scenarios that instructors might encounter when training others.

f. Provide Practice: An essential component of the T3 process is giving participants the opportunity to practice what they've learned. Instructors will take turns delivering segments of the training, using the same methods they will employ in the actual learning environment. Encourage peer feedback on delivery and style, fostering a collaborative and supportive learning environment.

10.3. Responsibilities. The CCA or the designated CCMM representative, is responsible for documenting all T3 issues and concerns and providing feedback to government technical representative and other stakeholders as appropriate. A T3 checklist is provided in Appendix I identifying and outlining T3 inputs, outputs, and attendees for the event. The CCA, or designated CCMM representative will:

a. Review duration of the T3 event published in the project's Integrated Master Schedule to ensure adequate time is provided to meet the objectives of the event and there are no conflicts with the scheduled dates.

NOTE: For RRL projects, the integrated government schedule will be reviewed. Coordinate recommended changes with the appropriate NETC N7 Enterprise Branch representative(s) to identify performance to plan implications.

b. Conduct pre-T3 review using the "Inputs" section of the T3 checklist. Notify stakeholders of issues that will impact the scheduled start or quality of the T3 event.

c. Discuss course discrepancies daily during the T3 event with the stakeholders to resolve ambiguities and clearly record any issue(s)/discrepancies that require correction, clarification, and/or adjudication.

d. Document T3 event "Outputs" and "Attendees" in Pre-Pilot Conference Memorandum.

e. As part of the preparation for IT in the classroom, prior to the T3, access to any programs that support the T3 must be completed. This includes individual accounts and others that may require granting of certain access levels (e.g., TRANET, RSUPPLY, etc.).

f. CCMM must ensure risk assessment is validated and approved by cognizant LC prior to T3 events.

10.3.1. Ready Relevant Learning Specific Responsibilities. The CCA or designated CCMM representative will:

a. Submit CRM and Pre-Pilot Conference Memorandum to the NETC N7 Enterprise Branch representatives, TYCOM representative, and government technical representative upon completion of T3 event. The vendor/government technical representative may also maintain their own list of discrepancies separately depending on contractual requirements.

b. Participate in the Post-T3 Redline Adjudication Meeting. This event is held by the government technical representative and where the status/timeline to complete issues documented in the CRM are addressed.

c. Identify critical issues that will impact pilot execution if not corrected or mitigated. In certain cases, CRM adjudications may not be completed prior to the pilot convene due to timelines, number of discrepancies, technical issues, etc. Issues that will delay the start of the Pilot if not corrected or mitigated must be clearly identified, documented, and monitored to resolution.

d. Request follow on stakeholder meetings as needed to adjudicate unresolved issues that will impact scheduled course pilot dates.

CHAPTER 11
PRE-PILOT

11.0. Introduction. Step 9A of the NTP contains the pre-pilot material review and pre-pilot meeting. This step involves a thorough review of all training materials, tools, and resources to ensure they are accurate, complete, and aligned with the training objectives. The pre-pilot meeting serves as a forum to discuss any adjustments or improvements needed before launching the pilot phase. Stakeholders and SMEs may be involved to provide feedback and insights. The Pre-Pilot/Pilot Checklist in Appendix J will guide the process from 90 days prior to pilot through Authorization to Teach Letter for course approval.

11.1. Preparation for Pilot Course Convening. The structure and conduct of a pilot course will depend largely on the length of the course, class convening schedule, and the extent of approved curriculum materials and support materials available.

a. A short course with infrequent class convening permits the conduct of a pilot, assessment of results, and incorporation of review comments prior to the next convening.

b. A complex, lengthy course, or the necessity to accommodate class schedules, may dictate the use of a "rolling pilot," where data is gathered and fed back to the developer for incorporation, while the pilot continues for later sections or convenings.

(1) Segments of the piloted materials must integrate into the rest of the course. That is, previous training must support the materials being piloted.

(2) Have options available to utilize previously approved course materials if piloted segment produces abnormally high-test failure rates by students in the pilot class.

(3) If the piloted segment of a course is acceptable, it will be left in place after pilot. However, final approval of course materials by the CCA will be reserved until all revised materials have been piloted and reported upon. Suggestions regarding the use of this training material include:

(a) If corrections are relatively minor, continue to instruct from the red-line materials while corrections are being incorporated into a smooth copy. Utilize a CRM to capture major issues for tracking and correction/adjudication with the developer.

(b) If corrections result in re-writing or re-sequencing materials within a module or lesson, return to the use of previously approved materials until corrections are completed.

(c) If time and resources permit, pilot the revised materials a second time.

11.2. Pre-Pilot Materials Review. The CCMM will submit a proposed pilot course convening date to the CCA with copies sent to all other participating LSs as soon as a projected completion date for training materials development is available. To ensure standardized preparation, execution and follow-up actions for pre-pilot and pilot events, document all course issues and redlines identified during the pilot on a CRM.

11.2.1. Readiness to Conduct Pilot. Not later than 90 days prior to the designated pilot course convening date, the LS scheduled to conduct the pilot is requested to assess and certify its readiness to conduct the pilot course. This readiness notification must be addressed to and developed in conjunction with the CCA. Copies will be transmitted to any other participating LS or other activities, and include the following elements:

a. A listing of present training material shortages and deficiencies which are projected to be corrected prior to the pilot course convening date.

b. The state of completion, installation, and operability of TDs and laboratories which support the pilot course.

c. A listing of training material shortages and deficiencies, if any, which are not expected to be corrected by the convening date, or for which delivery/correction dates cannot be determined. Include cognizant activity and estimated delivery/correction dates if known.

d. A listing and assessment of any other factors which could adversely affect the validity of the pilot course as a comprehensive evaluation of all instructional elements. Instructor preparation time and the availability of students with the required prerequisites are among factors to be considered.

e. An overall assessment of readiness to conduct the pilot course as scheduled (include status and completeness of the curriculum and supporting training materials, TTE, TDs, laboratories, supply support, etc.).

f. If the scheduled date is not recommended, an alternate date should be proposed.

g. Review Class Roster from the enterprise Navy Training Reservation System portion of Corporate enterprise Training Activity Resource Systems (CeTARS) and ensure enrolled number of students are at the minimum required to convene the course. Ideally, course pilots will be conducted with maximum class size to ensure thorough verification of classroom environments, facilities, training equipment, and to check the overall time required for training. Final review of student roster must be conducted 30 days prior to convene date.

11.2.2. Alternate Learning Site Review. CCMM will provide draft course materials (TCCD, SG, IG, tests/testing plan, IMI, etc.) to alternate LS(s) for review and comment. Alternate teaching site(s) must return comments within 30 days. CCMM will review recommendations and provide feedback within 30 days.

11.2.3. Interactive Multimedia Instruction Testing. Navy courses designed for delivery via the LMS, content must be tested using GCAT. CCMM will oversee and provide the NeL GCAT checklist, initiating the GCAT testing process. IMI must be tested in the classroom or environment where the lesson will be delivered. Each LS teaching the course is required to test its content. Some Navy classrooms currently lack the necessary connectivity to support LMS-based content delivery. In these cases, the course content must be tested in the classroom, environment, or system where it will ultimately be delivered, prior to the pilot phase.

11.2.4. Final Risk Assessment. Risk assessment criteria must be performed as prescribed by NETCINST 1500.13F. The risk assessment must be approved by the cognizant LC prior to T3/Pilot.

a. Ensure NETC N00X is notified, as soon as possible, when new HRT courses are being developed, or existing HRT courses are being modified and additional risk is anticipated. No new or modified HRT course that introduces additional risk will convene without NETC N00X concurrence. Additionally, NETC N00X must be notified prior to new trainers, training platforms, or training facilities being used.

b. It is widely accepted that administrative training (classroom only) does not pose a reasonable element of risk to the staff and students; thus, a risk assessment may not be necessary. However, if the classroom environment introduces equipment or items that will be handled by students, then a risk assessment must be conducted for this portion of the training.

NOTE: During the Design phase, an initial review of the LOs will be conducted to determine possible risks and mitigation efforts. During the development phase, as the IGs are created, the risk assessment will be validated. The risk assessment will be reviewed again during the T3 process and approved by CCA prior to pilot.

11.2.5. Core Unique Instructor Training Plan. For HRT courses**,** CCMM will draft and maintain CUITs. All CUITs must be approved by the appropriate LC and completed by all High-Risk instructors prior to commencing course pilot. See NETCINST 1500.13F for further guidance.

11.3. Pre-Pilot Conference. The CCA will designate a monitoring team chairman and monitoring team to convene the pre-pilot conference. The monitoring team chairman will convene the pre-pilot conference to plan the validation process, assign responsibilities to the monitoring team, and discuss/resolve any outstanding issues that could impact the pilot course. The monitoring team chairman will coordinate the pre-pilot conference schedule and location with the applicable LC/LS and all other stakeholders at least 30 days prior to the pilot course to ensure appropriate attendance and participation as well as minimize disruption to the training schedule. Pre-Pilot Conference Memorandum, Appendix K, will be used for all RRL projects. A locally produced memorandum may be used for other projects.

11.4. Pilot Course Convening Approval. The CCA will evaluate the recommendations in the readiness report, approve a pilot course convening date, and specify a due date for submittal of the Final Post-Pilot Monitoring Report. This will be done within 30 days, however, the CCA may extend period based on extenuating circumstances.

CHAPTER 12
PILOT

12.0. Introduction. Step 9B in Phase III of the NTP process outlines the course pilot process. A course pilot is defined as the first full-length course conducted at a Navy school by Navy instructors using the curriculum and supporting training materials prepared specifically for that course. The purpose is to validate the curriculum and materials (to include TTE and facilities), and to determine their effectiveness and course length. Course pilot event will be conducted in the NETC-approved production environment. Exception may be granted by NETC N73 on a case-by-case basis to facilitate business operational requirements. For revised courses, it may not be necessary to pilot the entire course. Justification for piloting portion of course will be submitted and approved by CCA. The CCA is the Pilot Course Approval Authority for all courses.

12.1. Pilot Course Convening and Course Monitoring. The course must be conducted and managed in accordance with the IG and the management guidelines established in the NAVEDTRA M-142.4 Volume I. Often the CCA or the CCMM will establish as a policy that any student recommended for dis-enrollment from a pilot course must be reassigned to another course teaching the old curriculum. This procedure eliminates the perception that the student is being penalized by problems which may be inherent in the material being piloted.

12.1.1. Course Pilot Monitoring Team Duties and Responsibilities. The CCMM or LS conducting the pilot course will generally provide most of the monitoring team members from the instructional staff. CDs, and when possible, LSs that will teach the course will provide assistance in the course monitoring effort. The Pre-Pilot/Pilot Checklist, Appendix J, is designed to be started 90 days prior to Pilot Course Convene. Any discrepancies noted must be resolved prior to Pilot Course Convene Date.

12.1.1.1. Monitoring Team Chairman. The role of the chairman is to coordinate and manage the pilot course and summarize the results in the final Post-Pilot Monitoring Report, Appendix O. The Monitoring Team Chairman must:

a. Maintain physical custody of the master red-lined curriculum and support materials, ensuring all consensus/comments/recommendations of the course monitors are properly and accurately annotated.

b. Ensure Pre-Pilot/Checklist, Appendix J, is started 90 days prior to course convene. Assign roles and responsibilities for checklist completion.

c. Chair and conduct critique sessions daily with the course monitors, incorporate comments into the master redlined curriculum materials, and make the master red-line materials available to course monitors.

d. Inform course monitors of the time and location for critiques.

e. Conduct pre-presentation reviews of curriculum materials.

f. Provide course monitors with presentation material that has been restructured by instructors in advance of presentation.

g. Conduct and chair the scheduled post-pilot conference.

h. Originate the Final Post-Pilot Monitoring Report, Appendix O.

12.1.1.2. Course Monitors and Instructors. The pilot course monitors must be technically competent to provide the instructor technical assistance as required. Monitors will be familiar with approved and pending change recommendations to any training materials which could have an impact on the pilot course and be familiar with the objectives of the preliminary curriculum and approved training. The course monitors are provided with all curriculum materials and references while observing instruction. The Course Monitors and Instructors must:

a. Attend pre-pilot conference.

b. Attend post-pilot conference.

c. Be present for all classroom and laboratory sessions.

d. Utilize the Pre-Pilot/Pilot Checklist.

e. Comment as appropriate on curriculum, using the Pilot Course Monitoring Outline Sheet in Appendix L.

NOTE: The outline sheets are designed for use by course monitors and to serve as guides for noting subjects or items observed during the course monitoring process that require comment. Typically, one sheet would be completed by each course monitor for each lesson topic, but this is flexible and should be amenable to the structure of the course.

f. Maintain personal red-line of curriculum materials for use during critiques and CRM feedback.

g. Attend all critique sessions held to review presentations and resolve comments for incorporation into the master red-line.

h. Attend all pre-presentation reviews of curriculum materials requested by the chairman.

i. Accept and use for monitoring the modified curriculum materials supplied by the chairman.

j. Participate in the development of Post-Pilot Monitoring Report.

k. Record actual time spent on each section using the Pilot Course Monitoring Time Log, Appendix M.

l. Collect Pilot Course Student Feedback Sheet, Appendix N from instructor at end of pilot.

NOTE: If it is determined that additional resources are required to meet course objectives, a modified TPP must be submitted.

NOTE: For RRL, close coordination with the NETC N72 Enterprise Content Review and Reengineering Branch representative well in advance of the pilot is essential to timely and successful pilot execution.

12.2. Post-Pilot Procedures. At the completion of the pilot, the pilot monitors, CCA, and CDs will meet to discuss their observations and comments on all instructional material, the course management procedures, and the facilities. The Pilot Course Monitoring Outline Sheets, Pilot Course Monitoring Time Log, LS Administrative Review Checklist, and the Student Reaction Survey Sheet will be reviewed to ensure all issues are addressed. Appropriate corrective action will be recommended. Within thirty (30) days after completion of the pilot course, the monitoring team chairman will submit the Post-Pilot Monitoring Report to the CCA.

NOTE: The Course Risk Assessment must be reviewed and updated if any changes to course affecting safety was noted.

NOTE: For RRL projects, the NETC N72 Enterprise Content Review and Re-engineering Branch representative, and Naval Air Warfare Center Training Systems Division (NAWCTSD) will be sent a copy via e-mail. The developer will correct all red-line changes and return the updated curriculum materials to NAWCTSD per contract requirements who will in turn return the curriculum materials to NETC and the LC/LS.

12.2.1. Pilot Course Corrections and Adjustments. Based on the findings and comments recorded during the pilot course, it is usually necessary to make corrections and adjustments to the training materials prior to approval and implementation. Detailed direction is provided to the developer on what corrections and adjustments are to be made. Any modification to training materials which does not affect the course

mission statement or require significant additional resources may be corrected as a result of the pilot. The following are examples of such corrections:

a. Revise objectives as necessary to support the course mission. Modifications or deletions to LOs requires requirement sponsor concurrence.

b. Add, delete, or re-sequence module, lesson, or section topics.

c. Adjust section periods and ratios.

d. Add or delete support material.

Any modification to training materials which affects the course mission statement or requires significant additional resources may not be corrected without approval of a modification TPP. The following are examples of such corrections:

e. Work outside the course mission statement (expand or reduce scope).

f. Change in minimum/maximum class size, established course length greater than 1 day, Average on Board.

g. Require additional resources:

(1) Equipment

(2) Facilities

(3) Personnel

(4) Funding

12.2.2. Unsuccessful Pilot. If for any reason the pilot course is unsuccessful, the CCMM will submit a detailed CRM to the CCA and will not teach new material until all CRM issues are addressed. CCA will work with the developer to incorporate proposed changes/modifications to the curriculum/support materials. Before re-piloting the course, the CCMM must request approval from the CCA. Any student participating in a failed pilot course must remediate on unsuccessful objectives.

NOTE: For RRL, the CCMM will submit the detailed CRM to the CCA, N72 Enterprise Content Review and Re-engineering Branch representative, and NAWCTSD via e-mail and will not teach new material until all CRM issues are addressed. NAWCTSD will work with the developer to incorporate proposed changes/modifications to the curriculum/support materials. Before re-piloting the course, the CCMM must request approval from the CCA. Any student participating in a failed pilot course will retake any lessons, units, etc., that failed the pilot using the currently approved curriculum.

12.3. Implementation Process. The final step in Phase III is issuance of approved TCCD and Authorization to Teach Letter from CCA. Formal training can commence at designated sites once authorization is provided. If the course will be implemented under limited fielding capabilities (e.g., acquisition of training equipment incomplete), then a statement to that effect is required on the Authorization to Teach Letter.

NOTE: Authorization to Teach Letter must contain course security classification and distribution statement.

12.3.1. Course Curriculum Model Manager Responsibilities. The CCMM ensures all LSs are ready to train and can accommodate site-unique training considerations. The CCMM will distribute all master curriculum material to all LSs and submit initial CeTARS and CANTRAC data for new or revised courses.

12.3.2. Learning Site Responsibilities. All LSs teaching the course are responsible for certifying instructors to teach the course and supervise personalization of IGs. Refer to NAVEDTRA M-142.4, Vol I for a complete listing of LS responsibilities.

CHAPTER 13
PHASE III: DETAILED PROCESS STEPS

13.0. Overview. This chapter features tables detailing a step-by-step process referencing the NTP Map to assist in comprehending the Phase III Course Development, Modernization, Acquisition, and Pilot process. Detailed steps are aligned to the NTP Workflow Tool in Flankspeed.

NTP maps are available for download:

https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/SitePages/N71.aspx

Table 29: Detailed Process Steps Legend

LEGEND	
Icon/Color	**Meaning**
	Draft/Create - Document is placed in pending files in NTP Workflow Tool
	Upload - Document is published in the NTP Workflow Tool
	Review - Document(s) reviewed by Stakeholders
	Update - Document is updated in NTP Workflow Tool
	Schedule - Meeting is scheduled in NTP Workflow Tool
	Approval - Approval process using NTP Workflow Tool or MFR
	Decision Meeting/Gate
	Step is conducted outside of NTP Workflow Tool

Table 30: Detailed Content Design and Prototypes Steps

PHASE III COURSE DEVELOPMENT, MODERNIZATION, ACQUISITION, & PILOT			
Step 6 – Detailed Content Design and Prototype			
STEP	**ACTION**	**RESPONSIBILITY**	**APPENDIX**
6A-1	Draft IMDP	Executing Organization	Appendix D - IMDP Template Appendix P - DID
6A-2	Draft TP and Testing Plan	Executing Organization	Appendix P - DID
6A-3	Draft Step 6 Decision Meeting (Gate 4/5) Read Ahead	Executing Organization	Appendix R - Gate 4 (Design Review) Brief Template Appendix T - Gate 5 (Prototype) Brief Template
6A-4	Create/Modify Content Designs and/or Prototype(s)	Executing Organization	

6A-5	Review Design and Prototype Review IMDP Other Documents as required	Executing Organization	Appendix Q - CRM Appendix E - Prototype Lesson Development Elements Appendix F - Prototype Programming Review Checklist Appendix G - Prototype Review Checklist - CD Appendix H - Prototype Review Checklist - SME
6A-6	Schedule Step 6 Decision Meeting (Gate 4/5)	NETC N72(X)/LC	
6A-7	Conduct STEP 6 Decision Meeting (Gate 4/5) **EXECUTING ORG** Briefs Design Methodology and Demonstrates Prototypes (if required) and documents meeting minutes and action items.	Executing Organization	
6A-8a ☑	Approve Design Concepts and Prototype & STEP 6 Decision Meeting (Gate 4/5)	NETC N00R (RRL ONLY)	
6A-8b ☑	Approve Design Concepts and Prototype(s) & STEP 6 Decision Meeting (Gate 4/5)	LC/CCA	

Table 31: Content Development, Testing & Evaluation, and Delivery Steps

PHASE III COURSE DEVELOPMENT, MODERNIZATION, ACQUISITION, & PILOT			
Step 7 – Content Development, Testing and Evaluation, and Delivery			
STEP	**ACTION**	**RESPONSIBILITY**	**APPENDIX**
7A-1	Develop TCSD	Executing Organization	
7A-2	Develop IMP & IMI	Executing Organization	Appendix P - DIDs
7A-3	Draft TSSD	Executing Organization	Appendix P - DIDs
7A-4	Update Risk Assessment	CCMM (C2M2) Drafts, Safety, LC Approves	
7A-5	Draft CUIT (High-Risk Courses Only)	C2M2 Drafts LC Approves	
7A-6	Draft Step 7 Decision Meeting (Gate 6) Read Ahead	Executing Organization Create brief that summarizes content developed and T&E process	Appendix T - Gate 6 Pre-Pilot Review Brief Template
7A-7	Review TCSD, IMI, TSSD, CUIT, Risk Assessment	Executing Organization	Appendix Q - CRM
7A-8	Modify Training Content (as required)	Executing Organization	
7A-9	Conduct GCAT of courseware in LMS	Executing Organization	
7A-10	Schedule Step 7 Decision Meeting (Gate 6)	NETC N72(X)/LC	
7A-11	Update TCCD	NETC N72(X)/LC	

7A-12	Conduct STEP 7 Decision Meeting (Gate 6)	Executing Organization	
7A-13a ☑	Approve Training Content & Step 7 Decision Meeting (Gate 6)	NETC N00R (RRL ONLY)	
7A-13b ☑	Approve Training Content & Step 7 Decision Meeting (Gate 6)	LC/CCA	

Table 32: Train-the-Trainer Steps

PHASE III COURSE DEVELOPMENT, MODERNIZATION, ACQUISITION, & PILOT			
Step 8 – Train-the-Trainer			
STEP	**ACTION**	RESPONSIBILITY	APPENDIX
8A-1	Schedule T3 Event	Executing Organization	Appendix I - Train-the-Trainer Checklist
8A-2	Upload Course Conduct Information Package, if needed	LC/CCMM	Appendix P - DIDs
8A-3	Conduct T3 Event	LC/CCMM	

Table 33: Pilot Course Steps

PHASE III COURSE DEVELOPMENT, MODERNIZATION, ACQUISITION, & PILOT			
Step 9 – Pilot Course			
STEP	**ACTION**	**RESPONSIBILITY**	**APPENDIX**
9A-1	Schedule Pre-Pilot Conference	LC/CCMM	Appendix J - Pre-Pilot/Pilot Checklist
9A-2	Validate Alternate Teaching Sites, Review Pre-Pilot Materials	CCMM/LS	

9A-3	Update CUIT (High-Risk Courses Only)	LC/CCMM	
9A-4	Conduct Pre-Pilot Meeting	LC/CCMM	Appendix K - Pre-Pilot Conference Memorandum
9A-5	Upload Pre-Pilot Conference	LC/CCMM	
9A-6	Approval to Pilot Course	LC/CCA	
9B-1	Conduct Course Pilot	CCMM	
9B-2	Upload Post Pilot Monitoring Report	LC/CCMM	Appendix O - Post-Pilot Monitoring Report
9B-3	Upload Student Reaction Survey	LC/CCMM	Appendix N - Student Reaction Survey
9B-4	Upload LS Administrative Review Checklist	LC/CCMM	Appendix U - LS Administrative Review Checklist
9B-5	Upload Course Monitor Outline Sheet	LC/CCMM	Appendix L - Course Monitoring Outline Sheet
9B-6	Upload Course Monitoring Time Log	LC/CCMM	Appendix M - Course Monitoring Time Log
9B-7	Update Course Risk Assessment	LC/CCMM	
9B-8	Update TCCD (as required)	LC/CCMM	

9C-1	Draft Course Final Approval Package with Authorization to Teach	LC/CCA	Appendix V - Authorization To Teach Template
9C-2 ☑	Authorization To Teach	LC/CCA	
9C-3	Upload Authorization to Teach	LC/CCA	

APPENDIX A
BIBLIOGRAPHY

Van Schaack, A. (2021, November 19). Practical Application of Learning Science: A Handbook for Naval Instructors.

APPENDIX B
REFERENCES

REFERENCE	TITLE
DoDI 8500.1 CH1	Cybersecurity
DoDI 8510.01	Risk Management Framework for DoD Systems
NAVEDTRA 140C	Training Support Management Manual
NAVEDTRA M-142.1	NTP Phase I Triggers
NAVEDTRA M-142.2	NTP Phase II Requirements Development
NAVEDTRA M-142.3	NTP Phase III Course Development, Modernization, Acquisition, and Pilot
NAVEDTRA M-142.4 Vol I	NTP Phase IV Course Fielding - Volume I Navy School Management
NAVEDTRA M-142.4 Vol II	NTP Phase IV Course Fielding – Volume II Testing Manual
NAVEDTRA M-142.5	NTP Phase V Assessment and Sustainment
NAVEDTRA M-142.6	Navy Instructor Manual
NETCINST 1500.13F	NETC High and Moderate-Risk Training Safety Program
OPNAVINST 1500.75D	Policy and Governance for Conducting HRT
OPNAVINST 1510.10E	Corporate Enterprise Training Activity Resource System
OPNAVINST 5100.19F	Navy Safety and Occupational Health Manual for Forces Afloat
OPNAVINST 5100.23H	Navy Safety and Occupational Health Manual, Volume I: Navy Safety Management System
OPNAVINST 6110.1K	Physical Readiness Program
SECNAVINST 1610.3	Department of the Navy Policy on Harassment Prevention and Response
MILCON	https://www.navfac.navy.mil/Directorates/Planning-Design-and-Construction/Products-and-Services/Military-Construction/
STIGS	https://public.cyber.mil/stigs/

APPENDIX C
PHASE III DETAILED PROCESS MAP

NTP Phase III Detailed Process Map may be viewed here:

https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/1423/Forms/AllItems.aspx

APPENDIX D
INSTRUCTIONAL MEDIA DESIGN PACKAGE TEMPLATE

IMDP template example can be viewed here:

https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/1423/Forms/AllItems.aspx

APPENDIX E
PROTOTYPE LESSON DEVELOPMENT ELEMENTS

Element	Action
1	Define the scope of the program and collect content as follows: • Know the audience • List LOs • Identify types of content • Obtain content • Verify content • Identify the context of the content before andafter
2	Set and agree on program standards if they do not already exist.
3	Determine program structure and requirements: • Menu structure • List of subjects,and topics included • Available help functions • Program flowchart • Navigation options
4	Determine an instructional and testing strategy for the program.
5	Group information into smaller segments.
6	Determine a detailed instructional strategy for each segment, such as text, video, graphics, and animations.
7	Document the designs in an instructional media design/prototype following the guidelines provided in this reference: • Design instruction for each segment. • Design inserted test items, reviews, and summaries foreach segment. • Design practice exercises and/or test items, for example, criterion-referenced forlarger units of instruction.
8	Constantly communicate with the imaging personnel or production crew to fine-tune the design and ensure it can be implemented.
9	Involve SMEs at major milestones when developing the program for: • Onscreen completion for onetopic. • Video segment completion,graphics, and so forth. • Prototype lesson completion. • Test completion. • Lesson and/or module completion.

APPENDIX F
PROTOTYPE PROGRAMMING REVIEW CHECKLIST

Rating/Platform: _____ CTN Series: _____

Development Title: _____ Courseware Package: _____

Reviewer: _____ Date: _____

Programming Reviewer Actions	Y	N	Note Discrepancies/Other Information
Uses a uniform programming style in format, readable, clean and easily maintained, including indentation and the use of white space around operators and keywords.			
Functions, procedures, and variables are consistently placed and logically named.			
Programming code is annotated andcommented for ease of maintainability.			
Is there a single .zip file that, when unzipped, will meet both the SCORM standard and stand-alone requirements, including a start_here.htm file in the root directory, and will launch as a standalone?			
Do media file names follow appropriate conventions?			
All proprietary or branding is removed.			
All progress checks, quizzes, assessments score correctly.			

Programming Reviewer Actions	Y	N	Note Discrepancies/Other Information
Functions on a standard NMCI machine when launched from LMS and as a standalone.			
Functions on a non-NMCI machine.			
Functions on Test Quality Control.			
Functions on TRANET.			
Functions on GCAT (NOTE: if for a schoolhouse, use the classroom to test).			
Internal links function properly.			
Any external links are used only to point to U.S Government uniform resource locators and function properly.			
Courseware launches at lesson topic level.			
It does not contain flash components in the form of .swf files.			
All assessments are complete and score properly.			
Are HTML pages titled correctly in the <title> tag?			
Are multiple templates being used in the development? If so, have prototype checklists been submitted for each.			
imsManifest.xml files are correct.			
Organizational identifier-first title contains the course short title or rate/platform as part of the title.			
Organizational identifier-second title contains only the short title.			

Programming Reviewer Actions	Y	N	Note Discrepancies/Other Information
The “Objectives Global To System” attribute is set to “false.”			
Advanced Distributed Learning (ADL) location points to the course_metadata.xml file.			
Bookmarks correctly.			
Tracks and rolls up correctly (successfully completes and passes).			
It did not show successful completion and passed on exit before the last page.			
For instructor-led CAI presentations: the completion status is “complete” on the last page. Success status is “unknown.”			**NOTE:** It must have a completion status set to completion and complete on the last page. Success status must be set to unknown.
The completion status is "complete" for self-paced IMI: the completion status is “3complete” on the last page. Success status is “passed” only if there is an end of lesson test or the entire module is a test module; otherwise, it is “unknown.”			**NOTE:** If there are no graded assessments, the success status must remain unknown. If the SCO/lesson contains a graded assessment, the success status must show passed/failed with the correct score.
Keywords in course_metadata.xml file include, if applicable: CIN, work unit code(s), platform, rate/ MOS, system codes, type equipment code, equipment designation, and descriptive keywords.			
The title in the course_metadata .xml file matches the first level organization title in the imsmanifest.xml file.			

Programming Reviewer Actions	Y	N	Note Discrepancies/Other Information
Educational objectives are listed in <classification> elements in course_metadata.xml.			
SCORM content package contains the ADL test suite log.			
In the course_metadata.xml file, the <general> element describes what is covered in the lesson.			
In the course_metadata.xml file, <general> element, Identifier catalog is “LMS” and entry is “ILECC.”			

APPENDIX G
PROTOTYPE REVIEW CHECKLIST – CURRICULUM DEVELOPER

Reviewer Action	Y	N	Note Discrepancies/Other Information
All fonts are displayed correctly. Fonts used are those in the NAVEDTRA M-142.3 as acceptable.			
Objectives clearly and correctly stated.			
Assessments match objectives.			
Graphics and photos are clear and in scale.			
Graphics display prominently and consistently.			
Lines and labels are used consistently.			
Text is readable.			
Flow colors are consistent and follow the accepted colors and conventions standard.			
Prototype functions according to the lesson design document (e.g., the IMDP).			
The lesson title and subtitle are clearly displayed.			
Location within the lesson is clearly displayed.			
They are designed to the correct knowledge domain and level of learning.			
The lesson has a logical flow.			
Answer keys are provided for all Pre/Post Assessment tests.			

APPENDIX H
PROTOTYPE REVIEW CHECKLIST – SUBJECT MATTER EXPERT

Reviewer Action	Y	N	Note Discrepancies/Other Information
Graphics and photos are clear, in scale, and technically correct.			
All text is technically correct.			
Graphics display prominently and consistently.			
The content uses proper references.			
The lesson title and subtitle are clearly displayed.			
Location within the lesson is clearly displayed.			
The lesson has a logical flow.			
Answer keys are provided for all pre/post assessment tests.			

APPENDIX I
TRAIN-THE-TRAINER CHECKLIST

1. Purpose: This checklist outlines the inputs and outputs for T3 events.
2. Responsibility: CCMM is responsible for documenting all T3 issues and concerns in a CRM and providing feedback to the contractor, CCA, and other stakeholders as appropriate.

Inputs	Y	N	Note Discrepancies/Other Information
Course training materials loaded into IT suite.			
Classroom computers/electronic classroom functional.			
Instructor/class/labs scheduled.			
All media forms loaded onto the IT suite.			
Copies of the IGs (one per instructor required for instructor personalization).			
Copies of the job sheets (one per instructor required for instructor personalization).			
CRM (to document discrepancies).			
New TTE/TD installed/on hand.			

NOTE: As part of the preparation for the IT in the classroom prior to the T3/Pilot, access to any programs that support the T3 must be completed. This includes individual accounts and others that may require granting of certain access levels (e.g., TRANET, RSUPPLY, etc).

Outputs	Y	N	N/A	Note Discrepancies/Other Information
Whiteboards, Smartboards, VAP navigation.				
Instructor station navigation.				
Tablet and student workstations navigation (as applicable).				
Reference and content load navigation.				
Embedded animation demonstrations.				
Embedded animation execution by all instructors.				
Instructor technology familiarization and demonstration especially with new TTE and TDs.				
Technology (classroom/lab) execution by all instructors such as Virtual Task Trainer (VTT), VSIM, Multi-purpose Reconfigurable Training System (MRTS), student polling devices, etc.				
SG sheets executed by all instructors.				
CRM red lines completed for any technical and quality issues discovered in course materials.				

APPENDIX J
PRE-PILOT/PILOT CHECKLIST

PRE-PILOT/PILOT CHECKLIST	DATE

1. PILOT INFORMATION:

COURSE/COURSE IDENTIFICATION NUMBER/RATING: _____

PILOT DATE: _____

LOCATION OF PILOT: _____

(LEARNING SITE (LS), BUILDING #, AND CLASSROOM)

2. PILOT MONITORING KEY PERSONNEL:

CHAIRMAN: _____ PHONE: _____

MONITOR: _____ PHONE: _____

MONITOR: _____ PHONE: _____

INSTRUCTOR(s): _____ PHONE: _____

_____ PHONE: _____

COURSE SUPERVISOR: _____ PHONE: _____

CURRICULUM DEVELOPER: _____ PHONE: _____

FIELD LEARNING STANDARDS OFFICER (FLSO)/FIELD TRAINING SPECIALIST

(FTS): _____ PHONE: _____

3. THE COURSE IS READY IN ALL RESPECTS TO CONDUCT THE PILOT:

COURSE CURRICULUM MODEL MANAGER:

_____/_____

Date

Ninety (90) Days Prior to Pilot Course Convening:	**Y**	**N**	**N/A**
Confirm Step 7 Decision Meeting (Gate 6) has been completed. **Completion Date:** _____			
Provide listing of present training material shortages and deficiencies which are projected to be corrected prior to the pilot course convening date; provide alternate solutions if deficiencies remain.			
Assess and certify readiness to conduct the pilot course and advise Curriculum Control Authority (CCA) of status.			
Ensure monitoring team chairman and team members have been identified and responsibilities assigned.			
Determine the state of completion, installation, and operability of training devicess and laboratories which support the pilot course.			
Determine and approve pilot course convening date.			
Identify alternate pilot convening date if the current scheduled date is not recommended.			
Letter received from CCA granting permission to conduct pilot.			
Schedule the pre-pilot meeting with key stakeholders; meeting must be at least 60 days prior to pilot convening date. **Pre-Pilot Conference Date:** _____			
Sixty (60) Days Prior to Pilot Identify Pre-Pilot Conference Date:	**Y**	**N**	**N/A**
Copies of pilot curriculum/support materials have been provided to the monitoring team.			
Establish tentative date for post-pilot conference. **Post-Pilot Conference Date:** _____			
Review course master schedule (CMS) for accuracy.			
Ensure personalization of the Instructor Guide (IG) is current and includes discussions of integrity issues appropriate to the course.			
Complete and submit Pre-Pilot Conference Memorandum, Appendix K.			
List reason(s) and course of action for any “No” answers for 90/60-day prior items:			
Thirty (30) Days Prior to Convening:	**Y**	**N**	**N/A**
All required curriculum materials tested and verified operational within the designated classroom.			
All training and lab equipment required for the course has been installed and tested.			
Cancel/rebook to schedule students for pilot course is complete.			
Review class roster from Corporate enterprise Training Activity Resource System (CeTARS) and ensure enrolled number of students are at the minimum required to convene the course.			
Validate all red-lines documented during train-the-trainer have been incorporated into the curriculum/support materials.			
Fourteen (14) Days Prior to Convening: (Pre-Pilot Surveillance)	**Y**	**N**	**N/A**
Not later than 14 days prior to the approved pilot course convening date, the LS scheduled to conduct the pilot is requested to submit a message report if the pilot course will NOT be conducted on the approved date.			

Ten (10) Days Prior to Convening:	**Y**	**N**	**N/A**
List reason(s) and course of action for any "No" answers for 30/14/10 days prior:			
Ensure any updated curriculum materials have been provided to the learning center curriculum manager, FLSO/FTS, and course supervisor as needed.			
Ensure students meet course prerequisites.			
If student account access is required for training network, complete and submit System Authorization Access Request (SAAR) forms along with class roster from CeTARS to the information technology (IT) representative to obtain accounts.			
Curriculum Materials Available (Final Review):	**Y**	**N**	**N/A**
Training Course Control Document			
IG			
CMS			
Student Guide (SG)/Instruction Sheets, Job Sheets, etc.			
Instructional multimedia Materials (IMM) (interactive courseware, virtual simulation, etc.)			
Testing Materials			
Job Sheets			
Risk Assessment			
Required Resources Available to Perform the Pilot (Final Review):	**Y**	**N**	**N/A**
Reference			
All tools, trainers, and additional equipment are functional (multipurpose reconfigurable training system) (three-dimensional/technical training equipment).			
Films/Videos			
Instructional Training Aids			
Notify applicable training sites of scheduled pilot course date and obtain acknowledgement of required stakeholder pilot attendance.			
All required curriculum materials, interactive multimedia instruction, and IMM have been tested in the designated electronic classroom (ECR).			
All training and lab equipment required for the course has been installed and tested.			
Student roster for pilot has been finalized.			
All resource requirements are available to perform the pilot.			
Validate that all publications listed in the Resource Requirements List are available and current.			
List reason(s) and course of action for any "No" answers on Final Review:			
Classroom and Laboratory facilities have been identified and verified to meet the requirements of the pilot:	**Y**	**N**	**N/A**
Classroom/Laboratory			
Student/Instructor Workstations			
IT Infrastructure			
Lighting			
Equipment			

Temperature			
Training Distractors Identified			
Cleanliness			
CeTARS information verified correct and current: (Updates require submittal of appropriate data forms.)	**Y**	**N**	**N/A**
CMS			
Classroom and/or Laboratory location(s)			
Course convening dates correct			
Validate instructor(s) qualifications:	**Y**	**N**	**N/A**
Pilot Instructor (all):			
Certified to teach the course of instruction.			
Core unique instructor training completed for high risk training, when applicable.			
IG technical content accurate.			
IG has been personalized.			
Practice lessons have been performed in the pilot classroom.			
All facilities associated with the pilot meet Safety and Occupational Health/Navy Occupational Safety and Health/Occupational Safety and Health Administration requirements:	**Y**	**N**	**N/A**
Classroom(s)			
Laboratory			
Personal Protective Equipment			
Posted Safety Signs			
Hazards Identified			
Testing Package:	**Y**	**N**	**N/A**
Minimum passing grade for the course and rationale.			
Schedule of tests administered in the course and learning objectives (LO) measured by each test.			
Description of the types of tests (e.g., adaptive test, aptitude test, achievement test, comparative test, criterion-referenced test, performance test, performance-based test, etc.) used to determine the student's grade, with rationale.			
Description of the grading method (e.g., normative, criterion referenced, grading criteria, weighting criteria, etc.) for evaluating student performance on the test with rationale.			
Description of the method to be used to determine the student's final course grade.			
Description of review, remediation, and retesting procedures.			
Description of testing constraints which prevent testing of LOs as stated with mitigation/work-around justification.			
Description of the method (e.g., rating scales, yes no, satisfactory/unsatisfactory (SAT/UNSAT)) used to assign grades to performance tests with supporting documentation for conversion to numerical grade.			
Rationale for courses which have SAT/UNSAT grading criteria.			
Rationale for test item and test placement aligns with the IG/SG.			
Description of the methodology for generation of random tests.			
Description of the security measures for web-based testing and workarounds when Internet access is not available.			
Two (2) Days Prior to Convening:	**Y**	**N**	**N/A**
Print class roster from CeTARS.			
Ensure classroom is operational and fosters a comfortable and professional training environment.			
Provide a list of students to the security manager, when required.			

If an ECR will be utilized for training, ensure the instructor and student stations are fully operational.			
Break out publications, tools, and equipment for students/instructor.			
Ensure Emergency Action Plan is current and correct, when required.			
Post class course schedule.			
List reason(s) and course of action for any "No" answers for Pre-Pilot items:			
Day of Course Convening:	**Y**	**N**	**N/A**
Open classroom/lab 30 minutes prior to start of class.			
Inform students of classroom security requirements, if applicable.			
Conduct Course Introduction – Safety/What's In It For Me/Course Objectives/Subject Matter Expert/Testing/Chain of Command/Class Rules.			
Have students complete High Risk Student Medical Screening Form, NETC 1500/5 as applicable.			
If SAAR form is not required, submit class roster to the department security manager for clearance verification when applicable.			
Have students verify/update class roster and deliver to student administration.			
Brief class on student critique program and inform students that comment sheets are available and can be completed at any time during the course of instruction.			
Generate student recall list for class binder/folder.			
Monitoring Team Chairman/Monitoring Team:	**Y**	**N**	**N/A**
Complete Pilot Course Monitoring Outline Sheet utilizing Appendix L.			
Utilize Pilot Course Monitoring Time Log to track each lesson taught, Appendix M.			
Utilize CRM to identify any red-line curriculum/support materials, Appendix Q.			
Maintain physical custody of the master red-lined CRM.			
Verify safety, occupational health, and hazard awareness information is incorporated into all curricula when required.			
Be present for ALL classroom and laboratory sessions.			
Ensure all course materials and IMM are piloted to determine if the LOs are adequately supported.			
Conduct and attend daily end-of-day critique sessions held to review presentations and resolve comments for incorporation into the master red-line CRM.			
Conduct post-pilot conference upon completion of the piloted course; all stakeholders will meet to provide their observations and comments on all instructional material, course management procedures, and site facilities. **Note:** Corrective actions must be recommended to correct any deficiencies identified.			
If piloted course is to be multi-sited, any problem at a satellite site which will impair the implementation of the course must be discussed under the appropriate heading in the report. The site must be clearly identified to distinguish it from the pilot site.			
List reason(s) and course of action for any "No" answers for Pilot:			

At Least One Day Prior to Graduation:	**Y**	**N**	**N/A**
Print student graduation certificates and have the commanding officer (CO)/officer in charge sign.			
Graduation Day:	**Y**	**N**	**N/A**
Ensure students complete end of course (EOC) surveys.			
Ensure students complete Pilot Course Student Feedback Sheet, Appendix N.			
Ensure student grades are documented in CeTARS.			
Ensure students are properly detached by student control.			
Verify all classified material has been properly handled, secured, or destroyed as applicable.			
Perform test item analysis.			
Review Pilot Course Student Feedback Sheets (EOC survey) for valid suggestions for course improvements. Document valid student feedback on the master red-line CRM.			
Within (5) Five Days of Graduation:	**Y**	**N**	**N/A**
Route quality of life issues commented on by students from the Pilot Course Student Feedback Sheets to base CO/command master chief for awareness and resolution as required.			
Pilot Course Corrections and Adjustments:	**Y**	**N**	**N/A**
Ensure master red-line CRM provides detailed information on what corrections and adjustments are to be made to the piloted training materials prior to approval by CCA. **Note:** Any required modification to training materials which affect the course mission statement or requires additional resources may not be corrected without modification and approval of a modified training project plan.			
Complete Post-Pilot Monitoring Report Appendix O. Long courses may require interim monitoring reports. The final course monitoring report must contain all interim reports, as applicable.			
Successful pilot course completed.			
Submit Post-Pilot Monitoring Report and master red-line CRM to CCA and other stakeholders as required.			
Implementation Process:	**Y**	**N**	**N/A**
Authorization to Teach Letter completed by the CCA.			
List reason(s) and course of action for any “No” answers for Post-Pilot:			

Pilot checklist is complete: _____ Date: _____

Organization: _____

APPENDIX K
PRE-PILOT CONFERENCE MEMORANDUM

Date: _____

MEMORANDUM

From: Course Curriculum Model Manager
To: Supporting Learning Center N7/NETC N7 Enterprise Branch (if required)
Via: Field Training Specialist/Field Learning Standards Officer

Subj: PRE-PILOT CONFERENCE MINUTES FOR (**COURSE TITLE/COURSE IDENTIFICATION NUMBER**), CLASS **(NUMBER),** CONVENING DATE **DD MMM YY**

Ref: (a) NAVEDTRA M-142.3 Course Development, Modernization, Acquisition, and Pilot
(b) USFF RRL Process Manual, dated 20 August 2020 (if applicable)

1. Per reference (a), a Pre-Pilot Conference was conducted on **DD MMM YY**. The following items were discussed:

a. Pilot Course Positions Assigned:

(1) Monitoring Team Chairman:	
(2) Team Monitor(s):	
(3) Pilot Course Instructor(s):	
(4) Commercial Vendor Representation:	
(5) Course Supervisor	
(6)	
(7)	
(8)	

b. Status of course management materials: All proposed course control documents have been reviewed. All course control documents are on file within the course audit trail.

c. Status of course curriculum materials: All instructor guide (IG) and student guide materials have been reviewed and are technically and instructionally accurate.

d. Status of course support materials: All tests/testing plans and support materials have been reviewed and are technically and instructionally accurate.

e. Status of course embedded technologies: All instructional multimedia including virtual task trainers and virtual simulations have been reviewed and are technically and instructionally accurate.

f. Status of pilot instructor's IG personalization. All pilot course instructors have completed personalization of their IGs.

g. Review of all pilot course standard forms.

h. Identify any outstanding concerns: _____

_____

i. Requested deviations: _____

_____

j. The tentative date for the post-pilot conference is:_____

2. Point of contact is_____ at_____

APPENDIX L
PILOT COURSE MONITORING OUTLINE SHEET

NAME: _____ DATE: _____

COURSE IDENTIFICATION NUMBER/MODULE/LESSON/SECTION NUMBER: _____

CLASS/LAB: _____

SECTION TITLE: _____

1. INSTRUCTOR GUIDE (IG) - Were IG components accurate and correctly formatted?
   a. Front Matter
   b. Learning Objectives (LO)
   c. Discussion Points (DP)
   d. Related Instructor Activity
   e. Instructor/Student Preparation
   f. Other
2. STUDENT GUIDE (SG) - Were SG components accurate and correctly formatted?
   a. Front Matter
   b. Outline Sheets
   c. Information Sheets
   d. Assignment Sheets
   e. Job Sheets
   f. Diagram Sheets
   g. Problem Sheets
3. EQUIPMENT/TOOLS
   a. Was equipment correct and available in sufficient quantity?
   b. Were tools correct and available in sufficient quantity?
4. SUPPORT MATERIALS/INSTRUCTIONAL MULTIMEDIA MATERIAL (IMM)
   a. Was support material relevant to section topic?
   b. Was support material relevant to section topic?

c. Is the special emphasis provided by the support material necessary?

d. Is IMM clear and legible?

5. INSTRUCTIONAL ACCURACY/ADEQUACY

a. Is content accurate?

b. Is material presented in a logical sequence?

c. Does lead-in information motivate the student to pursue the material?

d. Do teaching/learning activities encourage productive learning?

e. Is material written in a manner that allows maximum student participation?

f. Are there opportunities for review and practice?

g. Is content adequately covered to teach behaviors specified in LOs?

h. General Information

(1) Are abbreviations, terms, and symbols accurate?

(2) Are operational characteristics, capabilities, and limitations accurate?

(3) Is documentation accurate?

i. Physical Information

(1) Is information on major and associated components accurate?

(2) Is information on displays, controls, and indicators accurate?

j. Functional Information

(1) Is information on functional operation accurate?

(2) Is information on controls and indicators accurate?

(3) Is information on computer software operation and maintenance programs accurate?

k. Interface Information

(1) Is information on physical interfaces accurate?

(2) Is information on functional interfaces accurate?

l. Operational Information

(1) Is information on initialization accurate?

(2) Is information on normal operational tasks accurate?

(3) Is information on casualty/degraded modes accurate?

(4) Is information on securing/shutdown accurate?

(5) Is information on personnel and equipment safety accurate?

m. Maintenance Information

(1) Are preventive maintenance procedures accurate?

(2) Are operational tests and diagnostic programs accurate?

(3) Are malfunction indications accurate?

(4) Are fault isolation procedures accurate?

(5) Are alignment, calibration, and adjustment requirements accurate?

(6) Are disassembly, repair, and reassembly requirements accurate?

(7) Are tools and test equipment accurate?

(8) Are post-repair procedures accurate?

(9) Are personnel and equipment safety procedures accurate?

(10) Are maintenance policies accurate?

6. INSTRUCTION

a. Did the instructor(s) demonstrate adequate preparation? Did instructor(s) demonstrate appropriate instructional methods and techniques?

b. Did the instructor(s) demonstrate appropriate instructional methods and techniques?

c. Depth of Coverage

(1) Was depth of coverage appropriate in relation to objectives?

(2) Was depth of coverage appropriate in relation to experience level of the students?

d. Did instructor(s) demonstrate appropriate questioning techniques?

e. Was instructor(s) presentation pertinent to DPs?

7. TESTING

a. Do tests adequately measure student comprehension of LOs?

b. Are performance tests indicative of actions performed on the job?

c. Are sufficient test items and alternative test forms available?

d. Are all students tested under same conditions?

e. Are performance tests similar to, but not the same as, job assignments?

f. Is test security maintained?

g. Using test item analysis, identify any test items missed by more than 50% of pilot students.

h. Describe action taken to correct deficient test items

(1) Test Data

(a) Number taking test: _____

(b) Number passing test: _____

(c) High score: _____

(d) Low score: _____

(e) Median score: _____

(f) Minimum passing score: _____

(g) What remedial options (if any) were utilized?

APPENDIX M
PILOT COURSE MONITORING TIME LOG

COURSE TITLE: _____

COURSE IDENTIFICATION NUMBER: _____

CLASSROOM/LAB NUMBER OR LOCATION: _____

MONITOR NAME: _____ REPRESENTING: _____

DATE	LESSON	CLASS HOURS SCHEDULED	CLASS HOURS ACTUAL	LAB HOURS SCHEDULED	LAB HOURS ACTUAL	COMMENTS

* Comment required if actual time varies by +/- 10% from scheduled time.

APPENDIX N
PILOT COURSE STUDENT REACTION SURVEY SHEET

NAME (Optional): _____ DATE: _____

Privacy Act Statement

Authority to request this information is granted under 5 U.S.C. §301 and Department of the Navy Regulations.

Purpose: The purpose of this questionnaire is to measure your reaction to the training.

Routine Uses: The information collected will be used by the (insert center name here) to evaluate training and make improvements.

Disclosure: The information you provide **WILL NOT** become part of your permanent record and **WILL NOT** be used to make decisions about you or affect your career in any way.

The survey takes approximately 10-15 minutes to complete.

COURSE IDENTIFICATION NUMBER/COURSE: _____
Please select best answer for each of questions below and comment where you feel necessary.

1. Objective(s) of the course were made clear at beginning of lesson(s)/section(s).
   _ Strongly Agree
   _ Agree
   _ Neither Agree nor Disagree
   _ Disagree
   _ Strongly Disagree

Comments: _____

2. Lesson(s)/Section(s) thoroughly covered objective(s).

   _ Strongly Agree

   _ Agree

   _ Neither Agree nor Disagree

   _ Disagree

   _ Strongly Disagree

Comments: _____

3. Instructional Media Materials/training aids (virtual simulator, video, schematics, charts, equipment, PowerPoint, and interactive multimedia) helped me to meet the lesson(s)/section(s) learning objectives.

   _ Strongly Agree

   _ Agree

   _ Neither Agree nor Disagree

   _ Disagree

   _ Strongly Disagree

Comments: _____

4. Who was your primary instructor?

Name: _____

5. Please rate the effectiveness of your primary instructor.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not Applicable
The instructor was professional at all times.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor kept the learning interesting.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor was prepared.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor taught at a level I could understand.	⬭	⬭	⬭	⬭	⬭	⬭

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not Applicable
The instructor clearly explained the training objectives.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor encouraged me to ask questions.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor answered my questions adequately.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor was available to provide additional assistance.	⬭	⬭	⬭	⬭	⬭	⬭

6. Would you like to rate the effectiveness of an additional instructor?

   ⬭ Yes (Go to question 6)

   ⬭ No (Go to question 8)

7. Who was your secondary instructor? Name: _____

8. Please rate the effectiveness of your secondary instructor.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not Applicable
The instructor was professional at all times.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor kept the learning interesting.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor was prepared.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor taught at a level I could understand.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor clearly explained the training objectives.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor encouraged me to ask questions.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor answered my questions adequately.	⬭	⬭	⬭	⬭	⬭	⬭
The instructor was available to provide additional assistance.	⬭	⬭	⬭	⬭	⬭	⬭

9. Please use the space below to provide any specific comments you may have about the quality of your instructor(s).

_____

_____

10. The amount of practice or drill in the lesson(s)/section(s) was adequate.

_ Strongly Agree

_ Agree

_ Neither Agree nor Disagree

_ Disagree

_ Strongly Disagree

Comments: _____

11. The pace of the lesson(s)/section(s) was adequate.

_ Strongly Agree

_ Agree

_ Neither Agree nor Disagree

_ Disagree

_ Strongly Disagree

Comments: _____

12. How well did the test cover material taught in the lesson(s)/section(s)?

_ Excellent

_ Good

_ Average

_ Fair

_ Poor

Comments: _____

13. Select the statement that best describes the Student Guide.

    _ I would NOT have understood the material without the training guide.

    _ The training guide helped me understand the material, but was NOT necessary.

    _ The training guide made the material more confusing.

Comments: _____

14. Select the statement that best describes instruction sheet (instruction sheets include outline, information, assignment, problem, diagram, and job sheets).

    _ Instruction sheets were helpful in reviewing the material.

    _ Instruction sheets were time consuming, but very helpful.

    _ Instruction sheets were time consuming and NOT very helpful.

    _ Instruction sheets made the material more confusing.

Comments: _____

15. How much time did you spend completing the following? Completing assignment sheets? ____ Studying for the test? _____

16. Do you have any general comments about any of the lesson(s)/section(s) taught, or how to improve any individual lesson(s)/section(s) for enhanced student learning experiences/understanding?

_____

_____

_____

_____

Quality of Life

17. The following quality of life services provided at this command/base met my needs.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Not Applicable
MWR	⬭	⬭	⬭	⬭	⬭	⬭
Medical	⬭	⬭	⬭	⬭	⬭	⬭
Dental	⬭	⬭	⬭	⬭	⬭	⬭
Messing	⬭	⬭	⬭	⬭	⬭	⬭
Berthing	⬭	⬭	⬭	⬭	⬭	⬭

18. Please use the space below to provide any specific comments you may have regarding quality of life issues while attending training.

_____

_____

_____

Safety

19. Safety and Operational Risk Management (ORM) concerns were addressed appropriately during training.

    _ Strongly Agree

    _ Agree

    _ Neither Agree nor Disagree

    _ Disagree

    _ Strongly Disagree

20. Please use the space below to address any safety or ORM concerns you may have encountered while attending this training.

_____

_____

_____

APPENDIX O

POST-PILOT MONITORING REPORT

Date: _____

MEMORANDUM

From: Course Curriculum Model Manager
To: Supporting Learning Center N7/NETC N7 Enterprise Branch (if required)
Via: Field Training Specialist/Field Learning Standards Officer

Subj: POST-PILOT MONITORING REPORT

1. COURSE IDENTIFICATION
   a. Course:
   b. Course Identification Number:
   c. Location:
   d. Pilot Course Period:
   e. Monitors: (Identify Monitoring Team Chairman and Course Monitors)
   f. Other:

2. ADMINISTRATION
   a. Facilities:
   b. Personnel and Equipment Safety:
   c. Security:
   d. Allocation:
   e. Critique Sheet Summary

3. CURRICULUM VALIDATION
   a. Instructor Guide:
   b. Student Guide:
   c. Equipment/Tools:
   d. Support Material:
   e. Instruction:
   f. Testing:
   g. Risk Assessment:
   h. Core Unique Instructor Quality Training (high risk courses only)

4. INSTRUCTIONAL ACCURACY/ADEQUACY

5. MINORITY REPORT (If none, so state)

6. OTHER (Optional)

APPENDIX P
DATA ITEM DESCRIPTIONS

DIDs can be viewed here:

https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/1423/Forms/AllItems.aspx

APPENDIX Q
COMMENTS RESOLUTION MATRIX AND INSTRUCTIONS

This tool is available for download:

https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/1423/Forms/AllItems.aspx

APPENDIX R
GATE 4 DESIGN REVIEW BRIEF TEMPLATE

Gate 4 Design Review Brief template can be viewed here:

https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/1423/Forms/AllItems.aspx

APPENDIX S
GATE 5 PROTOTYPE REVIEW BRIEF TEMPLATE

Gate 5 Prototype Review Brief template can be viewed here:

https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/1423/Forms/AllItems.aspx

APPENDIX T
GATE 6 PRE-PILOT REVIEW BRIEF TEMPLATE

Gate 6 Pre-Pilot Review Brief template can be viewed here:

https://flankspeed.sharepoint-mil.us/sites/MYNAVYHR_NETC/N7/1423/Forms/AllItems.aspx

APPENDIX U
LEARNING SITE ADMINISTRATIVE REVIEW CHECKLIST

MONITOR NAME: _____REPRESENTING: _____

DATE: _____ COURSE IDENTIFICATION NUMBER: _____

TITLE: _____

CLASSROOM/LAB ROOM NUMBER OR LOCATION: _____

1. FACILITIES:
   a. Is the learning process aided by environmental conditions with respect to:

	Yes/No
(1) Temperature?	☐ ☐
(2) Lighting?	☐ ☐
(3) Spaces?	☐ ☐
(4) Absence of distractions?	☐ ☐

Comments:_____
_____
_____

   b. Are the laboratory facilities:

	Yes/No
(1) Properly arranged?	☐ ☐
(2) Supportive of skill objective accomplishment?	☐ ☐

Comments:_____
_____
_____

   c. Are electronic classrooms operational:

	Yes/No
(1) Daily percentage availability/reliability?	☐ ☐
(2) Were any hardware or software issues identified?	☐ ☐
(3) Were there any network problems encountered?	☐ ☐

Comments:_____
_____
_____

2. PERSONNEL AND EQUIPMENT SAFETY: Are safety precautions:

	Yes/No
a. Adequately identified?	☐ ☐
b. Prominently displayed?	☐ ☐
c. Stressed in instructional presentations?	☐ ☐
d. Enforced when performing tasks?	☐ ☐
e. Is personal protective equipment available, serviceable, and enforced when required?	☐ ☐
f. Are existing hazards adequately identified?	☐ ☐
g. Is standard safety equipment available for use?	☐ ☐

Comments:_____

_____

_____

3. SECURITY:

	Yes/No
a. Adequately identified?	☐ ☐
b. Is the dissemination of classified material or information on a strict “need to know” basis?	☐ ☐
c. Is the use of classified material confined to the classroom or laboratory?	☐ ☐
d. Is classified material accurately and prominently marked?	☐ ☐
e. Is access to the classroom or laboratory controlled during classified presentations or discussions?	☐ ☐

Comments:_____

_____

_____

4. ALLOCATIONS:

	Yes/No
a. Are student-to-instructor ratios considered optimum within:	
(1) Classroom	☐ ☐
(2) Laboratory	☐ ☐
b. Is Classroom-to-laboratory time allocation effective?	☐ ☐

Comments:_____
_____
_____

5. ALLOCATIONS:

	Yes/No
a. Are critique sheets utilized?	☐ ☐
b. Do responses on critique sheets indicate that students have achieved the relevant knowledge and skill requirements?	☐ ☐

Comments:_____
_____
_____

APPENDIX V
COURSE AUTHORIZATION TO TEACH TEMPLATE
(LETTER HEAD)

1500
Ser N7/XX
Date

From: Commanding Officer, (Learning Site)
To: Commanding Officer, (Learning Center)

Subj: AUTHORIZATION TO TEACH (Title of Course, Course Identification Number/Course Data Processing)

Ref: (a) NAVEDTRA M-142.3
(b) (Learning Center Reference(s))

Encl: (1) Training Course Control Document for (CIN)

1. Per references (a) and (b), subject course is approved upon receipt of enclosure (1).

2. [List course overall classification.] (e.g., This course is classified as controlled unclassified information.)

3. [List course distribution statement.] (e.g., Distribution statement for this course is C. Distribution authorized to U.S. Government agencies and their contractors [category] [date of determination]. Other requests for this document must be referred to [controlling Department of Defense office].)

4. Submit schedule changes to (Corporate enterprise Training Activity Resource System point of contact e-mail).

5. If there are any questions or concerns regarding this matter, please contact (name and phone number/e-mail address).

SIGNED
(may be by direction)

Copy to:
U.S. Fleet Forces Command N1T (USFFC_N1T_RRL3@us.navy.mil)
Resource Sponsor
Systems Command
Type Commanders
Naval Education and Training Security Assistance Field Activity (N426)
Naval Education and Training Command N7
(Others as required)