

## Navy ILE Learning Objective Statements Specifications and Guidance



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## Change Record

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## Acronyms, Abbreviations, Definitions

ADL	Advanced Distributed Learning
EIIIIs	Echelon III Commands
ILE	Integrated Learning Environment
IMDP	Instructional Media Design Package
KSAs	Knowledge, Skills, Abilities
KSATTR	Knowledge, Skills, Tools, Abilities and Resources
LO	Learning Object
LOS	Learning Objective Statement
NETC	Navy Education and Training Command
SCORM	Sharable Content Object Reference Model
SL	Science of Learning

See the ILE website (<https://www.netc.navy.mil/ile/>) for a complete list of acronyms, abbreviations and definitions.

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## 1. Purpose

The purpose of this document is to identify the specifications needed to create, store, review, search, and maintain learning objects within the Navy's Integrated Learning Environment (ILE). The document serves as the baseline to advance the development of learning objectives and learning objective statements that will serve as a link between authoritative Job Task Analysis (JTA) data (Skill Groups) and related work elements, the learning events, and the content.

## 2. Policy

Learning objectives will be designed, developed, implemented, and maintained using guidelines reflected herein. The ILE Management & Implementation Team is process owner for this document. It is the government's responsibility to ensure learning objectives placed within the ILE are validated and of sound integrity; i.e., performance- or evidenced-bases are current, accurate, and relevant.

## 3. Action

The implementation of these specifications and guidance is the responsibility of the Component Command Content Sponsors. All Content Sponsors will ensure new learning objectives are written in accordance with the ILE specifications identified in this document. When legacy content is repurposed, the learning objectives must be rewritten to reflect these new specifications. As Content Sponsors collaborate with the ILE Management & Implementation Team to develop course/content prioritization lists, the new specifications should be addressed in the statements of work. In the event, training requirements cannot be sufficiently substantiated or articulated with the current verb list, the Content Sponsor representative should contact the ILE Management & Implementation Team so that verbs are added into the corporate system regularly.

## 4. Background

Learning objectives serve as the link between Skill Groups data and related work elements, Enterprise Competencies (i.e., competencies that show the linkage between DoD and Navy mission-essential competencies), and content. As the Navy moves forward with the development of ILE-compliant content, there is an identified need to develop a common language or data model to capture, store, share, and reuse learning objectives which may then be assembled into learning objective statements to support content-specific learning objects. Learning objective statements will be formulated using the Skill Group taxonomy as the foundation for defining job/position requirements for position knowledges, skills, abilities, tasks, task attributes, subtasks, subtask attributes, & steps to represent the full spectrum of work proficiency required.

The data model includes structure, syntax, and semantics of the learning objective. This effort of statement specificity affords the opportunity to house learning objectives in repositories. Learning objectives (verb and object) stand alone. Learning objective statements (behavior, condition, and standard) are set in the context of the learning event and the content. See Figure 1.

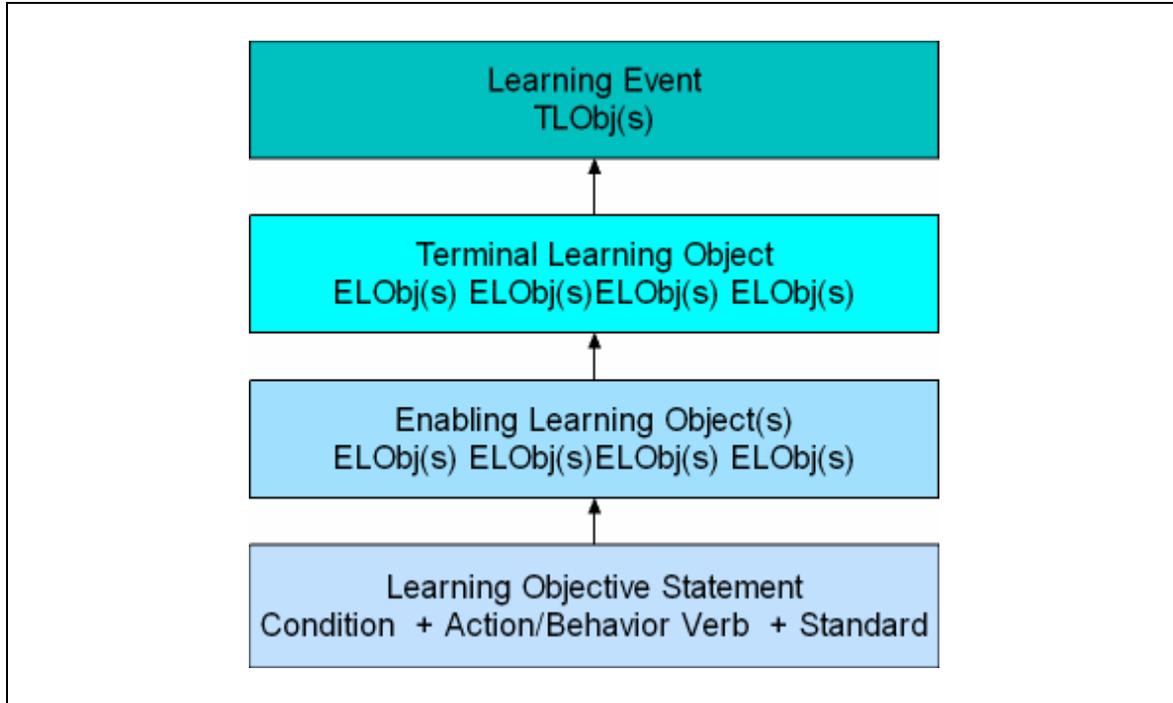


Figure 1 Assembling a Learning Event

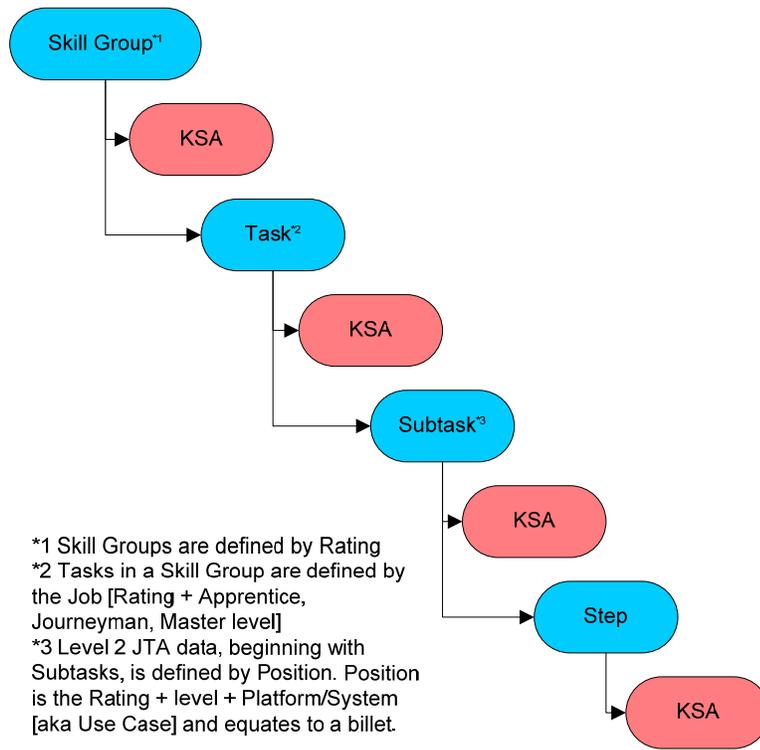
A learning objective statement acts as the trigger or catalyst for the assembly and aggregation of content assets to form terminal and enabling learning objects. These objects may then be logically connected to enterprise competencies structured from Skill Group data which are work element aggregations of required Knowledge, Skills, Abilities, Tasks, Subtasks, & Steps.

Instructional designers use learning objective statements as the cornerstone to designing content. Traditionally, learning objective statements are used to:

- Offer a means to designers to select and organize activities and resources associated with the learning process.
- Provide a means by which assessment can measure a learner's performance or evaluate a program's validity and reliability.
- Identify the skills and knowledge that must be mastered in the learning event (Morrison, Ross, & Kemp, 2004).
- Serve as anchor points in sustaining proper alignment between competency gaps, terminal objective and enabling objective selection, content assembly, sequencing, delivery methodology and medium, student assessment, and program evaluation.

## 5. Skill Group Composition

Skill Groups are detailed JTA descriptions of what performers do in their jobs. The Skill Group construct is based on the JTA construct found in the MIL-HDBK 29612-2A and allows the Navy to write Learning Objective Statements and design content from standardized, uniform data. The Skill Group aggregation can be seen in Figure 2, and can be compared with SCORM, NCOM, and other related aggregations in Table 1.



**Figure 2 Skill Group Composition**

**Table 1 Hierarchy of Relationships**

SCORM	NCOM <sup>1</sup>	JTA <sup>2</sup>	IMI	IMI Example	ILT	ILT Example
Root Aggregation	Learning Object Aggregation	Skill Group <sup>3</sup>	Learning Event	Target Motion Analysis	Learning Event	Auxiliary Equipment Troubleshooting
Aggregation	Terminal Learning Object (TLO)	Task <sup>4</sup> , Task Attribute /Subtask, Subtask Attribute	Lesson	Construction of the contact evaluation plot (CEP)	Lesson	Maintaining Auxiliary Equipment
Sharable Content Object	Enabling Learning Object (ELO)	Subtask <sup>5</sup> , Subtask Attribute /Step	Section (knowledge associated with a subtask)	Given different steps within the CEP procedure, the learner will be ...	Section	Cleaning Auxiliary Equipment
Asset Aggregation		Step	Learn, Explore, Practice	Learn, Explore, Practice		Direct trainee to practice the cleaning procedure
	Assets		Elements	Introduction		

## 6. Research-based

To expedite the development of learning objectives and their specifications, the ILE Management and Implementation Team has elected to begin with a widely used taxonomy developed by Bloom, Englehart, Furst, Hill, & Krathwohl (1956), with additional guidance from other noted researchers (Gronlund, 1985, 1995; Dick, Carey, & Carey, 2001; Heinich, Molenda, & Russell, 1993; Kibler, 1981; Krathwohl, Bloom, & Masia, 1964; Mager, 1984; Morrison, Ross, & Kemp 2004; Rothwell & Kazanas, 2004; and Smith & Ragan, 1999).

## 7. Assumptions

Research work, such as that of the Advanced Distributed Learning (ADL) group and the SCORM suggest the following assumptions may be made about learning objectives. Learning objectives are independent of (but related to):

<sup>1</sup> This is the acronym for Navy Shareable Content Object Reference Model.

<sup>2</sup> This is the acronym for Job Task Analysis.

<sup>3</sup> Skill Groups are defined by Rating

<sup>4</sup> Tasks in a Skill Group are defined on the Job [Rating + Apprentice, Journeyman, Master level]

<sup>5</sup> Level 2 JTA data, beginning with Subtasks, is defined by Position. Position is the Rating + level + Platform/System [aka Use Case] and equates to a billet.

- Any specific schema for skills, competencies or content
- Any performance gaps or audience
- Any specific technology or tool
- Any instructional method or delivery medium/media

## 8. Intent

Learning objectives stand alone. Learning objective statements are in context with the content. Learning objective statements are developed using decision trees. The first step in developing the learning objective statement is to determine its intention.

Intent is determined by the performance gap as well as the audience characteristics. Determining the intent of instruction is the first step in understanding what is to be learned, i.e., “What do I want the learner to do?” The answer to this question determines the verb domain and category. Based on Bloom’s taxonomy, there are three broad “intent” domains: cognitive, affective, and psychomotor. Each domain has subcategories that are used to further refine intent.

In order to formulate a learning objective statement, the learning objective outcome is selected first. Once selected, the learning objective is further refined by selecting a verb from the respective subcategory that further defines the outcome of learning.

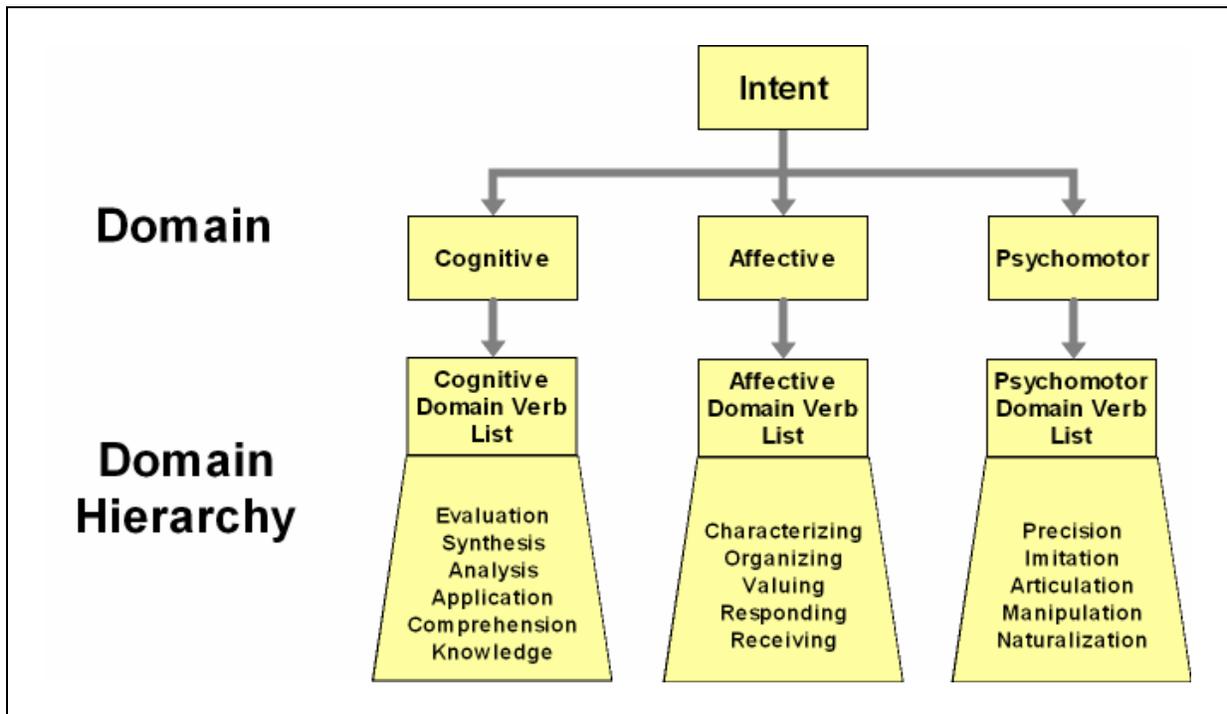


Figure 3 Intent, Domain, Domain Hierarchies, and Domain Verb Lists  
Bloom, et al (1956), Krathwohl, Bloom, & Masia (1964), and Heinich, Molenda, & Russell (1993)

## 9. Components

Robert Mager (1962) was the first to define a learning objective statement as a three-component verbal statement. The three components are a description of the:

- Behavior or action that demonstrates or shows evidence of learning
- Conditions of the demonstration of that action
- Standard that will be applied to measure successful completion

The Content Planning System (CPS) is a new software application that assists Content Sponsors in developing each component of the Learning Objective Statements, and derives those LOS's from databased authoritative Job Task Analysis (JTA) data. For more information on CPS, go to the ILE website at <https://www.netc.navy.mil/ile/>.

### 9.1. Behavior

What behavior can the learner demonstrate or what evidence can be provided to indicate that the learner has mastered the job/position-required knowledge or skills specified in the instruction?

The very basic behavior (learning objective) includes a verb and an object. A verb repository will exist within the ILE architecture that sorts and selects verbs by the Intent domain and category. See Enclosure 2.

### 9.2. Condition

What resources are needed or under what conditions will the evaluation take place?

The condition describes the tools or information that the learner will be given in order to demonstrate completion. Conditions should include:

- The cue or stimulus that the learner will use to search information stored in the learner's memory, e.g., "Given the definition . . .", "Given a set of alternatives. . .", etc.
- The characteristics of any resource material required to perform the task, e.g., illustrations, software applications, physical objects, reference materials.
- The scope and complexity of the task and relevant or authentic contexts for the real-world performance setting, e.g., "Given an aerial map of the bombing target with resistance pockets identified. . ."; "Given the strategic plans of three European allies . . ."; etc.

By setting the scope and complexity, the task is tailored to a specific target audience. Scope and complexity also aid in the transfer of knowledge/skill from the instructional setting to the performance setting. (Dick, Carey, & Carey, 2001). The contextual analysis should describe the situation of job/position-related performance and thus help determine the condition.

### 9.3. Standard

What is the measurement that will indicate successful or acceptable performance or proficiency?

The standard describes what behavior will be acceptable or the limits within which a behavior must fall. The standard identifies the minimum acceptable performance level.

With some cognitive skills, responses may vary within the established parameters. For variation, the standard should include the degree of tolerance for an acceptable response. Grading rubrics in the form of checklists or rating scales may assist with measuring variable responses. See Enclosure 6.

Mager (1962) as discussed in Smith and Ragan (1999) identifies some of the more common standards:

- Accuracy (student's answer must be within X degrees)
- Number of errors (with five mistakes or fewer)
- Number of correct responses (with minimum score of 80%)
- Time (not to exceed 30 minutes)
- Consistency within an established standard (in order listed on the chart)
- Consistency within a stated standard (includes one of the following identifiers: aviation, surface, undersea)
- Satisfaction (person walks away satisfied)

## 10. Terminal Objective

A terminal objective is a major objective for a topic or task and describes the overall learning outcome. For example:

- Topic: Isolate the fault
- Terminal objective: Isolate the fault in the high frequency radio system.
- Terminal objective statement: Given a damaged high frequency radio system, the technician will isolate the fault within 30 minutes.

Terminal Objectives:

- Express the composite knowledge, skills, and abilities required.
- Are composed of one or more EOs.
- May contain multiple components. For example, Perform Search and Rescue = Perform Search and Perform Rescue.
- Represent a statement of terminal behavior (i.e. the skills and knowledge we expect learners to achieve as a result of instruction) and a precise statement of a learning goal.
- Identify measurable behavior (assessed quantitatively and/or qualitatively); the verb mirrors the Performance Objective verb and should be suitable for assessment
- Are referenced by metadata.

## 11. Enabling Objective

An enabling objective supports a terminal objective. It is a subcategory. It generally describes specific behaviors (single activities) that must be learned or performed. To continue the example:

- Terminal objective: Isolate the fault in the high frequency radio system.
- Enabling objective: Trace the electrical flow of transistors in a radio unit.

Enabling Objectives:

- Are context-based, and express the composite knowledge, skills, and abilities required within a given context (i.e., Platform, Environment, System, Other).
- Context determines condition.
- May represent Skill Group tasks, task attributes, subtasks, subtask attributes, steps, and step attributes required within the identified context.
- Represent discrete Skill Group components, and, as such, are independent of other EOs – collectively they support a TO.
- Identify measurable behavior (assessed quantitatively and/or qualitatively); the verb mirrors the performance objective verb and should be suitable for assessment.
- Require metadata definition.
- May not require assessment if EO is inherent (example definition). For example, if your objective is, “Define the term electrical flow and state its purpose.” The “definition” phrase will be contained within the purpose statement and may not need to be assessed separately.

## 12. Science of Learning

The Science of Learning (SL) Directorate within the Human Performance Center guides practitioners in applying the SL (i.e., the foundational methodology for understanding what learning is, how people learn, and how learning translates to measurable performance) to learning-related decisions in the Navy. SL intersects the content design & development processes in multiple key stages (see Encl 7).

For each of these stages, practitioners should undertake a deliberate effort to select and execute a methodology that is in alignment with current and validated theories, technologies, and best practices. Basing methodology selection and execution on SL will drive the Navy toward better predictive value for the acquisition, transfer, and retention of learning content by our workforce. Thus, there is risk of unsuccessful alignment between LOS and job requirements; SL reduces this risk. Further, error amplification makes it very costly to go backwards to solve alignment problems. It is far better to reduce these risks early in the process through a reflective approach.

Science of Learning interventions are reflected in content development as:

- New content development as the result of a new training requirement or equipment.
- Revision to existing content as the result of a change to a training requirement, equipment or periodic curriculum review.

- Periodic maintenance for currency, accuracy, and relevancy.
- Legacy conversion of existing content to a new delivery mode.

If the content development is new, then a top-down approach is taken in the Learning Objectives Flowchart. If the content development is revision, maintenance, or conversion, then a bottom up approach is used.

### 13. Terminology

Checklist. A checklist is a list of specific behaviors, characteristics of a product, or activities, and includes a place for marking whether each is present or absent (Nitko, 2004).

Competency. Competencies include observable behaviors, outputs, or outcomes that demonstrate the knowledge, skills, and abilities (KSAs) needed to successfully perform a work role/occupational function.

- Core competency—Representative of Navy Mission.
- Cross-functional competency—Generalized sets of attributes that link to job requirements, enable mission interoperability, and transferability across communities and job families.
- Specialty competency—Skills, knowledge, and abilities that lead to successful performance of a specific job.
- Enterprise competency—Show link between DOD and Navy mission-essential competencies.

Learner. The ILE exists not only to serve the active duty Sailor, but the civilians and family members as well. Throughout this document, as well as other associated documents and in the learning literature, “learner” is the preferred generic term that refers to individuals who have access to lessons in the integrated instructional systems.

Measurable. The learning objective statement is one of the foundational pieces found within the instructional design literature. It answers the universal question, “What is it the learner should be able to do (or know) after completing the instruction?” Grounded in behaviorism, its inception mandated that the objective statement be both measurable and observable. Advances in learning research now support the argument that objectives statements be measurable, which can then be objectively quantified with precision, rather than subjectively measured through observation.

Performance Assessment. Performance assessment presents a task requiring the learner to do an activity that requires applied knowledge and skills from several learning events and uses clearly defined criteria to evaluate how well the learner has achieved this application. Checklists or rubrics are used to ensure consistency in measurement from one learner to another (Nitko, 2004).

Rating Scale. A rating scale consists of numbers, such as 0 to 3, or 1 to 5, that reflect the quality levels of performance. Each numeral corresponds to a verbal description of the quality level it represents (Nitko, 2004).

Rubric. A rubric is a coherent set of rules used to evaluate the quality of a student’s performance. They guide the judgments and ensure that the rules are applied

consistently from one learner to another. The rules may be in the form of a rating scale or a checklist.

Traceable. Contemporary instructional design has recognized the connectedness between learning objective statements, content, assessments, and tasks that a learner will eventually perform. The Navy is using taxonomy to describe work requirements in terms of tasks learned together, performed together, and evaluated together; construction of the LOS described in this document is defined in a structure which aligns learning interventions to identified job demands. The procedures described in this document tie the work of instructional design to component Skill Group knowledges, skills, and abilities.

User. The generic term that refers to those individuals or groups that have responsibility for input into and work within the instructional systems.

## 14. Command Review

It is the responsibility of the Command Content Sponsors to provide specifications and guidance for periodic review of objectives placed within the ILE. See Encl 5. Additionally, prior to providing objectives to a developer for assembly in content, the Command responsible for the content should review objectives for currency, accuracy, and relevancy. The following guidelines are provided to use when examining objectives with content development.

First:

- Check the learning objective to determine if it is complete and adequately describes the intended outcome.
- Check the learning objective to determine if it is concise and avoids misinterpretation.
- Check the behavioral objective to determine if it includes a verb, object, condition, and may include a standard.
- Check the cognitive objective to determine if it has a general statement and a supporting specific statement(s).

Second:

- Determine whether the objective is aligned with the task analysis and performance goals.
- Determine if the objective is written at the appropriate level to match the skill or knowledge.

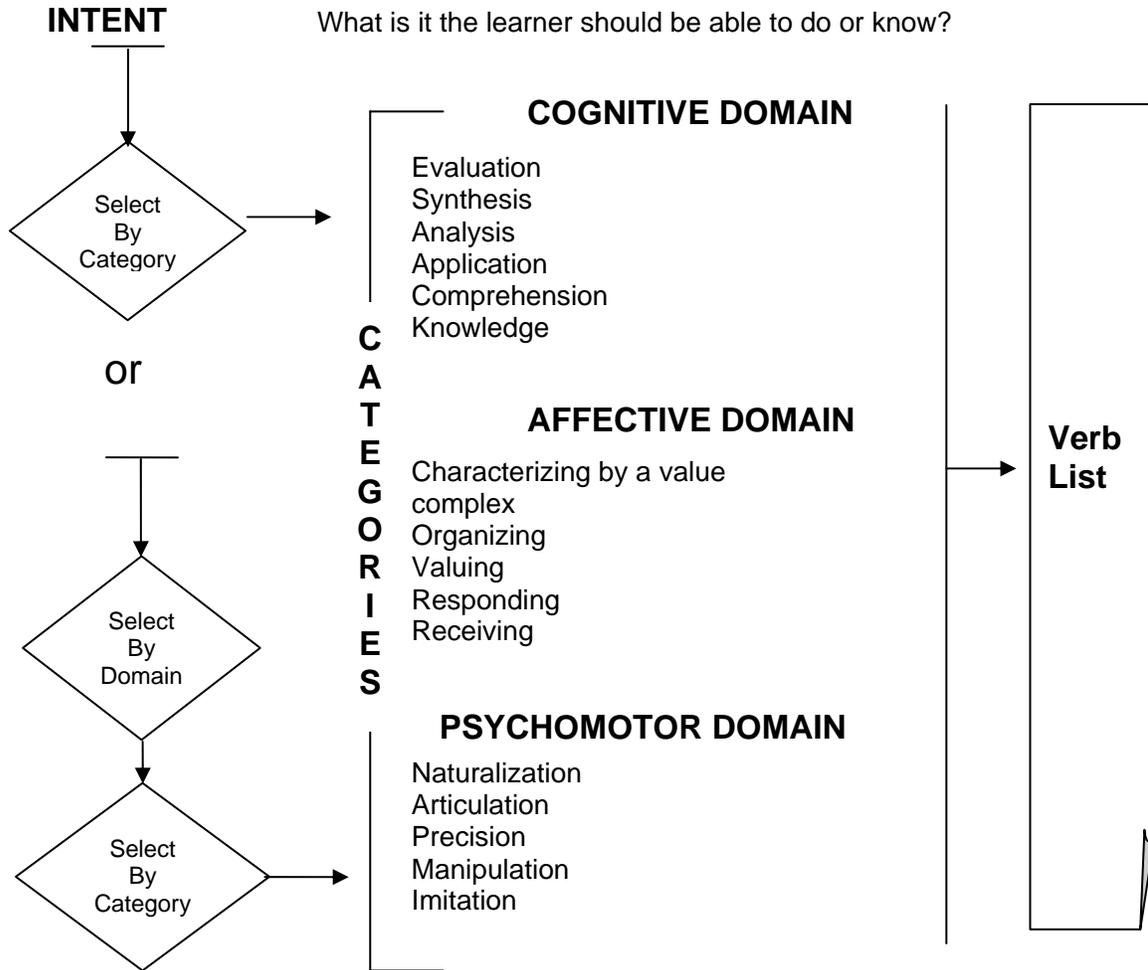
Third:

- Determine if the standards, if applicable, appear in the learning objective statement.
- Determine if the standards appear in the Assessment Item Specification Plan. See Ref C, noted on page 1 of this document.

## 15. Technical Requirements

All information placed in the Learning Objective repositories will meet the technical specifications as set forth by the ILE and described at <https://www.netc.navy.mil/ile/>.

**Enclosure 1. Domain and Verb List Decision Tree**



**Enclosure 2. Domains, Categories and Verb Lists****Cognitive Domain****Evaluation**

(Requires synthesis, analysis, application, comprehension, and knowledge)

Judging the value of an idea, procedure, method; make qualitative judgments using criteria from internal and external sources.

Appraise	Edit	Rate
Argue	Enlist	Recommend
Ascertain	Estimate	Recruit
Assess	Evaluate	Relate
Attach	Explain *	Resolve
Avert	Hire	Revise
Choose Or Select (Based On Evaluation)	Interpret	Score
Compare	Judge	Select
Conclude	Justify	Summarize (Based On Evaluation)
Consult	Lead	Support
Contrast*	Make A Decision	Validate
Criticize	Measure	Value
Critique	Negotiate	Write (A Review)
Decide	Offer	
Defend	Predict	
Describe *		
Discriminate *		

\*by itself belongs to a subcategory

## Synthesis

(Requires analysis, application, comprehension, and knowledge)

Putting together elements or parts of a whole that reflects originality; to form a new whole, e.g., production of a unique communication (theme or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information).

Analyze	Effect	Perform (in public)
Annotate	Establish	Plan*
Apply	Explain*	Predict
Arrange	Extend	Prepare
Assemble	Find	Prescribe
Assume	Formulate (an original idea)	Present (an original report)
Categorize	Generalize	Produce*
Change	Generate	Project
Collect	Guide	Propose
Combine	Hypothesize	Rearrange
Combine and organize	Illustrate	Reason
Compile	Infer	Reconstruct
Compose	Integrate	Relate
Conceive	Invent	Reorganize
Conclude	Investigate	Resolve
Construct	Lay-out	Revise
Convert	Locate	Rewrite
Create	Make	Search
Criticize	Manage	Solve
Decide	Maneuver	Set up
Defend	Manipulate	Summarize
Derive	Mediate	Supervise
Design	Mitigate	Synthesize
Determine *	Modify	Tell
Develop *	Monitor	Triage
Devise	Observe	Use
Diagram	Organize	War game
Direct	Originate	Write (an original composition)
Discover	Oversee	
Document		
Draft		

\*by itself belongs to a subcategory

## Analysis

(Requires application, comprehension, and knowledge)

Ability to break down values and organize them into clear ideas or patterns, detecting, and establishing relationships among them.

Analyze	Differentiate between (by analysis)	Organize
Appraise	Discriminate	Outline*
Breakdown	Distinguish *	Point out
Calculate *	Draw conclusions	Probe
Categorize	Examine	Process
Challenge	Experiment	Question
Classify	Form generalizations	Relate
Compare	Formulate	Select (judgment involved)
Contrast	Generalize	Separate *
Criticize	Identify *	Show relationships
Debate	Illustrate *	Solve
Deduce	Infer *	Subdivide *
Detect	Inspect	Survey
Determine	Interview	Test
Diagnose	Make inferences	Troubleshoot
Diagram		Verify
Diagram Audit		

\*by itself belongs to a subcategory

## Application

(Requires comprehension and knowledge)

Ability to use ideas, principles, procedures, and theories in specific and general situations.

Accumulate	Employ	Prepare
Activate	End	Present
Advice	Estimate	Prioritize
Affect	Execute	Process
Allocate	Expand	Produce
Apply	Express	Program
Assert	Express in a discussion	Proof
Assume	Facilitate	Prove
Build	Find (implies investigation)	Prove (in math)
Calculate	Finish	Provide
Call	Gauge	Reclaim
Change	Graph	Refer to
Check	Host	Relate
Clear	Illustrate	Resume
Collect information (supply correct equation formula)	Implement	Retrieve
Compute	Indicate	Scan
Condense	Initiate	Schedule
Conduct	Interpret	Sending
Construct	Investigate	Set up
Convert	Keep records	Ship
Counsel	Locate*	Show
Delete	Log	Sign on (as in computers)
Deliver	Log-in (as in computers)	Situate
Demonstrate	Log-out	Sketch
Derive	Make	Solve (problems expressed in words)
Determine	Manipulate	Sort
Develop	Map	Start
Differentiate	Modify	Stop
Differentiate between	Operate	Store
Discover	Organize	Submit
Discuss	Participate	Supply
Dispense	Pause	Terminate
Distinguish	Perform	Trace
Distinguish between	Persuade	Transfer
Download	Phone	Translate
Dramatize	Plan	Upload
Draw	Practice	Use
Edit	Predict (from known factors)	Write

\*by itself belongs to a subcategory

## Comprehension

(Requires knowledge)

The ability to grasp the meaning, intent, or relationship of facts, principles, or procedures. Translating material from one form to another (words or numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects).

Appraise	Explain (express in other	Put in order
Change	terms)	Recognize
Classify	Express	Record
Code	Extend Figure	Report
Compile	Find (locate)	Restate
Compose	Find (as in math)	Review
Compute	Find the difference	Rewrite
Confer	Format	Route
Correct	Forward	Select
Decipher	Generalize	Simplify
Decode	Give example	Solve
Defend	Identify	Subtract
Define (in students words)	Illustrate	Suggest
Depict	Indicate	Summarize
Describe	Infer	Trace
Discriminate	Locate	Trace (on map, chart)
Discuss	Measure	Transcribe
Distinguish	Obtain	Translate
Encrypt	Outline	
Estimate	Paraphrase	
Evaluate	Predict	

## Knowledge

The ability to recall, to bring the appropriate material to mind.

Advise	Duplicate	Realign
Allocate	Elaborate	Rebuild
Announce	Eliminate	Recall
Answer	Enumerate	Recite
Arrange	Exchange	Recognize
Assign	Express	Recollect
Authorize	Extract	Recommend
Brief	Fill in the blank (or	Record
Calculate	complete)	Recount
Categorize	Finalize	Recreate
Certify	Follow directions	Redistribute
Choose from a list	Gather	Reexamine
(judgment not included)	Group	Relate
Cite	Identify	Reorganize
Classify	Indicate	Repeat
Coach	Inform	Reproduce
Collate	Instruct	Respond
Compare	Label	Restate
Complete	Learn	Schedule
Confirm	Level	Select (judgment not
Consolidate	List	involved)
Contrast	Locate (on a map or given	Separate
Correlate	document)	Sort
Cross-check	Match	Specify
Define (give a dictionary	Memorize	State
definition)	Name	Task
Describe	Notify	Teach
Designate	Order	Tell
Differentiate	Organize	Template
Discriminate	Outline	Train
Distinguish	Quote	Translate
Distribute	Rank	Tune
Divide	Read	Underline
		Update

## Affective Domain

### Characterizing by a Value or Value Complex

(Requires receiving, responding, valuing, and organizing)

Ability to internalize values developing a “life style”. The behavior is pervasive, consistent, and predictable.

Act	Devote	Prescribe
Advocate	Disclose	Preserve
Alert	Discriminate	Prioritize
Allow	Display	Promote
Alter	Encourage	Propose
Appreciate	Endure	Qualify
Approve	Enforce	Question
Assess	Ensure	Rally
Assume	Exemplify	Rationalize
Authenticate	Exonerate	Reassess
Behave	Favor	Reserve
Balance	Formulate	Respect
Belief	Function	Retain
Cancel	Imagine	Review
Choose	Incorporate	Revise
Command	Influence	Sell
Complex	Innovate	Serve
Conceive	Judge	Share
Conform	Justify	Support
Conjecture	Listen	Study
Conserve	Maintain	Uphold
Constitute	Modify	Use
Continue	Pattern	Validate
Coordinate	Perform	Verify
Defend	Practice	Vindicate
Develop		
Devise		

## Organizing

(Requires receiving, responding, and valuing)

Ability to bring together different values, resolve conflicts between them to build an internally consistent value system.

Adapt	Defend	Order
Adhere	Establish	Organize
Align	Explain	Perceive
Alter	Formulate	Prepare
Arrange	Generalize	Rank
Attend closely	Group	Rate
Categorize	Identify	Recognize
Characterize	Integrate	Reconnoiter
Classify	Listen	Relate
Combine	Listen attentively	Show awareness
Compare	Modify	Show sensitivity
Complete	Monitor	Synthesize
Complex	Observe	Systemize
Coordinate		

## Valuing

(Requires receiving and responding)

Ability to see worth or value in the subject, activity, and assignment. Student is motivated, not by the desire to comply or obey, but by the commitment to the underlying value guiding the behavior. Behavior is consistent and stable making value clearly identifiable.

Accept	Endorse	Prefer
Adopt	Enjoy	Propose
Approve	Ensure	Read
Choose	Exhibit	Report
Commit	Explain	Sanction
Complete	Express	Select
Describe	Form	Share
Desire	Initiate	Study
Differentiate	Invite	Work
Display	Join	
Dispute	Judge	
	Justify	

## Responding

(Requires receiving)

Ability to participate. Seeks out and gains satisfaction from working or engaging in activity.

Accomplish	Contribute	Participate
Achieve	Cooperate	Question
Acknowledge	Demonstrate	Permit
Advise	Describe	Praise
Agree	Discipline	Pursue
Aid	Discuss	React
Allow	Dispatch	Read
Announce	Encode	Refuse
Answer	Execute	Reply
Anticipate	Follow-up	Report
Apologize	Give	Request
Ask	Greet	Respond
Assist	Help	Resume
Communicate	Indicate	Seek
Complete	Inquire	Select
Complete assignment	Interpret	Show
Comply	Label	Visit
Conform	Notify	Volunteer
Consent	Obey	Welcome
Contact	Obey rules	Write

## Receiving

(Ability to receive or to attend to particular phenomena or stimuli.)

Divided into three subcategories: awareness, willingness to receive, and controlled or selected attention.

Acknowledge	Getting attention	Receive
Ask	Give	Reply
Attend	Hold	Select
Be aware	Holding attention	Show alertness
Choose	Identify	Tolerate
Describe	Listen	Use
Directing attention	Listen locate	View
Follow	Name	Watch

## Psychomotor Domain

### Naturalization

(Requires imitation, manipulation, precision and articulation)

Response is automatic. Ability to experiment, creating new motor acts or ways of manipulating materials out of understandings, abilities, and skills developed. One acts "without thinking."

Acquire	Distribute	Open
Arrange	Divide	Operate
Assemble	Do	Originate
Blend	Drive	Pace
Break up	Enact	Perform
Carry	Encircle	Produce
Carry out	Enclose	Progress
Cause	Establish	Raise
Clean	Execute	Refine
Combine	Fit	Reject
Complement	Handle	Relate separate
Complete	Hold	Rewire
Compose	Improve	Stoop
Conduct	Incorporate	Transcend*
Connect	Initiate	Transfer
Constitute	Insert	Transport
Construct*	Invent	Unite
Contrive	Involve	
Control	Join	
Correct	Lift	
Create	Link	
Design	Load	
Disconnect	Maintain	
Dismantle	Make	
Disperse	Manipulate	
	Merge	

\*by itself belongs to a subcategory

## Articulation

(Requires imitation, manipulation, and precision)

Higher level of precision: Ability to modify movement patterns to fit special requirements or to meet a problem situation.

Acclimatize	Lead	Relieve
Accommodate	Map	Reorder
Adapt	Modify	Reorganize
Adjust	Modulate	Reorient
Alter	Mutate	Reshuffle
Ambush	Navigate	Retool
Attack	Neutralize	Revert
Bend	Occupy	Revise
Break	Orient	Spin
Bypass	Oscillate	Square
Change	Pack	Suppress
Conduct	Patrol	Surpass *
Deploy	Prevent	Swing
Direct	Program	Swirl
Draw	Protect	Tailor
Evade	Queue	Temper
Fit	Readjust	Train
Fix	Rearrange	Transcend *
Flip	Reconcile	Transpose
Grasp	Reconstitute	Turn
Infiltrate	Reconstruct	Twirl
Inverse	Recover	Twist
Invert	Reduce	
Lay	Regulate *	

\*by itself belongs to a subcategory

## Precision

(Requires imitation and manipulation)

Skill has been attained. Proficiency is indicated by a quick, smooth, accurate performance, requiring a minimum of energy. The overt response is complex and performed without hesitation.

Access	Dispatch	Log	Record	Tap
Accomplish	Displace	Lubricate	Reestablish	Test
Achieve	Display	Make safe	Refine	Tighten
Activate	Dispose	Maneuver	Refuel	Trace
Actuate	Disseminate	Maintain	Regulate	Transcend
Adjust	Drive	Manage	Release	Transfer
Administer	Egress	Master	Relocate	Transmit
Advance	Elevate	Mount	Remove	Transport
Align	Emplace	Move	Repair	Treat
Archive	Employ	Navigate	Replace	Troubleshoot
Arm	Energize	Obtain	Replenish	Type
Assemble	Engage	Open	Reset	Unload
Attach	Enter	Operate	Retrieve	Update
Attain	Enter	Order	Return	Utilize
Automatize	Establish	Outdo	Rise	Write
Balance	Evacuate	Outmatch	Rotate	Zero
Beat	Exceed	Outperform	Save	
Become proficient	Excel	Outrank	Scale	
Breach	Exchange	Outweigh	Score	
Calibrate	File	Overcome	Secure	
Camouflage	Fill out	Overhaul	Self-regulate	
Center	Fire	Park	Send	
Charge	Fit	Pass	Service	
Clean	Fuel	Perform	Set up	
Clear	Ground	Place	Shut down	
Climb	Harden	Plot	Sight	
Close	Hoist	Police	Signal	
Collect	Initialize	Position	Splint	
Connect	Input	Post	Squeeze	
Cover	Insert	Press	Stockpile	
Debrief	Inspect	Pressurize	Store	
Debug	Install	Process	Stow	
Decontaminate	Install	Procure	Strike	
Deliver	Integrate	Provide	Submit	
Destroy	Intercept	Publish	Succeed	
Diagnose	Isolate	Qualify	Supervise	
Dig	Issue	Raise	Support	
Disassemble	Jack	Range	Surpass	
Disconnect	Key	Rank	Sweep	
Disengage	Launch	Reach	Take	
Dismantle	Load	Receive	Take charge	

## Manipulation

(Requires imitation)

Ability to continue practicing a skill or sequence until it becomes habitual. The response is more complex than at the previous level, but learners still are not "sure of themselves."

Acquire		Fit (parts together)	Pace
Advance		Follow	Perform
Assemble (higher skills)	(higher level)	Guide	Produce
Break up *		Handle	Progress
Carry		Hover	Raise
Clean		Improve	Regulate
Complete		Insert	Rewire
Conduct		Land	Steer
Control		Lift	Stoop
Disconnect		Load	Take off
Dismantle		Maintain	Track
Disperse		Make	Transfer
Distribute		Maneuver	Transport
Do		Manipulate	Traverse
Drive		Open	Use
Execute		Operate	

## Imitation

(Ability to learn complex skills overtly.)

Repeating an act that has been demonstrated or explained, via trial and error until an appropriate response is achieved.

Assault	Disorganize	Outline	Shorten
Assemble	Dissect	Perforate	Simulate
Attempt	Disturb	Perform	Sketch
Begin	Divide	Pierce	Slice
Blueprint	Draft	Pull	Split
Break up	Draw	Practice	Smell
Calibrate	Duplicate	Proceed	Start
Carry	Enlarge	Reinforce	Stay
Carry out	Fall	Remove	Strengthen
Carve	Feel	Repair	Stretch
Construct	Follow	Repeat	Swim
Copy	Fortify	Replace	Taste
Creep	Hear	Replicate	Throw
Cut	Hold	Represent	Try
Delineate	Imitate	Reproduce	Turn
Depart	Increase	Respond	Twist
Depict	Jump	Run	Visualize
Detect	Lift	Scan	Wear
Diagram	Mimic	Scatter	

Disassemble	Mock	See
Discompose	Move	Separate
Disjoint	Organize	Shift

Note: \* Indicates that the verb by itself is from a subcategory; the verb needs to be combined with a verb from the current category to be part of that category. Following is an example using the verb “identify” in the Cognitive Domain.

Knowledge (by itself, belongs to the Knowledge category)

Given six food elements differing in nutritional value, the culinary specialist will be able to identify the nutritional value for each food element. This task will be done with at least 80% accuracy.

Analysis: (Combined with a verb in the Analysis category, the verb from Analysis takes precedent.)

Given 10 meal groups made of a combination of six food elements, differing in nutritional value, the culinary specialist will be able to identify the nutritional value for each food element and classify them into sets that contain different food groups. These sets will be arranged in ascending order from most nutritional to less nutritional in value. This task will be done with at least 80% accuracy.

When a verb is found on two categories—with equal weight

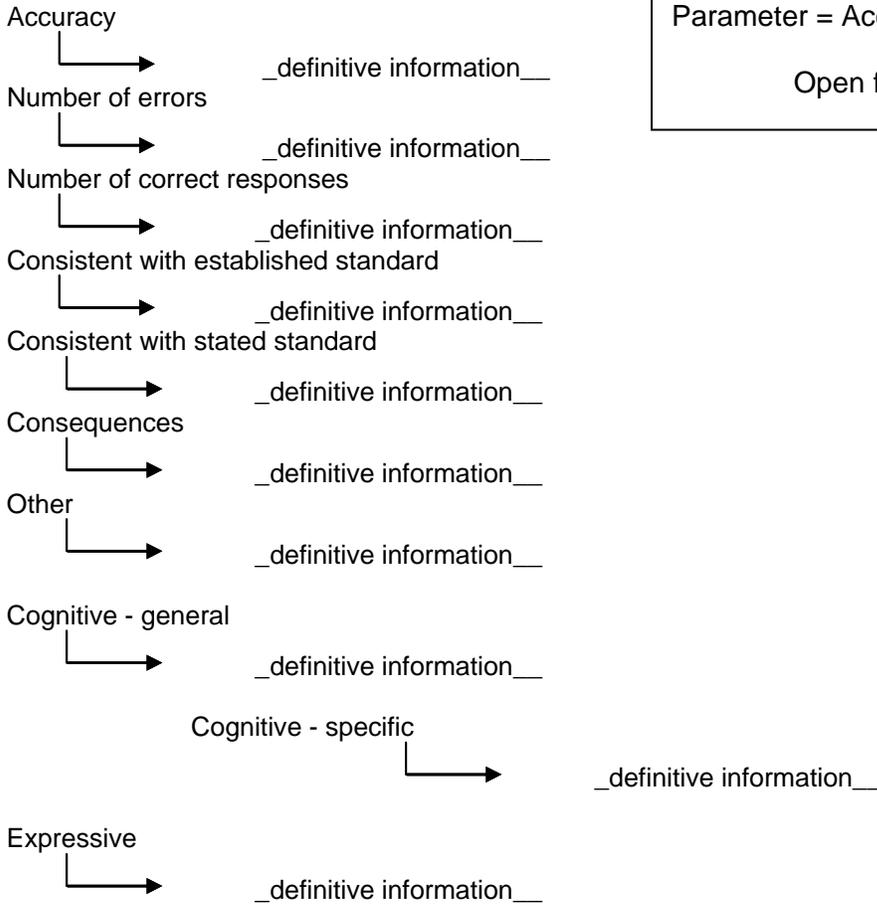
Sometimes the same verb is found in two categories, e.g., classify is listed in both Comprehension and Analysis. The difference considers the content and the task. Comprehension requires the learner to understand the relationship between elements or groups and maybe add some element(s) to existing groups; classifying an element among existing options.

Analysis requires the learner to come up with the classification based on specific characteristics supported by the analysis of such elements. The differences between one category (Comprehension) and the other (Analysis) is explained in the conditions and behavior expected from the audience.



### Enclosure 4. Standard Decision Tree

STANDARD What is the measurement that will indicate successful or acceptable performance?



Parameter = Accuracy  
Open field = definitive information

**Enclosure 5. Process Review Guide**

1. WORK PROCESS: Learning Objectives
2. FUNCTIONAL CATEGORY: Personnel and/or Organizational Management – Curriculum Development, Maintenance Review, and Control
3. BRIEF DESCRIPTION OF WORK PROCESS: To ensure that procedures for designing, developing, implementing, and reviewing learning objectives within the confines of the ILE facilitate a quality learning experience for our Sailors.
4. REFERENCES: Please cite the appropriate reference(s) associated with the Process Requirements in paragraph 5 below. There are a number of references that govern learning products.

Because technology advances at a rate faster than instructions can generally be issued, commands are advised to check the following sites frequently:

- ILE Website: <https://www.netc.navy.mil/ile/>
- Human Performance Center Spider: <https://www.spider.hpc.navy.mil/>
- Department of Defense Web Policies and Guidelines: <http://www.defenselink.mil/webmasters/>
- SECNAVINST 5720.47A Department of the Navy Policy for Content of Publicly Accessible World Wide Web Sites

5. PROCESS REQUIREMENTS: SMECOMMENTS

List main points in the form of a question that will assist the Reviewer or SME when reviewing the process.

## a. At the Content Sponsor level

- (1) Has the Content Sponsor provided written specifications and guidance to each subordinate command on how learning objectives will be designed, developed, maintained, and reviewed in accordance with the ILE LOS Specification document?
- (2) Does the Content Sponsor have in place a transition plan or guidance to support the review of legacy learning objectives and to refine legacy content to meet the ILE requirements?
- (3) Does the Content Sponsor command have a periodic review schedule to assist commands with the new methodology?

## b. At the Subordinate Commands level

- (1) Did the subordinate command develop or adopt a procedure to design learning objectives incorporating the science of learning and human performance concepts?
- (2) Did the subordinate command prepare and maintain a traceability matrix for newly developed courses?
- (3) Does the subordinate command have a plan in place to periodically review learning objectives items to check alignment with assessment, content, and Skill Group data?
- (4) Does the subordinate command have prepared checklists and grading rubrics for learning objectives for use by test administrators for performance tests?

7. QUALITY ASSURANCE KEY METRICS: Identify the key metrics for measuring performance. These metrics should clearly indicate how “success” of the assessment will be defined and measured, and provide a quick view of how well the assessment development and implementation process is progressing in achieving its intended purpose.

Data collection for metrics should include at a minimum the following:

- Completion of the documentation identified in ILEGUI1553-ISD-1, 2, and 3
- Learner identification procedures
- Traceability Matrix (Crosswalk for linkage with Skill Groups)
- Percentage of legacy learning objectives refined for warehousing within the ILE repository
- Timelines for refresh of the learning objectives

## Enclosure 6. Checklists and Rating Scales

Example of a checklist for assessing performance in setting up and using a microscope.

Learner's Actions	Sequence of Actions	Learner's Actions	Sequence of Actions
Takes slide	1	Skills in which learner needs further training	
Wipes slide with lens paper	2	In cleaning objective	✓
Wipes slide with cloth		In cleaning eyepiece	
Wipes slide with finger		In focusing low power	✓
Places drop or two of culture on slide	3	Noticeable characteristics of learner's behavior	
Adds few drops of water	4	Awkward in movements	✓
Wipes cover glass with lens paper	5	Slow and deliberate	
Wipes off surplus fluid		Unable to work without specific directions	✓
Places slide on stage	6	Very rapid	
Looks through eyepiece with right eye		Characterization of the learner's mount	
Looks through eyepiece with left eye	7	Poor light	✓
Turns to objective of lowest power	9	Poor focus	
Turns to high power objective	21	Excellent mount	
Holds one eye closed	8	Unable to find object	✓

Adapted from "A test of skill in using a microscope" by R. W. Tyler, 1930, Educational Research Bulletin, 9, p. 44, in Nitko's *Educational Assessment of Students*, p. 270.

When crafting a procedure checklist, first observe and study experts performing so you can identify all the appropriate steps. Then:

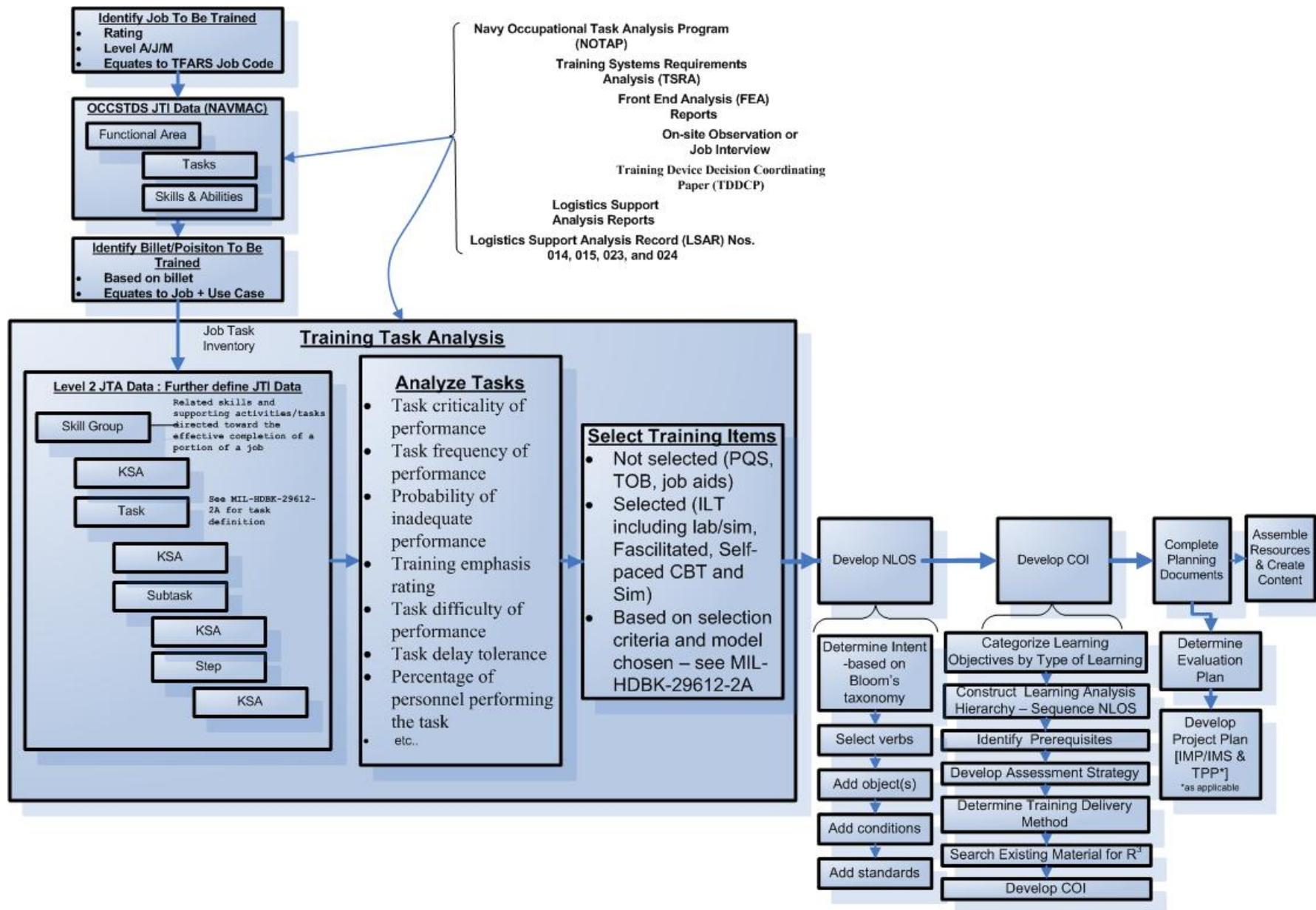
1. List and describe clearly each specific sub-performance or step in the procedure you want the learner to follow.
2. Add to the list specific errors that learners commonly make.
3. Order the correct steps and the errors in the approximate sequence in which they should occur.
4. Make sure you include a way either to check the steps as the learner performs them or to number the sequence in which the learner performs them.

Example of a rating scale for briefing a solution to a tactical problem

<p>Score level = 3</p> <p><u>Tactical knowledge</u> Shows understanding of the situation Uses appropriate methods to assess the situation</p> <p><u>Strategic knowledge</u> Uses relevant outside information of a formal or informal nature Identifies all the important elements that impact the situation Selects an appropriate strategy to conduct the maneuver</p> <p><u>Communication</u> Gives a complete response with a clear, unambiguous explanation Includes an appropriate and complete diagram Presents strong supporting arguments to decisions</p>	<p>Score level = 2</p> <p><u>Tactical knowledge</u> Shows nearly complete understanding of the situation Uses some of the appropriate methods to assess the situation</p> <p><u>Strategic knowledge</u> Uses some outside information Identifies most of the important elements that impact the situation Selects a successful alternative strategy to conduct the maneuver</p> <p><u>Communication</u> Gives a fairly complete response with reasonably clear explanations Includes an appropriate and nearly complete diagram Presents supporting arguments with some minor gaps</p>
<p>Score level = 1</p> <p><u>Tactical knowledge</u> Shows limited understanding of the situation Uses or fails to use appropriate methods of assessment</p> <p><u>Strategic knowledge</u> Attempts to use outside information Fails to identify important elements that impact the situation Selects an inappropriate strategy for the maneuver</p> <p><u>Communication</u> Has some satisfactory elements, but lacks significant parts in explanation Includes a diagram that is unclear or difficult to interpret Appears unprepared, "winging it"</p>	<p>Score level = 0</p> <p><u>Tactical knowledge</u> Shows no understanding of the situation</p> <p><u>Strategic knowledge</u> Uses irrelevant outside information Fails to indicate which elements are appropriate to the situation The strategy does not address the maneuver</p> <p><u>Communication</u> Communicates ineffectively Diagrams misrepresent the maneuver</p>

Adapted from "The Conceptual Framework for the Development of a Mathematics Performance Assessment Instrument, by S. Lane, 1992, Educational Measurement Issues and Practice, 12 (2), p. 23 in Nitko's *Educational Assessment of Students*, p. 267.

Enclosure 7. Science of Learning in Content Design & Development



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