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ABSTRACT

Designed to give guidance to those involved in the curriculum development process within the Shipyard Training Modernization Program (STMP), this guide provides an understanding of the fundamental practices followed in the curriculum development process. It also demonstrates incorrect and correct approaches to the development of the curriculum components through the use of examples. Introductory sections provide STMP operational definitions for curriculum development and a description of the STMP training approach. The next section contains the following problem areas in curriculum design and construction: construction of objectives, consistency between objectives and test items, consistency between objectives and lesson content, and inclusion of all presentation components required to support the type of learning to be acquired. The sample development problem is followed by a brief discussion of the fundamental practice to be applied in correcting the problem, examples of the types of errors made, and an example of the correct approach for each error. A literature review is appended. (YLB)

FUNDAMENTAL PRACTICES
of
CURRICULUM DEVELOPMENT

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FUNDAMENTAL PRACTICES OF CURRICULUM DEVELOPMENT

Purpose

The purposes of this guide are (1) to provide an understanding of the fundamental practices followed in the curriculum development process, and (2) to demonstrate incorrect and correct approaches to the development of the curriculum components through the use of examples.

Who Should Use This Guide

This guide is designed to give guidance to those involved in the curriculum development process within the Shipyard Training Modernization Program (STMP). All Modernization Program personnel should appreciate the value of a curriculum package that clearly specifies the intent of the instruction, provides pertinent content, examples, and practices that match the stated intent, and provides for progress checks/evaluations to determine the mastery of the material. During the development of the materials (instructor guides/student guides) Industrial Technologists (IITs), Subject Matter Experts (SMEs), and Shop Instructors should ensure each component is written clearly and is appropriate. This guide touches upon fundamental practices that should be used when these components are developed.

Background

The curriculum development process has been defined and redefined over the last 4,000 years by educators of a wide variety of philosophies. However, the basic premises remain the same even after all these years, when society has transitioned from the belief that education and training serve only religious purposes to today's supposition that education and training serve the purposes of bettering one's life and providing a means for earning a living.

Finch and Crunkilton state that in 2000 BC the Egyptians felt that a person aspiring to be a scribe learned best by attending classroom instruction in reading and writing and then spending time as an apprentice scribe working beside a journeyman scribe. Lucas tells us about the 17th century educator Comenius who felt a trainee learned better if he was told what and how he was going to be taught and if the instruction carried the trainee through four basic stages: (1) exercising his senses, (2) exercising his memory, (3) exercising his understanding, and (4) exercising his judgment.

Modern day educators support these concepts with a variety of research studies. Popham and Baker cite research studies that suggest allowing learners to know what the instructor expects in terms of performance will allow the learners to attain those objectives more efficiently. Knowing these expectations eliminates the need for the trainees to try and guess what they must do. Another principle that warrants attention is that of practice. Popham and Baker state the instructor must let the students practice what they will be called upon to do in displaying mastery of the objectives. Research studies attest to the power of practice. Ellis, Wulfeck, and Fredericks state that instructional design principles such as (1) formatting information so the trainee can find it, and (2) communicating the content clearly and effectively so students can understand it have been shown to promote trainee learning. (See the appendix for further discussion of research findings.)

As can be seen, curriculum development has precedence that dates back thousands of years, and there are basic design practices of which curriculum developers must be aware. One way to ensure these practices are incorporated in the instruction is to carefully develop the materials, and to remember to write specific objectives and related test items. Furthermore, the materials must consist of the statement, example, practice, knowledge of results, review, and evaluation components for each objective. Using Instructional Systems Development practices, the Modernization Program can produce training that is leaner, more efficient, and cost effective.

STMP Operational Definitions For Curriculum Development

The following terms are defined with the intent of providing a corporatewide understanding of what is meant by each component of the curriculum development process. The definitions provided reflect the meanings of the terms as they apply to the Modernization Program:

ENABLING OBJECTIVE - Represents smaller parts of the overall performance being taught. It consists of an action, condition, and standard. The enabling objective describes a skill, knowledge, or subperformance the trainee must acquire to enable him to accomplish the terminal objective.

EVALUATION - A formal process that can be a progress check, a written test or a performance test. It evaluates how well the trainee has mastered the objectives.

EXAMPLES/DEMONSTRATIONS - Tell, show, or demonstrate information or procedures to the trainee. They illustrate how the statement applies in a specific case. Demonstrations are required when procedures must be acted out to show motion, proper steps, or sequence.

INSTRUCTIONAL SYSTEMS DEVELOPMENT - A systematic approach to training that has the majority of learning activities centered on and keyed to job skills. The instruction is trainee-centered and precisely states, (1) what the trainee will learn and, (2) the expected outcomes; how the trainee will learn is built into the learning activities with emphasis on student interaction with the information and performances. The performance of the trainee is compared to a fixed standard. The trainee must meet the stated standard before moving to the next unit of instruction.

KNOWLEDGE OF RESULTS - Provides results to the trainee on how well the practice or test was performed. If required, additional information and practice can be provided to the trainee to assist him in understanding and acquiring the ability to master the subject matter.

NORM-REFERENCED INSTRUCTION - An approach that bases learning activities around chapters, units, or segments of textbooks as opposed to the job tasks or activities. A general presentation of information is given without specific outcomes. Presentation is typically instructor-centered with information disseminated primarily through lecture with little trainee interaction. The instructor delivers the material with little periodic input from trainee. This approach relies on paper and pencil tests and performance is compared with that of the group. Students may not have mastered the material when they move to the next unit of instruction.

PRACTICE - Allows the trainee to attempt the performance being taught. It allows the trainee to apply the information and/or skills and reinforces or corrects concepts obtained to that point.

PRESENTATION - The delivery of the content or subject matter that supports the objectives contained in the module.

PRESENTATION COMPONENTS - The statement, examples, practices, progress checks, review and evaluation elements that provide a framework for delivery of instruction and for ensuring the trainee has practiced and mastered the subject matter.

PROGRESS CHECK - A testing element that evaluates the trainee's mastery of the lesson content. It is used within the lesson to evaluate mastery of one or more enabling objectives.

REVIEW - Provides a chance to summarize the intent of the instruction, to summarize the key points, and allows for a clarification of any questions.

SEQUENCING - The logical ordering of objectives that will help the trainee acquire the skills and knowledge being trained. Generally objectives are sequenced based on complexity or linear progression. The trainee may be introduced to the more simple objectives first and move to the most complex objectives last or the objectives are arranged in the order they would be performed on the job.

STATEMENT - Describes what the trainee is going to learn. It basically restates the action statement of the objective.

TERMINAL OBJECTIVE - Represents desired performance on the job; states the action the trainee is to do (action), what materials and other resources the trainee will be given (condition), and the acceptable performance level (standard). The terminal objective describes what the trainee should be able to do at the end of the module.

STMP Training Approach

The Modernization Program uses a systematic approach for development of training following the Instructional Systems Development (ISD) process. There are many names floating around for this approach such as compentency-based, mastery learning, Systems Approach to Training, performance-based, and criterion-referenced instruction, just to name a few. Although these terms are not identical, they are similar and usually can be used interchangeably.

The curriculum development process as outlined by Finch and Crunkilton consists of determining content, developing objectives (terminal and enabling), developing test items, classifying and sequencing objectives, developing learning experiences associated with the objectives, and developing student progress checks. Blank utilizes a curriculum development format that consists of components such as the task, the introduction, the terminal performance objective, enabling objectives, self-check, answer key, and performance test.

As can be seen, both processes mentioned above reflect components similar to those used through the STMP's Instructional Quality Inventory (IQI) process. The IQI requires the curriculum developer to include a terminal objective, enabling objectives, test items, content that matches the stated objectives, and a presentation of the content that includes a statement, example, practice (with knowledge of results), review and evaluation. These presentation components apply for each objective. Each objective should be sequenced in a logical order of simple to more complex.

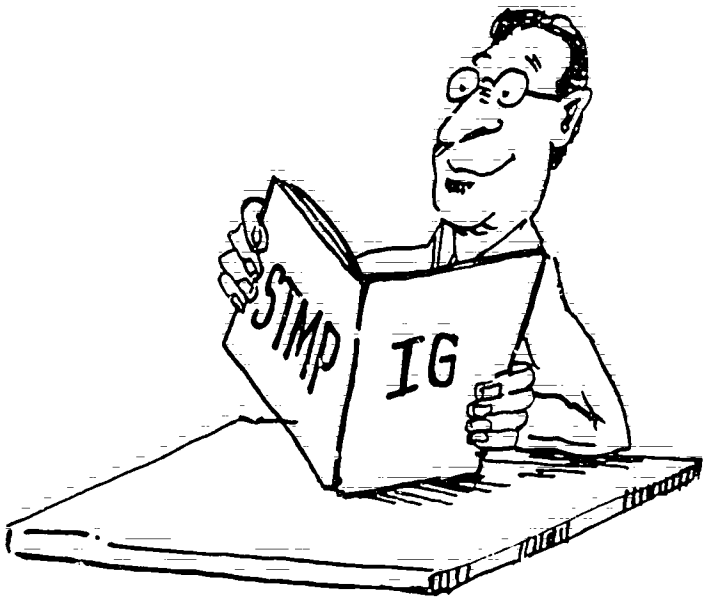
Blank identified four characteristics that an instructor must believe should exist in a training program in order for it to be classified as criterion-referenced or ISD. These characteristics are: (1) details exactly what the trainee will learn, (2) provides high quality instruction that is trainee-centered, (3) helps trainees learn one thing well before going to the next, and (4) requires each trainee to demonstrate mastery. The STMP strives to develop training that meets these criteria. According to Blank research results present clear pictures of what promotes and inhibits learning. There are events that must take place during any learning activity for effective and efficient learning to occur. These are some of the presentation components mentioned earlier. The ISD approach employed by STMP strives to include these events in all training packages.

The ISD approach varies from the more traditional way of conducting training commonly referred to as norm-referenced instruction (NRI). Blank describes the characteristics of the norm-referenced approach in terms of what an instructor believes should be the elements of a training program. These beliefs are: (1) very general statements about trainee outcomes are adequate, (2) instructors personally lecturing and demonstrating to the group is the best approach to teaching, (3) all students should spend the same amount of time on each task or subject area and should move on when the group is ready, and (4) trainees should be evaluated based on how well they compared with other trainees.

There are fundamental differences between the ISD and traditional NRI approaches to training. The assumption and beliefs expressed concerning the ISD approach may appear idealistic or even impossible at first glance. However, "the principles underlying the approach have been shown valid in hundreds of schools around the world" (Blank) and do allow training instructors and developers to create effective and efficient training.

The STMP is striving to create training packages that reflect the principles of the ISD approach. In order to accomplish this goal, the curriculum developers and instructors need to (1) develop and use objectives, (2) develop test items that will measure the mastery of the objectives, (3) develop content that is consistent with the objectives, and (4) include essential learning components in the materials such as a statement, example, practice (with knowledge of results), review and evaluation.

The next section of this booklet will provide some guidelines on how to develop instruction that includes these vital instructional components.



FUNDAMENTAL PRACTICES
OF CURRICULUM DEVELOPMENT

Certain curriculum development procedures cause developers some problems in design and construction. These areas are:

- Construction of Objectives
- Consistency Between Objectives and Test Items
- Consistency Between Objectives and Lesson Content
- Including All Presentation Components Required To Support The Type of Learning To Be Acquired

This section presents these problem areas in more detail. It contains a development problem, a brief discussion of the fundamental practice to be applied in correcting the problem, an example of the type of errors made, and an example of the correct approach.

Problem: Construction Of Objectives

DISCUSSION: Objectives communicate clearly to everyone involved in instructional development what the trainee is to accomplish. To do this, every objective must have three statements. The first is the action statement. It consists of one verb and its object and describes the action to be performed. The second is called the condition statement. It states the specific materials, tools, or other resources that will be given to the trainee to use in performing the action. The third is the standard statement. It must be observable and/or measurable.

ACTION VERBS: The greatest error made in constructing the action statement of an objective is the use of two verbs. Every objective should have one verb because this clearly indicates what action the student is to perform and on what action the student will be evaluated. It allows the curriculum to focus on areas where the student is having difficulties. The example below indicates the incorrect and correct approach.

INCORRECT: Action verb--Label the parts of the squaring shear and list the function of each part.

CORRECT: Label the parts of the squaring shear.

List the function of each part of the squaring shear.

CONDITIONS: The greatest error made in constructing the condition statement is not specifying the conditions under which the student must perform. The conditions must list the resources and information needed to perform the job. The example below indicates the incorrect and correct approach.

INCORRECT: Conditions--Given appropriate materials

CORRECT: Given a hammer, nails, 2x4 board

STANDARDS: The greatest errors made in constructing the standard statement is not (1) listing how complete, how accurate, or in what time frame the performance must be done or (2) stating what the final product must look like. The standard should not be vague and should not require the trainee, instructor and/or developer to research materials to discover the standard. The example below illustrates the incorrect and correct approach.

INCORRECT: Standards--

1) The machine must be operated in accordance with local instructions.

2) The finish will be covered correctly.

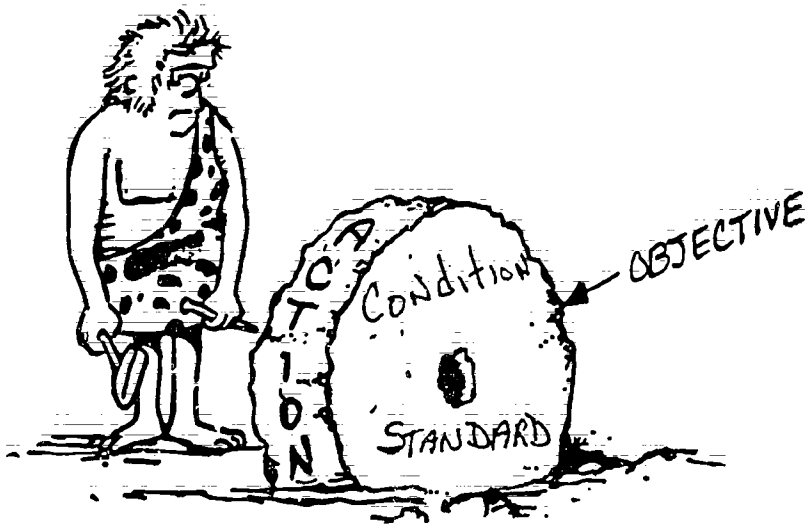
3) The process will be completed to meet the instructor's approval.

CORRECT:

1) The machine must be operated IAW procedures in NAVSEA N5043. (Specifics will be provided.)

2) The finish will be free of lint, dirt and contaminants.

3) The process will be completed within 10 minutes.



"The basics of good instruction is a well-constructed objective."

Problem: Errors In Consistency Between Stated Objectives and Supporting Test

DISCUSSION: Each objective needs at least one test item. The action, conditions and standards stated in the objective must be the same as those used for the test. The example below illustrates a common error with regard to consistency between the objective and the test item.

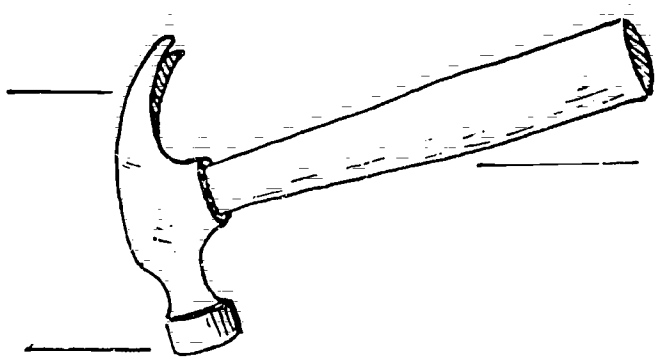
INCORRECT CONSISTENCY: Objective--From memory explain the function of each part of the hammer without error.

Test--List the parts of the hammer without error.

The objective and test item are not consistent. The objective wanted the trainee to explain the function of each part of the hammer. The test item has the trainee listing each part of the hammer.

CORRECT: Objective--Given an illustration of a hammer label the parts without error. The parts to be labelled are the claw, the head and the handle.

Test--Label the parts of the hammer by filling in the blanks in the illustration below.



Below is a comparison of the action, condition and standard statements of the objective with the action, condition and standard requirements of the test item. It clearly demonstrates the proper relationship that should exist between objectives and test items.

Objective Action:	Label
Test Action:	Label
Obj. Condition:	Given an illustration
Test Condition:	Given an illustration
Obj. Standard:	Without error (claw, head and handle)
Test Standard:	Without error (implied claw, head and handle)

The objective and test item are consistent in this example. The objective wanted the trainee to label a given illustration and the test item has the trainee labelling the given illustration.

Problem: Errors In Consistency Between The Objective And The Lesson's Content

DISCUSSION: The lesson content must teach the information stated in the objective. If the objective says list the parts of the hammer, then the content must provide a list of the parts of the hammer. If the objective says explain the procedures for operating the pump, then the content must explain the procedures. It cannot just list the procedures without the explanation. Therefore, the lesson content must contain the information the action word and its objective describe. The example below illustrates the inconsistency between what the objective calls for and what the lesson content covers.

INCORRECT CONSISTENCY:

OUTLINE OF INSTRUCTION	INSTRUCTOR/STUDENT ACTIVITY
Objective: Given an illustration of a hammer label the parts without error. The parts to be labeled are: the claw, the head and the handle.	Lecture.

A. HAMMER

1. Uses

    a. Allows you to drive nails into wood
    b. Allows you to connect pieces of wood
    c. Allows you to build objects

2. Parts and functions

    a. Head is used to drive nail.
    b. Claw allows you to remove nail.
    c. Handle allows you to apply strokes and pressure.

As you can see, the content and the objective are not consistent. All three parts of the hammer are discussed. The importance of each part is also provided. However, the objective calls for the student to be able to label a diagram of a hammer. This information has not been presented. According to the objective the other information is not needed at this point. Here is an example of how the objective and content should relate to each other.

***CORRECT*:**

OUTLINE OF INSTRUCTION	INSTRUCTOR/STUDENT ACTIVITY
Objective: Given an illustration of a hammer label the parts without error. The parts to be labeled are: the claw, the head and the handle.	
A. HAMMER--CONSISTS OF THREE PARTS 1. Head 2. Claw 3. Handle	Refer students to Fig. 1. Show Transparency 1; point out each part. Inform students to memorize these parts for the test.
Student Practice	
Practical Exercise	Point to each part and have students name part. Refer trainees to Student Guide to perform the practice.
Knowledge of Results	Refer trainees to Appendix for solution sheet.

In this example only the information called for by the objective is provided. The history of the hammer, the use of the hammer and the function of each part are not covered in the content here because the objective does not require that this information be taught. Other objectives should address that information if the developer/instructor feels it is "need-to-know" information. The content should only cover material that is "need-to-know" as stated in the objective.

Problem: Errors In Ensuring All Presentation Components Are Present In The Instruction

DISCUSSION: The presentation of instruction should consist of several basic components: statement, examples, practices (with knowledge of results), review, and evaluation.

The STATEMENT tells the trainee a fact, a definition, the steps of a procedure--it is what the objective states the trainee will learn.

The EXAMPLE/DEMONSTRATION is illustrated or demonstrated to the trainee. It applies the fact, definition, steps or principles being taught.

The PRACTICE is the trainee's opportunity to try to supply or apply the information being taught and should allow for the trainee to be told how well he completed the practice.

The REVIEW allows the trainee to hear the important points of the lesson prior to the evaluation.

The EVALUATION is the test. It evaluates whether or not the trainee has acquired the knowledge or skill required by the objective.

Each objective must have these components designed into the lesson content. These components support basic learning principles that assist the trainee in learning the material.

The following are examples of two presentations. One is done incorrectly and one is done correctly. Below the example is a listing of the presentation components and where in the presentation they can be found. The footnote-style numbers are used to indicate where the presentation component can be found in the outline of instruction.

INCORRECT PRESENTATION: Objective--Given a line drawing of a basic reciprocating pump, write the part names in the spaces provided. Parts to be labeled are: cylinder, piston, valve, connecting rod, and handle.

OUTLINE OF INSTRUCTION	INSTRUCTOR/STUDENT ACTIVITY
Basic Reciprocating Pump	
A. PUMP	Refer trainees to SG.
[1]1. Parts	
a. Cylinder b. Piston c. Valve d. Connecting rod e. Handle	
2. Description of parts	Refer trainees to SG.
[2]3. Illustration of pump	Refer trainees to SG for line drawing of pump. Tell trainees to memorize this for test.
[5]Evaluation	
Written test	Adminster written test. Refer to Appendix C.

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[5]TEST: List from memory the parts of the basic reciprocating pump.

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[1]The statement: The statement is not easy to find. It is a combination of A.1.a-e and A.3 where the parts are given and the line drawing mentioned.
[2]The example: The example is the line drawing.
[3]The practice: There is no practice and obviously no knowledge of results.
[4]The review: There is no review.
[5]The test: The test does not match the objective.

The following presentation represents a corrected version, including essential instructional components.

CORRECT PRESENTATION:

OUTLINE OF INSTRUCTION	INSTRUCTOR/STUDENT ACTIVITY
Objective--Given a line drawing of a basic reciprocating pump, write the part names in the spaces provided. Parts to be labeled are: cylinder, piston, valve, connecting rod, and handle.	
Basic Reciprocating Pump	
A. [1]FIVE PARTS 1. Cylinder 2. Piston 3. Valve 4. Connecting rod 5. Handle	Refer trainees to Transparency 1 "Line Drawing of Basic Reciprocating Pump." [2]Point out each part and give name, then point out each part and have trainees call out part name. Tell them they will need to know this for the test later.
[3]Student Practice Practical Exercise	Refer trainees to SG. Have them complete the exercise.
Knowledge of Results	Tell the trainees to refer to Solution Sheet in Appendix B.
[4]Review	As a review, ask the trainees:
A. FIVE PARTS OF BASIC RECIPROCATING PUMP 1. Cylinder 2. Piston 3. Valve 4. Connecting Rod 5. Handle	1) What are the five parts of the basic reciprocating pump? 2) Use Transparency 1. Point to parts and ask trainees to name them.

[5]Evaluation	
Written test	Administer written test. Refer to Appendix C.
Knowledge of results	Provide trainee with answers.

[5]TEST: A line drawing of a basic reciprocating pump is shown below. Label the parts by writing the name of the parts in the spaces provided.

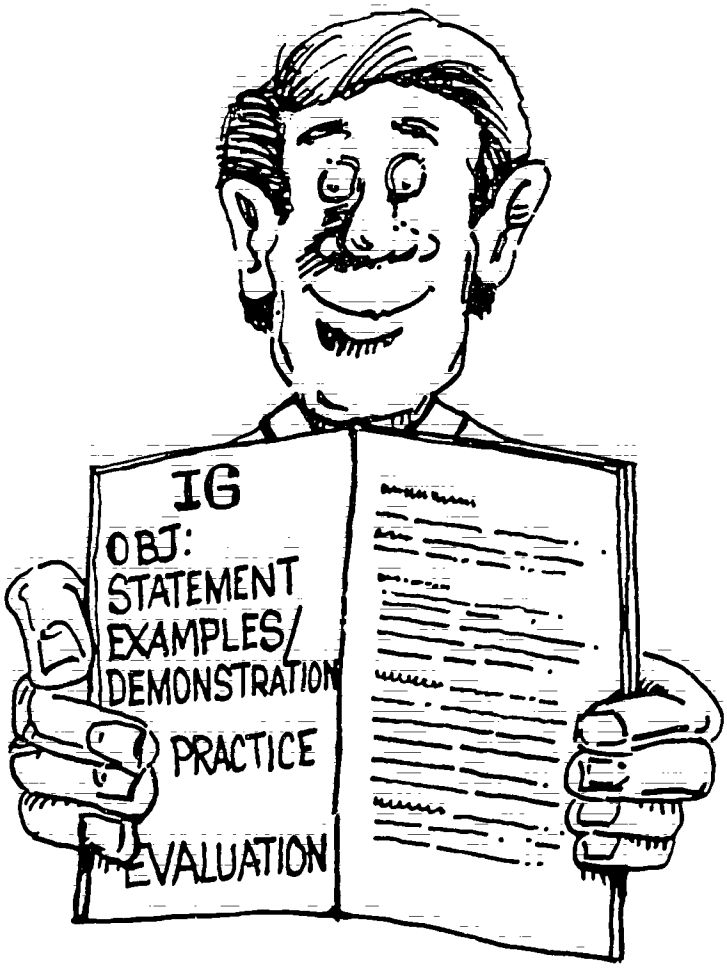
[1]The Statement:	The statement is given in items A.1-5 and teacher/student activity instruction which contains the labeled drawing.
[2]The Example:	The example is the labeled drawing and the instructor going over the drawing pointing out the parts.
[3]The Practice:	The practice occurs when the instructor has the students complete the exercise the student performs in the Student Guide labeling a line drawing of an unlabeled pump with the solution sheet (knowledge of results) in the Appendix B.
[4]The Review:	The part where the instructor reviews the parts of the pump.
[5]The Test:	The test matches the objective as stated with knowledge of results.

The fundamental practices presented in this section are key elements that must be included in STMP Training Packages. If careful attention is given to construction of the objective, then the trainee and instructor will clearly know the expected outcome of the instruction. If careful attention is given to ensure consistency between objective and test items, then the test will allow the trainee and instructor to evaluate the trainee's mastery of the objective. If the content matches the objective and contains no more or no less information than is needed for the trainee to master the objective, then the instruction will be lean and efficient. If the presentation components are included in the formatting of the content, then the total lesson will be effective.

Curriculum development requires considerations to be given to many aspects of the lesson. All of the elements are important in the creation of a training package that allows good, educationally adequate instruction to be given and that allows the trainee to acquire the stated outcomes in an efficient and effective manner.

SUMMARY

As Finch and Crunkilton stated, the impact of curriculum development on the effectiveness of a teaching-learning environment cannot be underestimated. It is important to develop the materials with close attention given to the basic principles discussed earlier in this guide. By following a systematic process, developers can create materials that are appropriate for lean and cost efficent training.



LITERATURE REVIEW

A review of the literature provides substantial support to the fact that the process of developing curriculum requires that attention be given to identifying the objectives, designing a course to meet the objectives, organizing the course to meet the objectives and evaluating the course in terms of the objectives (Davies). Inherent in this process is a desire to create an effective lesson. In order to do this the instruction must have a visible structure. As Davies says, "This structure gives form to the learning experience."

Research has indicated a correlation between lesson structure and trainee evaluations of the quality of instruction. Those lessons in which the trainee can detect organization tend to be rated as effective and those lessons which have no obvious form are evaluated as poor (Davies). This indicates the importance that must be given to construction of lesson materials.

OBJECTIVES

As Dick and Carey so aptly state, "Perhaps the best-known component of the instructional design process is the objective." They present the concept that if objectives are made available to the students, then the students have clear-cut guidelines for what is to be learned and tested during the course. The objective serves as a check on the relevance of classroom presentations allowing the students to obtain a clear description of what will be taught.

Davies defines an objective as a statement of what learners will be able to do at the end of a training program; it defines a learning need. He feels objectives are a contract that represent the expectations of the instructor for the trainees at the end of the training.

Popham and Baker state that objectives prevent learners from spending their time trying to "out-psych" the teacher -- that is, trying to guess what the teacher will ask on the examination. The objectives tell the learners what is expected of them, what the teacher wants them to do at the end of instruction, and what they should study.

The objective is constructed with a statement telling the trainees what they will be able to do (action), with a statement telling what resources they will need (condition), and with a statement telling them how well they will do it (standard). Objectives should be written specifically and clearly (Dick and Carey, Davies, and Popham and Baker).

Consistency - Objectives And Test Items

Denova reminds us that "good tests do not simply happen as a product of last minute inspiration". The test is directly linked with the objectives of the course and should be constructed totally from the objectives. The test items must call for the same kind of behavior as that specified in the objectives. Dick and Carey also stress the importance of tests measuring stated objectives. Popham and Baker state that a basic component of a teaching unit is a list of objectives and a detailed description of how they will be measured.

Consistency between the objective and test item is very important in determining whether students have obtained the stated objectives. If the behavior being measured is different than the behavior stated as the desired outcome then the training cannot be declared effective. Students not meeting the stated outcomes will have fallen victims of poorly designed and executed instruction.

Consistency - Objectives And Content

Ellis, Wulfeck, and Fredericks stress the fact that once objectives and test items are considered consistent with each other, the next step is to ensure the content is consistent with the objectives. Davies expands this thought by discussing the role of an objective as being that of a contract for learning. He says that objectives determine many aspects of a lesson such as length, instructional strategies, and most important, the content of the lesson. If there is one critical step in lesson preparation, according to Davies, it is to identify objectives to be achieved and that these be consistent with what the trainees are expected to do and/or know during the lesson. The verb tells what the trainee should do at the conclusion of training. It is a common mistake to teach too much and to give too much detail. Davies points out that background information is always useful, but it can get in the way of learning. The key is to concentrate on the job that has to be done - the "need-to-know". Each teaching point of the lesson should be related to the objectives of the lesson. He stresses the need to target the lesson to the objectives and teach what the trainee must know. This will help to alleviate the information they could know, but is a matter of inclination, or the information they should know, but is not mandatory. Popham and Baker see objectives as a scheme for establishing the learning set conducive for the trainee's attainment. This makes it imperative for the lesson content to match the objective and to include opportunities for the trainee to learn the information/procedures and practice the information/procedures indicated by the objectives.

Presentation Components

Davies sees the presentation components as representatives of the basic lesson structure. He describes this structure as a pattern - something by which an instructor can model his teaching. He sees the basic components of course instruction as an introduction which should lead to the main body of the lesson and should account for less than 10 percent of the instructional time. Next, he sees a development component that deals with the knowledge of skill being conveyed. He feels knowledge material will account for 65 percent of the instructional time, and when a skill is being taught, the lesson will account for 25 percent of the training, including the demonstration of the skill. This part of the lesson consists of a phase where the body of knowledge or information is provided. This may be done via lecture, videotape or reading assignment. The next phase allows the trainee to look for the meaning and understanding of the information. This is usually handled through discussion. The final phase involves application. Trainees must apply what they have learned to a real job situation. There should be practice, encouragement, and correction as key elements. The concluding part of a lesson is the consolidation component. This component strengthens what has been learned and brings all the lesson together for a rehearsal for mastery of the material and final evaluation.

Ellis, et. al., state that the components of a lesson are: objectives, statement, example, practice remembering, practice using, review and evaluation.

Dick and Carey describe the components of instruction as the objective, information presentation, examples, practice items, feedback and evaluation.

Popham and Baker also endorse structure to a course as a basic fundamental practice. They describe the components as objectives, perceived purpose/motivation, provide information, practice, feedback and evaluation.

As can be discerned from the curriculum development field of study, the structure of the instructional process is a vital element in the creation of adequate training. As Davies points out, "An instructor needs to be efficient and effective." Those instructors that are considered effective generally do things right. They plan their instruction to include elements that state the purpose and expectations for the trainee; they include information, examples, practice and evaluation. All of these elements relate to the objective with the end result that the instruction is relevant and necessary.

In summary, there are different ways to prepare a lesson and there is no one best approach. Davies points out that this is exactly why "a choice has to be made" with regard to how course materials will be developed. However, no matter which approach is selected, they all contain the basic components of objectives, content consistent with the stated objectives, examples/demonstrations, practice, and evaluation.

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