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(6) INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT: TECHNICAL LEVEL WORKSHOP.

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403 904

INTRODUCTION

This Workbook has been designed for use in conjunction with the Interservice Instructional Systems Development Procedures, audio-visual materials, and a limited number of Workshop Enablers or instructors. It is designed to be primarily self-instructional with the addition of feedback at key points in the process. You can improve your own performance and products by following some easy-to-say but hard-to-do rules.

(continued p 1473A)

1. Don't ask for critique or review until you are ready to receive it. Finish the work first.

2. Prepare yourself to listen carefully and take notes on the suggestions offered by the reviewer.

3. Encourage the Enabler to go into more detail and ask clarifying questions if you do not understand.

4. Let the Enabler know that you appreciate frankness and honesty. Feedback can only have real value if it is frank and honest.

5. If you outrank the person from whom you are asking a review or critique, you must be extra careful to let him know that he can provide a critique of your work or product that will not be a criticism of your position!!! Cultivating honest reactions and frankness in subordinates is one of the more difficult tasks the manager faces. It may well be one of the few characteristics which separates the outstanding managers from others.

When you have done the Workbook Exercise clearly and completely, take it to an Enabler for scoring and critique. Some of the Blocks have more than one Exercise---be sure to do only one at a time and get feedback.

HOW TO USE THIS WORKBOOK

The format will require that you follow the step-by-step instructions in the exercises for the particular block. These instructions will generally require that you:

1. Read the referenced materials.

2. Observe, read, or listen to auxiliary materials such as films, inputs from previous blocks, audio tapes, etc.

3. Perform the first exercise.

4. Check your work with the Workshop Enabler.

INSTRUCTIONS

The Interservice Procedures for Instructional Systems Development (IPISD) Model has five Phases and each phase has several components called Blocks:

PHASE I: ANALYZE - Five Blocks

PHASE II: DESIGN - Four Blocks

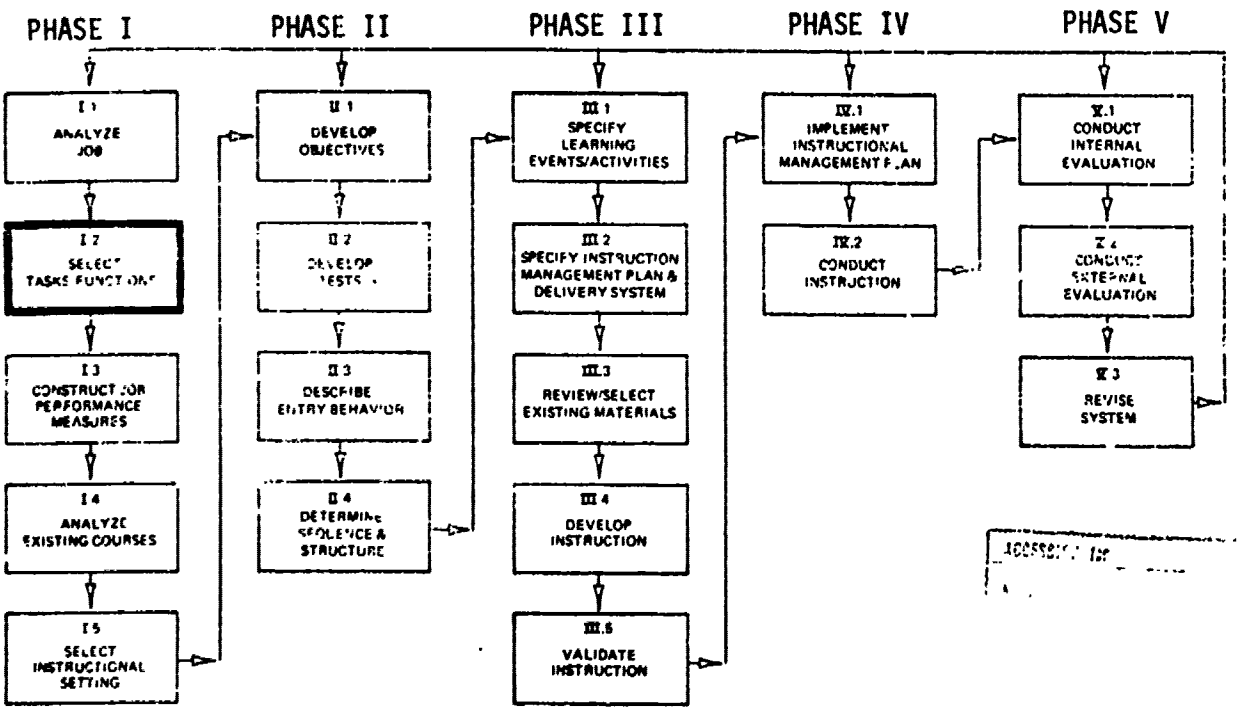
PHASE III: DEVELOP - Five Blocks

PHASE IV: IMPLEMENT - Two Blocks

PHASE V: CONTROL - Three Blocks

The IPISD Model is displayed graphically below. Notice that each block retains the Roman numeral of its phase along with a sequential Arabic numeral (e.g., Block I.2).

IPISD MODEL



In the Manuals, each block is separated into three Sections. Take a moment to look at the Table of Contents for Phase I: ANALYZE. The first section gives the Introduction, the second presents the Procedures, and the third lists the Outputs of the block. Each of these sections is divided further by adding a decimal point and the appropriate sequential Arabic numeral to the section number. Each Subsection may have additional subdivisions designated by adding another decimal point and the appropriate Arabic numeral. The following display illustrates the numbering system:

IV . 1 . 2 . 1

Phase Block Section Subsection

Within each block, only the section and subsection numerals are used, therefore these numerals will be the only ones you will encounter during the major portion of your readings. The phase and block numerals are presented on the initial page of each block along with a display of the total Model. The block that represents the portion of the Model you are about to enter is outlined with a heavy black line in the display.

In order to reference any particular section or subsection in the Model, you need to know the phase and block numbers in addition to the section and subsection numbers.

> For example, just knowing that the material you are interested in is located in Section/Subsection 2.1 does not give you enough information to find what you need. Knowing the block number narrows the field of inquiry, but is still not enough. However, if you know the phase number in addition to the above, you would probably have little difficulty in locating the material you are interested in.

An index is provided at the end of each volume. The index refers you to the phase and page number of the items referenced. To make sure you can use the numbering system in the IPISD Manuals, here are some examples:

> III.2.2.1 stands for Phase III, Block 2, Section 2, Subsection 1.
>
> Likewise, I.1.3.1 stands for Phase I, Block 1, Section 3, Subsection 1.

Your turn. Write down the page number in the manuals where each of the following sections are found.

a) I.3.1.0, #_____; b) I.2.2.1.2, # _____; c) I.2.2.1.1.8, #_____.

The answers to these questions can be found at the top of the following page.

Answers: a) 157; b) 130; c) 128

If you had trouble locating the appropriate page numbers, see the Workshop Enabler for assistance. The enabler is the instructor for the workshop, his role will be discussed at greater length later in this introduction.

Now that you can distinguish between phases, blocks, and sections, terms that will be used throughout your discussions and the readings, take a look at how this workshop is organized. For purposes of conducting the workshop, the related blocks have been divided into twelve Modules for the workshop.

Module 1:

Block I.1
Block I.2

Module 2:

Block I.3

Module 3:

Block I.4

Module 4:

Block I.5

Module 5:

Block II.1
Block II.2

Module 6:

Block II.3
Block II.4

Module 7:

Block III.1

Module 8:

Block III.2

Module 9:

Block III.3
Block III.4

Module 10:

Block III.5

Module 11:

Block IV.1
Block IV.2

Module 12:

Block V.1
Block V.2
Block V.3

Pretest

The pretest consists of a knowledge inventory of the materials contained in each module. A score of 100 is required for individuals who are responsible, in their actual jobs, for the performance of tasks associated with the particular phases and/or blocks covered by the test.

If an individual takes the tests and exercises for Phases I-III because of his current assignment, he would then be required to read the tests, exercises, and Executive Summary for Phases IV and V.

Posttest

The posttest is the same as the pretest and the criteria for passing are also the same. You will be given a posttest after you have completed each reading assignment in the manuals.

Exercises

The exercises are performance tests which measure your ability to perform the tasks associated with each module.

In some instances, space for your responses to the exercises is provided, either following the exercise or on the page immediately after the exercise. Writing paper will be provided for those exercises where you are asked to produce your own product.

Procedures

At the beginning of each module of instruction, you will be given a pretest which covers the information contained in that module. One of two things may happen based on your performance on the pretest.

1) If you reach your criterion on the pretest, you are then given the module exercise(s).

2) Otherwise, you are directed to the appropriate readings for the module.

Since this is a decision point in the procedures, there are two possible paths for you to take.

In the first case, after you have passed the pretest* you are given the module exercise(s). Upon completion of each exercise or set of exercises, your products and/or results are taken, by you, to the Workshop Enabler. The exercises have been marked with the following symbol:

When you reach this symbol, you are to have all of your work up to that point checked by the Enabler. You are to work from symbol to symbol. Sometimes you will need to have your products checked after every exercise; sometimes, after a group of exercises.

*You would not be expected to pass a pretest unless your training and experience is directly relevant to the content in a given module. If you pass many pretests, you may not be a member of the target population for which this instruction is intended.

The Enabler will judge you work and may give you a "go." If you receive a "go," you proceed to the next exercise, continuing until you receive a "go" on the final exercise.

Checking your products at the appropriate point is critical as it will ensure that what you are doing is on the right track. If you do not receive a "go," you and the Enabler will discuss the most appropriate plan for successfully completing the exercise. You will be able to correct any errors or problems while they are still in the early stage, rather than waiting for them to become serious. The Enabler may ask you to read the materials, or rework the exercise, or a comination of both.

This brings us to the second case, in which you did not pass the pretest. At this point, you are directed to the appropriate readings for the module. At the completion of the readings you are given the posttest. If you pass the posttest, you will receive the performance exercise(s) for the module and proceed in the manner stated above. However, if you do not pass the posttest you will be referred to those sections of the readings which seemed to cause you the most trouble. With the assistance of the Enabler, iron out any of the problems you have encountered. After this you will move on to the exercise(s) for that module.

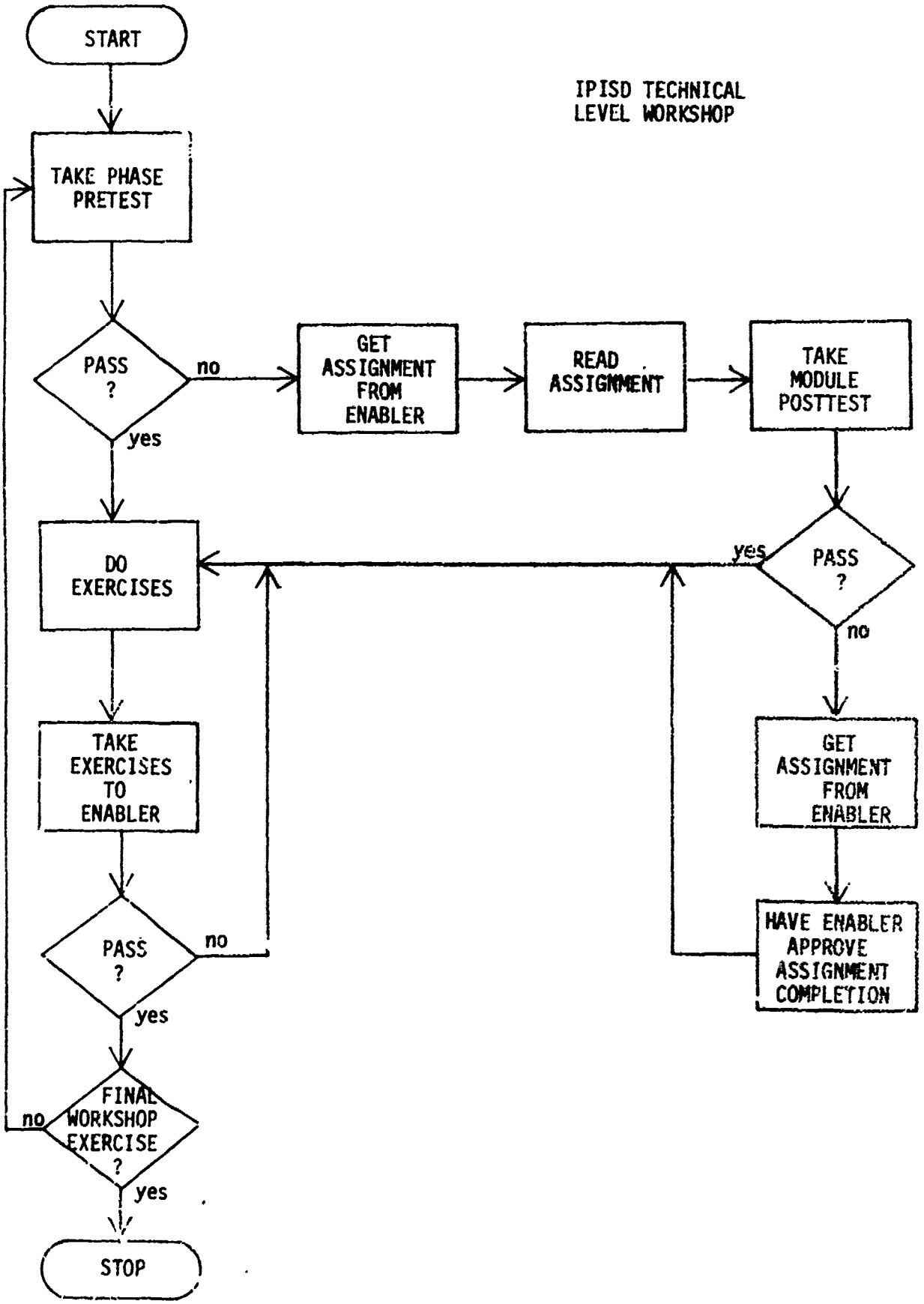
SMEs and Materials

Throughout the workshop, you will be required to complete numerous practical exercises using your own materials. If you were to bring materials related to the job of a rifleman, it would be essential for you to be a subject matter expert in that job. In order to successfully complete the practical exercises, you must be a subject matter expert in the content of your materials. In addition, the examples you select for development should be simple. The use of materials related to extremely complex or technical jobs will only make your learning experience more difficult.

A flowchart (diagram) of the workshop procedures is presented on the next page. It is suggested that you take a brief look at this diagram. You are now ready to begin Module One of the Technical Workshop. "Good Luck" and please feel free to make any comments concerning the procedures, the materials, or anything you see which might have an impact on the materials. Suggestions for revisions or changes should be sent to:

ISD Project
Center for Educational Technology
1A Tully Building
Florida State University
Tallahassee, FL 32306

IPISD TECHNICAL
LEVEL WORKSHOP



INTERSERVICE
PROCEDURES FOR
INSTRUCTIONAL
SYSTEMS
DEVELOPMENT

TECHNICAL WORKSHOP

MODULE ONE

WORKSHOP LEARNING OBJECTIVES

1. From a provided list of tasks, select the properly written task statements.
2. Write a job definition for a familiar job.
3. List the duties that make up a familiar job.
4. Considering the practical constraints of a given command, develop a complete data collection plan for the analysis of a specific job and the selection of tasks for training. This plan should include as a minimum:
   a. How data will be collected. Rationale for these decisions.
   b. In what order data will be collected (i.e., what data must be gathered before other data). What is the rationale for these decisions?
   c. What evaluation criteria will be used to select tasks for training. What is the rationale for these decisions?
   d. From what sources the data will be gathered.
   e. What data collection forms will be used.
5. Write several examples of "duties" of a familiar job.
6. Match task statements with the duties of a familiar job (duties listed above).
7. For a series of task statements, generate representative summary data simulating the results of data collected for the selection of tasks for training.
8. Select tasks for training, using a task list and appropriate supportive data.
9. Select tasks for training on the basis of summarized data resulting from a task inventory survey. Give a rationale for the decisions.
10. Document the conditions, cues, standards and elements for tasks selected for training.

WORKSHOP INSTRUCTIONAL MATERIALS

The readings for this module are Blocks I.1 and I.2,in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Following is a list of tasks that are part of the job of Military Po ice. Six of the task statements are correctly written and five are not. Identify the correctly written tasks.

		Correct	incorrect
1.	Work at scene of demonstrations.	_____	_____
2.	Process juvenile offenders.	_____	_____
3.	Subdue subject resisting arrest.	_____	_____
4.	Prevent accidents.	_____	_____
5.	Remove vehicles that obstruct traffic.	_____	_____
6.	Fill out missing person report forms.	_____	_____
7.	Follow safety rules.	_____	_____
8.	Take appropriate action while on duty.	_____	_____
9.	Issue traffic citations.	_____	_____
10.	Fill out burglary report forms.	_____	_____
11.	Understand how to fill out arrest reports.	_____	_____

2. From the list of tasks on the next page, select 7 tasks for training new recruits. Although all information included in the chart should be considered, your command considers consequences of inadequate performance the most important criterion. Place the letter T next to the tasks you select for training, in the left-hand column marked "T".

PATROLMAN TASKS

	% Performing of Total Force	% Performing of 1st Year Patrolmen	Consequences of Inadequate Performance	Task Difficulty	Average Rank of Members Performing
1. Conduct Prelim. Auto Theft Investigations	100	74	5.06	3.10	3.49
2. Conduct Prelim. Missing Persons Inves.	100	76	5.29	4.44	3.47
3. Call for Supplementary Aid (e.g., Wreckers, Fire Departments) for Traffic Crashes	100	91	5.56	2.74	3.49
4. Conduct Prelim. Inves. in Assault Cases	100	76	5.98	4.98	3.51
5. Conduct Prelim. Inves. in Felony Theft Cases	99	76	6.06	4.80	3.51
6. Protect Physical Evidence at the Scene	96	77	7.04	4.71	3.55
7. Direct Traffic by Hand Signals	95	89	4.93	3.74	3.48
8. Mark Physical Evidence for Later Identification	95	64	6.75	4.72	3.55
9. Diagram and Record Measurements of Traffic Crash Scene	94	79	5.88	4.44	3.49
10. Prepare Physical Evidence for Submittal in Court	70	31	6.08	6.06	3.80
11. Conduct Complete Inves. in Injury and Death Cases	47	23	6.74	6.61	3.88
12. Issue Warning Tickets	45	60	2.14	3.13	3.13
13. Plan Stakeout Duty	39	62	1.48	2.48	3.46
14. Transmit Crash Diagrams and Collision Diagram Summaries to State Highway Engineer	3	2	4.25	5.40	3.53
15. Inspect Men at Roll Call	1	3	4.04	3.59	4.73
16. Operate Tow Truck	0	5	3.06	3.88	2.43

TW-M1-3

3. During the workshop you will analyze a job, design and develop instruction for a small portion of this job, and evaluate the instruction to determine its effectiveness.

   At this point you should:

   a. Select a simple job. You should be very familiar with this job and know how it is performed or be reasonably expert at performing it. Do not select a job function with which you are not familiar.

   b. List the major duties included in the job you have selected. ✓

4. Assume your supervisor has assigned you the responsibility for job analysis for the job you selected in Exercise 3. Also assume that a current task list is not available. Before you conduct the job analysis you will need to: (1) prepare a data collection plan and (2) establish criteria for selecting tasks for training.

   Insofar as practical, suit the plan to your understanding of your present command. You may have to make some assumptions about the requirements of your command. For example, are you likely to have reasonable time and resources for conducting the job analysis or must you operate on an extremely tight schedule and budget? Be sure to document or record any assumptions you make. Remember that you are writing a plan so that you, your supervisor, and others will know exactly what you are going to do. Your plan must be sufficiently detailed so that your supervisor can either approve the plan or tell you what you must do differently.

   Your plan should, as a minimum, include:

   a. What data and information you need to collect.

   b. In what order you will collect the data and what methods you will use to collect the various data. Be sure to give the reasons for your decisions.

   c. Evaluation criteria to be used to select tasks for training.

   d. Sources for the various data; that is, from whom you will collect the data. Be reasonably specific here. "From a representative sample of the population," is not sufficient.

   e. What data collection forms will be used. Either sketch the forms or reference them if they already exist.

   f. How the task list will be validated. ✓

(NOTE: Since this is a long exercise, you may wish to have the Enabler check each part as you complete it.)

5. For the job selected in Exercise 3:

   List 8 of the tasks that make up the duties of this job. Do not document the conditions, cues, standards, or elements unless necessary to make clear to the user (in this case the Workshop Enabler) what the tasks are. Later you will develop tests and instruction for some of these tasks; therefore, you should list tasks with which you are reasonably expert.

6. In Exercise 4, your data collection plan included collecting data for selecting tasks for training. Assume you now have collected this data. Summarize the data upon which selection of tasks for training will be based, for the 8 tasks listed in Exercise 5. Since you do not have the real data, make the summary data look the way you think the real data would look. (NOTE: The Enabler may make some changes to these data. What you get back from him will represent the "real" data.) Your summarized data might look similar to the form shown in Figure I.15, page 142; Figure I.16, page 150; or Appendices C and D, pages 99-104.

7. Assume that your supervisor informs you that resources are available for training only 4 out of the 8 tasks. Based on this constraint and on the summarized data from Exercise 6, recommend tasks for training. Give the criteria you will use to select tasks for training and the rationale for your final recommendations. (NOTE: The Workshop Enabler may not accept your recommendations. The final selection of tasks for training may be negotiated by you and the Enabler.)

8. The Enabler will assist you in choosing one of the tasks selected for training. (Later, you will actually develop or select instruction for this task.) For this exercise, document the conditions, cues, standards, and elements for the chosen task on the attached Job Data Worksheet.

9. Why are tasks selected for training?

JOB DATA WORKSHEET (Module 1, Exercise 8)

JOB TITLE _____ DOS _____ PAGE NO _____

DUTY/CODE _____ LEVEL _____ DATE _____

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES

INTERSERVICE
PROCEDURES FOR
INSTRUCTIONAL
SYSTEMS
DEVELOPMENT

TECHNICAL WORKSHOP

MODULE TWO

WORKSHOP LEARNING OBJECTIVES

1. State the differences that generally exist between tasks and their corresponding JPMs.

2. Construct JPMs for tasks. Each JPM should contain:

   a. The required test performance

   b. Test conditions

   c. Test cues

   d. Test standards

   e. Equipment and facility requirements

   f. Administrator's instructions

3. List the reasons why instruction is based on JPMs rather than upon actual tasks.

4. Define the term "JPM."

WORKSHOP INSTRUCTIONAL MATERIALS

Read Block I.3 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Construct JPMs for the tasks listed on the three attached Job Data Worksheets. In cases where the JPM you write and the task differ, give the rationale for the difference. Prepare test administrator's directions only for the Wheel Vehicle task. The test administrator's directions should include:

   a. Test objective

   b. Conditions

      1) Equipment required
      2) Environment
      3) Layout of test area

c. Standards

d. Test administration procedures

e. Instructions to examinee

f. Checklist ✓

2. Explain why instruction is based on the JPMs rather than on actual tasks.

3. Construct a JPM for the task selected for further development in Exercise 8 of Module 1. You may use the space left of the Job Data Worksheet from Exercise 8, Module 1, or ask an Enabler for additional forms. The JPM should include:

a. The required test performance

b. Test conditions

c. Test cues

d. Test standards

e. Equipment and facility requirements

f. Scoring instructions ✓

4. Why are draft JPMs given tryouts?

5. How do process scales differ from product scales? ✓

JOB DATA WORKSHEET

JOB TITLE Illustrator DOS DOA PAGE NO.

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Dimension Drawings of Mechanical Objects ELEMENTS: 1. Select the measurements that need to be dimensioned on each view. 2. Dimension the views. JPM:	Standard issue drafting equipment, T-square	Supervisor requested	Sufficient dimensions to construct object properly placed	

TM-M2-3

JOB DATA WORKSHEET

JOB TITLE _____ DOS (Survival for all combat DOS) PAGE NO. 1

DUTY/CODE _____ LEVEL E1-E7 DATE _____

ITEM CODE	TASK, ELEMENTS, J.P.M	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Survive in hostile environment (only 2 elements, used to simplify exercise.) ELEMENTS: A. Select Edible Plants 1. Avoid non-edible a. plants with milkey sap b. mushrooms c. grains having black spurs in the place of normal grain seeds d. plants with a bitter or soapy taste B. Find Potable Water 1. Sources of water a. plants b. bugs c. dew d. rain e. lakes, rivers, and streams f. melted snow g. bases of cliffs h. dry stream beds i. cisterns j. springs k. sand dune hollows l. solar still	Any climatic area of the world. Separated from military or civilian sources of food and water in hostile territory.	Hunger and thirst and no usual sources of food and water.	Find enough food and water to survive.	

TM-M2-4

JOB DATA WORKSHEET

JOB TITLE _____ DOS(Survival for all combat DOS) PAGE NO. ?

DUTY/CODE _____ LEVEL E1-E7 DATE _____

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	JPM:				

TM-M2-5

JOB DATA WORKSHEET

JOB TITLE Wheel Vehicle Mechanic DOS XXA PAGE NO. 1

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Adjust malfunctioning wheel bearing on ¼ ton truck. ELEMENTS: 1. Position jack 2. Raise vehicle 3. Loosen lock nut on lifting eye 4. Remove lifting eye from wheel 5. Remove cotter pin 6. Select tongue wrench 7. Tighten flange nut to 30 lb.-ft. tongue 8. Release tongue by loosening the flange nut 9. Tighten flange nut finger tight 10. Replace cotter pin 11. Tighten lock nut on lifting eye 12. Lower vehicle to ground JPM:	Army road or motor pool conditions with equipment carried in ¼ ton truck (one ton hydraulic jack, general mechanics tool kit, ½" square drive tongue wrench, TRR 9-2320-218-20)	Vehicle wheel wobbles and shakes	Shaking and wobbling stops	

TM-M2-6

JOB DATA WORKSHEET

JOB TITLE Wheel Vehicle Mechanic (con't) DOS XXX PAGE NO. 2

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	JPM (con't):				

TM-M27

INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT

TECHNICAL WORKSHOP

MODULE THREE

WORKSHOP LEARNING OBJECTIVES

1. Examine reviews of existing courses and determine if the courses should be selected for instruction for a given set of tasks.

2. Provide a rationale for analyzing a job before analyzing existing courses or vice versa.

3. List the information that would be required to analyze existing instruction for a specified job.

4. Describe the course of action that should follow the decision that an existing course appears to contain suitable content and is based on a recent job analysis.

WORKSHOP INSTRUCTIONAL MATERIALS.

Read Block I.4 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Attached are two JPMs and five reviews of existing instruction. Look at each review sheet and the JPM(s) to which it applies (noted at the top of each review sheet), to determine if you would select the existing instruction for use. You are not judging the JPMs, just deciding if the instruction reviewed matches the JPM. Factors you may consider include title, contents, data, developer, existence of a job analysis, task selection, existence/suitability of JPMs, and general availability of necessary information on which to base a decision. State your reasons for selection or rejection.

2. Ordinarily, which should you do first, conduct a job analysis or analyze the development documentation for existing instruction? Why?

3. If you analyzed an existing course that supposedly taught the job that you wished to teach, and you determined that the course was based on a professional, recent job analysis, what is the next action you should take before accepting the job analysis as suitable for your needs?

4. What four items in the collection and review of documentation of existing instruction should be evaluated and found acceptable before accepting the instruction for your use? Why?

JOB DATA WORKSHEET

JPM 4

JOB TITLE Wheel Vehicle Mechanic DOS XXA AGE NO. 1

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Troubleshoot starting system	¼ ton truck; LVCT; TM 9-2320-218-20; TM 9-4910-456-14	Supervisor directs you to determine the cause of starting problems on a ¼ ton truck.	The tests must be performed and correct diagnoses made in each case. All safety rules must be followed.	
	A. Perform a starter voltage test and amperage draw test on the starting circuit.			Without damage to equipment or injury to personnel.	
	1. Check condition of battery.				
	a. Electrolyte at proper level. b. Batteries fully charged.				
	2. Complete visual inspection of starting system.				
	a. Examine starter terminal studs, battery terminal and engine ground strap for looseness. b. Grasp starter cable and connections with starter in operation to check for sensation of heat.				A sensation of heat indicates a poor connection, excessive amperage draw in the system or too small a cable.
	3. Prepare Low Voltage Circuit Tester (LVCT) for use.				
	a. Draw LVCT from supply/tool room. b. Check LVCT support equipment for completeness. c. Position LVCT in well ventilated area where test leads will reach batteries.				
	4. Perform starter voltage test.				
	a. Connect LVCT to vehicle batteries as shown in Vehicle Organizational Maintenance Manual. b. Operate starter with ignition off.				Voltmeter should indicate a minimum of 18.5 volts.

JPM 4

TM-M3-3

JPM 4 (con't)

JOB DATA WORKSHEET

JOB TITLE Wheel Vehicle Mechanic DOS XXA PAGE NO. 2

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	5. Perform starter amperage draw test. a. Disconnect battery ground strap (cable) at negative battery terminal. b. Prepare LVCT for external shunt use. 1) Open external shunt. 2) Connect shunt instrument (light) leads to tester external shunt terminals keeping polarity correct. c. Connect shunt heavy cables to starter circuit. 1) Connect red cable to ground cable. 2) Connect black cable to battery negative terminal. d. Operate starter and observe LVCT ammeter indication. Amperage should not exceed 40 amperes.				When engine is at operating temperature, if amperage exceeds 40 amperes the starter is defective or excessive engine friction is indicated.
	8. Check the battery ground cable and battery to battery cable for continuity.			Without damage to equipment or injury to personnel.	
	1. Connect LVCT between battery ground terminal and starter frame. a. Connect tester ends of voltmeter test leads to voltmeter binding posts keeping polarity correct. b. Connect opposite (probe) ends of voltmeter test leads between battery ground post and the starter frame.				

JPM 4 (con't)

TW-M3-4

JOB DATA WORKSHEET

JPM 4 (con't)

TITLE Wheel Vehicle Mechanic DOS XXA PAGE NO. 3

TY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	2. Move voltmeter range selector switch to the 50-volt position and operate starter with ignition switch off. a. If voltmeter shows low or no reading, move selector switch to 20-volt position and again read the meter with starter in operation. b. If low or no reading, move selector switch to the 10-volt position and retest. c. Move selector switch to 1-volt position if there is low or no reading in the 10-volt position. d. Locate and correct malfunction or defect, should reading be over 0.1-volt. e. Retest circuit to make sure malfunction is corrected. 3. Connect LVCT to perform battery to battery cable test. a. Position voltmeter range selector switch to off position. b. Connect tester ends of voltmeter test leads to voltmeter binding posts on LVCT keeping polarity correct. c. Turn voltmeter range selector switch to 50-volt position. d. Touch meter probe ends of test leads to battery posts as shown in test 4, fig. 2-18, TM 9-2320-218-20. Operate starter with ignition switch off and read meter; if low or no reading, turn voltmeter range selector switch down range (50 to 20 to 10 to 1) reading the meter at each position. e. If reading over 0.1-volt exists, clean connections and examine battery cable for corroded (eaten away) strands. Replace battery cable if defective. f. Retest circuit to make sure malfunction is corrected.			

JPM 4 (con't)

TW-M3-5

JPM 6

JOB DATA WORKSHEET

JOB TITLE Wheel Vehicle Mechanic DOS XXA PAGE NO. 1

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Determine antifreeze protection of a cooling system using the Optical Antifreeze Battery Tester.	¼ ton truck, Optical Antifreeze Battery Tester, TB 750-651, in any weather, inside or out.	Directions from supervisor to determine antifreeze protection.	All of the steps must be performed in order and recommendation (6) must be correct.	
	1. Prepare tester for use (same as for testing battery electrolyte). (Do not test here.)				
	2. Be sure cooling system is cooled sufficiently so that radiator cap can be removed without coolant escaping.				
	3. Use tester antifreeze pump to transfer a few drops of coolant from the vehicle radiator to the tester measuring window.				
	4. Point the tester toward light and read the scale on the right side. Antifreeze protection is indicated by a line on scale dividing light and dark areas.				
	5. Compare antifreeze protection to that prescribed in TB 750-651 and/or local SOP.				
	6. Recommend further action if necessary.				
	7. Clean tester with clear tap water and dry.				

JPM 6

TM-M3-6

TW-M3-7

Consider for JPMs 4 & 6

REVIEW SHEET FOR EXISTING INSTRUCTION #1

Title of Document: Operator's Manual for ¼ Ton Truck

Author: Headquarters, Department of the Army

Volume and Number: not given Date: Sept. 8, 1971

Publisher: Department of the Army

Any Other Identifying Info.: TM 9-2320-218-10 Official Document?: Yes

Medium: print

Delivery System: print

Developed by ISD Method?: Yes ____ No X

Job Analysis Data:

Front End Analysis

Job Analysis

Done within the past 5 years? Yes

Any system changes? Yes-general changes in doctrine incorporated

What were the sources? Not enough information given to determine

Can you generalize this situation to your situation? Yes, same information on electrical system

Is the data difficult to locate? Yes

Any other comments?

Select Tasks

Are these tasks based on the same criteria of tasks that your command is? Yes, done by same command.

Is the data used to select tasks based on the same geographic location, skill levels, etc.? Appears to be

Was task selection based on the same constraints? Unsure

Job Performance Measures

Can you review all JPMs? Attach list. No list available

What parts match the objectives? See above

Any other comments?

DECISION: Accept:

Accept Partially:

Reject:

Reconsider at Block III.3:

*TM 9-2320-218-10

TECHNICAL MANUAL
No. 9-2320-218-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 8 September 1971

OPERATOR'S MANUAL

TRUCK, UTILITY: ¼ TON, 4 x 4, M151 (2320-542-4783), M151A1 (2320-763-1092), M151A2 (2320-177-9258) TRUCK, UTILITY: ¼ TON, 4 x 4, M151A1C (2320-763-1091), M825 (2320-177-9257), 106MM RECOILLESS RIFLE TRUCK, AMBULANCE, FRONTLINE: ¼ TON, 4 x 4, M718 (2310-782-6056), M718A1 (2320-177-9256)

*This manual supersedes TM 9-2320-218-10, 8 March 1968, including all changes.

Consider for JPMs 4 & 6

REVIEW SHEET FOR EXISTING INSTRUCTION # 2

Title of Document: Organizational Maintenance Manual for ¼ Ton Utility Truck

Author: Headquarters, Department of the Army

Volume and Number: -- Date: 23 Sept 1971

Publisher: Headquarters, Departmert of the Army

Any Other Identifying Info.: TM 9-2320-218-20 Official Document?: Yes

Medium: Print

Delivery System: Print

Developed by ISD Method?: Yes _____ No _____

Job Analysis Data:

Front End Analysis

Job Analysis

Done within the past 5 years? Yes

Any system changes? Yes

What were the sources? Obtained from earlier publications

Can you generalize this situation to your situation? Yes

Is the data difficult to locate? No, information given

Any other comments?

Select Tasks

Are these tasks based on the same criteria of tasks that your command is? Yes, done by same command.

Is the data used to select tasks based on the same geographic location, skill levels, etc.? Yes, few modifications

Was task selection based on the same constraints? Unknown

Job Performance Measures

Can you review all JPMs? Attach list. No

What parts match the objectives?

Any other comments?

DECISION: Accept:

Accept Partially:

Reject:

Reconsider at Block III.3:

TECHNICAL MANUAL
NO. 9-2320-218-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *23 September 1971*

ORGANIZATIONAL MAINTENANCE MANUAL

TRUCK, UTILITY: ¼ TON, 4X4, M151, M151A1, M151A2;

TRUCK, UTILITY: ¼ TON, 4X4, M151A1C,

M825 WITH RECOILLESS RIFLE;

TRUCK, AMBULANCE, FRONT LINE:

¼ TON, 4X4, M718, M718A1

*This manual supersedes TM 9-2320-218-20, 26 August 1968, including all changes.

TW-M3-14

Consider for JPM 4

REVIEW SHEET FOR EXISTING INSTRUCTION # 3

Title of Document: Troubleshooting the Starting System on a ¼ Ton Truck

Author: John Jones

Volume and Number: -- Date: June 1975

Publisher: U.S. Army Ordnance School

Any Other Identifying Info.: 000-000-6056F Official Document?: Yes

Medium: film-sound; still visuals

Delivery System: Besseler Cue/See - also available on slide/tape

Developed by ISD Method?: Yes X-Systems Engineering No

Job Analysis Data:

Front End Analysis

Job Analysis

Done within the past 5 years? Yes

Any system changes? No

What were the sources? Unknown

Can you generalize this situation to your situation? Yes

Is the data difficult to locate? Data is available from Ordnance School

Any other comments? Lesson has been validated on E1-E4s

Select Tasks

Are these tasks based on the same criteria of tasks that your command is? Yes

Is the data used to select tasks based on the same geographic location, skill levels, etc.? Yes, with some changes

Was task selection based on the same constraints? Yes

Job Performance Measures

Can you review all JPMs? Attach list. No, but lesson posttest matches our JPMs

What parts match the objectives? Good match of objectives and JPM

Any other comments? Job task data card available on supporting skills and knowledge

DECISION: Accept: _____

Accept Partially: _____

Reject: _____

Reconsider at Block III.3: _____

TW-M3-16

Use with JPM 6

REVIEW SHEET FOR EXISTING INSTRUCTION

Title of Document: Use and Care of the Optical Antifreeze Battery Tester for Determining State of Batteries and Testing Antifreeze Protection

Author: John Jones

Volume and Number: -- Date: Jan. 1975

Publisher: U.S. Army Ordnance School

Any Other Identifying Info.: LN 000-000-6051F Official Document?: Yes

Medium: Print and slide/tape

Delivery System: Illustrated text and Besseler Cue/See AV Lesson

Developed by ISD Method?: Yes X-Systems Engineered No

Job Analysis Data:

Front End Analysis

Job Analysis

Done within the past 5 years? Yes

Any system changes? No

What were the sources? Obtained from other documents

Can you generalize this situation to your situation? Yes

Is the data difficult to locate? Obtained from other sources

Any other comments?

Select Tasks

Are these tasks based on the same criteria of tasks that your command is? Yes

Is the data used to select tasks based on the same geographic location, skill levels, etc.? Yes - information given

Was task selection based on the same constraints? Yes

Job Performance Measures

Can you review all JPMs? Attach list. No. List of lesson objectives attached

What parts match the objectives? Second section

Any other comments?

DECISION: Accept:

Accept Partially:

Reject:

Reconsider at Block III.3:

TW-M3-18

Use with JPM 6

REVIEW SHEET FOR EXISTING INSTRUCTION # 5

Title of Document: Use of Antifreeze Solutions for Cleaning Compounds in Engine Cooling Systems

Author: Headquarters, Department of the Army

Volume and Number: -- Date: 22 Jan 1971

Publisher: Department of the Army

Any Other Identifying Info.: TB 750-651 Official Document?: Yes

Medium: Print

Delivery System: Print

Developed by ISD Method?: Yes _____ No X

Job Analysis Data:

Front End Analysis

Job Analysis

Done within the past 5 years? Yes

Any system changes? Yes

What were the sources? Unknown

Can you generalize this situation to your situation? Yes

Is the data difficult to locate? Unavailable

Any other comments?

Select Tasks

Are these tasks based on the same criteria of tasks that your command is? Unknown

Is the data used to select tasks based on the same geographic location, skill levels, etc.? Yes - with several differences

Was task selection based on the same constraints? Unknown. Appears to cover same topics.

Job Performance Measures

Can you review all JPMs? Attach list. No

What parts match the objectives?

Any other comments?

DECISION: Accept:

Accept Partially:

Reject:

Reconsider at Block III.3:

INTERSERVICE
PROCEDURES FOR
INSTRUCTIONAL
SYSTEMS
DEVELOPMENT

TECHNICAL WORKSHOP

MODULE FOUR

WORKSHOP LEARNING OBJECTIVES

1. Analyze collected data and determine what additional data are required to make instructional setting decisions. Provide examples of the required data.

2. State the general guidelines to follow when nominating instruction to each of the following settings: JPA, STEP, FOJT, ISS, RS. State the the advantages/disadvantages of each setting.

3. Using provided data, nominate appropriate instructional settings for tasks. Provide a rationale for each decision.

WORKSHOP INSTRUCTIONAL MATERIALS

Read Block I.5 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. On the following pages are JPMs for nine tasks. Summary survey data are also included for each task. Based on the JPM and the summarized data, nominate each task to an instructional setting (JPA, STEP, FOJT, ISS, RS) using the guidelines on pages 245-259. ✓

2. You will be nominating your task (the one you prepared a JPM for in Module 2) to an instructional setting. Do you have all the data you need to make this nomination? If not, what additional data do you need? For any additional data that you think you need, summarize the data in the form you think they would take. Make whatever assumptions you need to make, but be sure to document the assumptions. The Enabler may change some of your data and some of your assumptions. What you get back from him will represent the "real" data. ✓

3. Based on the data from Exercise 2, nominate an instructional setting for your task. Give reasons for your nomination. (NOTE: You may have to explain the final setting selection to the Workshop Enabler.) ✓

EXERCISE 1 RESPONSE SHEET

JPM	TASK	ASSIGNED SETTING
1a	Survive	_____
2	Adjust a malfunctioning wheelbearing on a ¼ ton truck	_____
3	Determine state of charge of the battery using the Optical Antifreeze Battery tester	_____
5	Test battery using the LVCT	_____
6	Determine antifreeze protection of a cooling system using the Optical antifreeze battery tester	_____
7	Draw front and right side view sections of mechanical objects	_____
8	Letter with Leroy Lettering Set	_____
9	Draw multiview projections	_____
10	Dimension drawing of mechanical objects	_____

SUMMARY SURVEY DATA FOR NINE TASKS

	% Performing of Total Members	% Performing of 1st Year Members	Consequences of Inadequate Performance	Task Difficulty	Task Delay Tolerance
From Task List for Combat Infantryman)					
Survive when separated from unit in an uninhabited area	2.00	1.00	8.2	3.1	5.0
From Task List for Wheel Vehcile Mechanic)					
Adjust malfunctioning wheelbearing on a ¼ ton truck	63.00	71.00	4.2	5.1	4.2
Determine state of charge of the battery using Optical Antifreeze Battery tester	88.00	93.00	3.8	3.4	2.6
Test battery using the LVCT	76.00	81.00	6.1	3.3	2.8
Determine antifreeze protection of a cooling system using the Optical Antifreeze Battery Tester	58.00	64.00	5.2	2.9	2.5
rom Task List for Illustrator)					
Draw front and right side view sections of mechanical objects	59.00	62.00	3.7	4.2	7.1
Letter with Leroy Lettering Set	68.00	73.00	4.1	6.3	6.9
Draw multiview projections	77.00	81.00	3.8	6.5	6.2
Dimension drawing of mechanical objects	71.00	78.00	3.9	5.4	6.5

TM-MA-3

JOB DATA WORKSHEET

JPM 1a (Real world performance, controlled conditions)

TITLE All Combat Soldiers DOS PAGE NO. 1

Y/CODE LEVEL E1-E8 DATE

EM DE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Survive	Jungle or other survival course conditions	Separated from unit in an uninhabited area	Avoid poisoning and serious weight loss or dehydration.	
	1. Select and eat edible plants.				
	2. Locate and drink water.				

JPM 1a

TM-M4-4

JOB DATA WORKSHEET

JPM 2

JOB TITLE Wheel Vehicle Mechanic DOS XXA PAGE NO. 1

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Adjust malfunctioning wheelbearing on a ½ ton truck.	One-ton hydraulic jack; general mechanic's tool box; ½" square drive torque wrench; TM 9-2320-218-20. Indoors or outdoors in daylight and dry weather.	The following statement from the test administrator: During a road test the left front wheel of this vehicle wobbled and shook. It's caused by a loose wheelbearing. Your task is to repair it. Here are tools & reference materials if you wish to use them. You have 25 minutes to finish the job.	All steps must be completed in 25 minutes.	JPM 2
	1. Obtain jack and position it properly. 2. Raise vehicle. 3. Loosen locknut on lifting eye. 4. Remove lifting eye from wheel. 5. Remove cotter pin. 6. Select torque wrench. 7. Tighten flange nut to 30 lb-ft torque. 8. Release torque by loosening the flange nut. 9. Tighten flange nut finger tight. 10. Replace cotter pin. 11. Replace lifting eye. 12. Tighten locknut on lifting eye. 13. Lower vehicle to ground.				TM-M4-5

JOB DATA WORKSHEET

JPM 3

TITLE Wheel Vehicle Mechanic DOS XXA PAGE NO. 1

TY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Determine state of charge of battery using the Optical Antifreeze Battery Tester.	¼ ton truck; Optical Antifreeze Battery Tester; TB 750-561; any weather; inside or out.	Directions from supervisor to determine state of charge of batteries.	All of the steps must be performed in order and recommendation (7) must be correct. Safety precautions must be observed.	
	1. Prepare tester for use. a. Clean plastic cover and measuring window with tap water, then dry. b. Swing plastic cover down against the measuring window. c. Clean eyepiece lens with soft cloth or tissue.				
	2. Transfer electrolyte from battery cell to tester. a. Remove battery caps. b. Move a few drops of electrolyte from one cell through opening in plastic cover onto exposed part of measuring window of tester using black dipstick. c. Lay dipstick on rag dampened with tap water.				
	3. Determine state of charge of cell. a. Point the tester toward a bright light and look through the eyepiece. b. Read the scale on the left side. Electrolyte sample will divide scale showing light area and dark area. Keep cover closed and read scale at the dividing line. c. Compare cell charge with that specified beside the battery chage scale of the tester.				
	4. Clean measuring window, plastic cover and dipstick with a clean rag dampened with water. (Must be done after each cell test.) 5. Test electrolyte in remaining cells and compare test readings to battery charge scale. 6. Determine each battery condition based on test results of all cells in battery. 7. Recommend further action if necessary. 8. Flush tester measuring window, plastic cover and dipstick with clean tap water and dry.				

JPM 3

TM-M4-6

JOB DATA WORKSHEET

JPM 5

JOB TITLE Wheel Vehicle Mechanic DOS XXA PAGE NO. 1

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Test battery;	¼ ton truck; LVCT; TM 9-2320-218-20; TM 9-4910-456-14	Directions from supervisor to test battery.	All of the steps must be performed in order with no safety rule violations. The readings must be accurate to the nearest hundreth. The correct decision regarding equipment replacement must be made. Without damage to equipment or injury to personnel.	
	1. Test batteries under load using the LVCT load bank.				
	a. Draw LVCT from tool/supply room.				
	b.				
	1) Open and remove tester cover.				
	2) Check to see that LVCT is complete with Operator/Maintenance Manual and support equipment (test leads and shunt).				
	3) Check controls and components to make sure they are functional.				
	b. Prepare LVCT for operation.				
	1) Zero meter pointers.				
	2) Turn load bank switch and voltmeter range selector switch to OFF position.				
	3) Turn load bank control knobs and field rheostat control knob fully counterclockwise.				
	4) Remove all support equipment from the storage compartment.				
	5) Place LVCT in a well ventilated place where test leads will reach the batteries.				
	6) Assure that ventilation slots are not covered.				
	c. Set up LVCT to lead battery system circuit and test voltage (both batteries).				
	1) Make sure 12 volt load bank link is in the open position.				
	2) Connect voltmeter test leads to voltmeter binding posts, keeping polarity correct. Tighten binding posts with fingers.				
	.				
	.				
	.				
	g. Make decision to replace battery(s) if at least minimum voltage reading is not indicated.				

JPM 5

TM-M4-7

JOB DATA WORKSHEET

JPM 6

TITLE Wheel Vehicle Mechanic DOS XXA PAGE NO. 1

TY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Determine antifreeze protection of a cooling system using the Optical Antifreeze Battery Tester.	¼ ton truck, Optical Antifreeze Battery Tester, TB 750-651, in any weather, inside or out.	Directions from supervisor to determine antifreeze protection.	All of the above steps must be performed in order and recommendation (6) must be correct.	
	1. Prepare tester for use (same as for testing battery electrolyte). (Do not test here.)				
	2. Be sure cooling system is cooled sufficiently so that radiator cap can be removed without coolant escaping.				
	3. Use tester antifreeze pump to transfer a few drops of coolant from the vehicle radiator to the tester measuring window.				
	4. Point the tester toward light and read the scale on the right side. Antifreeze protection is indicated by a line on scale dividing light and dark area.				
	5. Compare antifreeze protection to that prescribed in TB 750-651 and/or local SOP.				
	6. Recommend further action if necessary.				
	7. Clean tester with clear tap water and dry.				

JOB DATA WORKSHEET

JPM 7

JOB TITLE Illustrator DOS 00A PAGE NO. 1

UTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Draw front and right side view sections of mechanical objects. 1. Draw the front and right side full sectional views of a pump rod guide (Figure 1)* drawing the views at double size.' a. Make a freehand orthographic sketch of the front and right side view of the object. b. Sketch the cutting plane line on the front view and section the right side view. c. Center the drawing on tracing paper 11" x 15", utilizing information from the freehand sketch. d. Draw the figure. e. Dimension the drawing.	Standard issue drafting equipment; T-square	Your supervisor has requested that you draw various objects whose internal construction is so complex as to render the use of hidden lines too confusing..	Drawings will be correct and accurate to within 1/32d of an inch.	*Figure not included here.

JPM 7

TM-MA-9

JPM 8

JOB DATA WORKSHEET

JOB TITLE Illustrator DOS 00A PAGE NO. 1

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Letter with Leroy Lettering set.	Standard issue drafting equipment; T-squares; Leroy scriber; #140 template; #240 template; Leroy Pen set	Your supervisor has requested that you produce writing titles for slides which are to be used for a conference.	Task must be performed with consistent uniform letters that are uniformly spaced (with no thin, weak, sloppy, or uneven horizontal letters and no guide pin or template slips.	
	1. Letter the following titles on guide lines, centered horizontally, using the #240 template. a. MAP CONSTRUCTION b. ORTHOGRAPHIC PROJECTION . . . n. UNITED STATES AIR FORCE				

JPM 8

TH-M4-10

JPM 9

JOB DATA WORKSHEET

JOB TITLE Illustrator DOS 00A PAGE NO. 1

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Draw multiview projections.	Standard issue drafting equipment; T-square	Your supervisor has requested you to draw a front, top and right side view of various objects.	The opaque lines must be of a consistent width their entire length. The drawings must be correct and accurate to within 1/32d of an inch.	
	1. Draw a front, top and right side view of a Beam Support (Figure 1)*.				*Figure not included here.
	a. Make a freehand orthographic sketch of the object to make sure that the views' details are understood.				
	b. Space the views on the drawing sheet.				
	c. Lay off principal dimensions and then block in views with light, sharp lines.				
	d. Draw in the details of each view, utilizing view-to-view projection where possible.				
	e. Use #8 lettering for object titles and #5 lettering for your name and project number.				

JPM 9

TM-MA-11

JOB DATA WORKSHEET

JPM 10

JOB TITLE Illustrator DOS 00A PAGE NO. 1

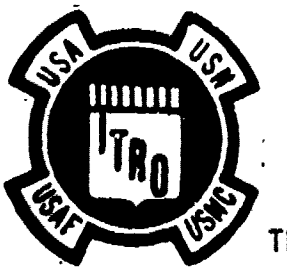
DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Dimension drawings of mechanical objects.	Standard issue drafting equipment, T-square	Your supervisor has requested that you dimension orthographic views that you completed earlier.	The dimensions must completely describe the object dimensioned. The dimensions and note must be one hundred percent accurate.	
	1. For the orthographic views given, select the measurements to be shown, provide sufficient dimensions to construct the object, and properly place the dimensions.				

JPM 10

TW-M4-12

INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT



TECHNICAL WORKSHOP

MODULE FIVE

WORKSHOP LEARNING OBJECTIVES

1. Using a list of job tasks, write the terminal learning objectives (TLOs) for each task, including in these statements, the actions, conditions, and standards.

2. Classify specified TLOs into one of the following categories of learning: Mental skills, information, physical skills, or attitudes.

3. For a familiar group of tasks and students, state the probable student entry behaviors.

4. Perform a learning analysis for provided TLOs. Write the learning objectives including in the statements, the actions, conditions, and standards, and specify which items are learning steps (LSs).

5. Write test items which can be used to test provided TLOs, Los, and LSs.

6. For a group of familiar tasks, state why or why not within-course tests should be used.

WORKSHOP INSTRUCTIONAL MATERIALS

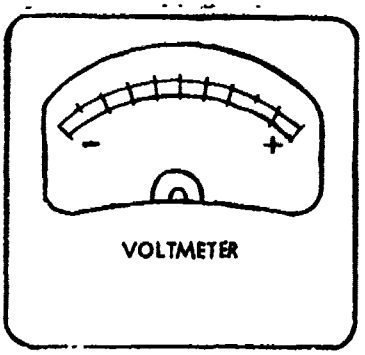
Read Blocks II.1 and II.2 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Given the following LO action statements from the LVCT learning analysis, write 3 test items. You may use the "B" part of JPM 4 and the pages from the TM which follow these exercises.

   LO Action Statement: Given readings on battery ground cable tests and the battery cable test, the trainee will interpret the readings and recommend further actions if necessary.

A voltmeter looks like this:



2. For your task (the task for which you constructed a JPM(s) in Module 2 and selected an instructional setting(s) for in Module 4), develop terminal learning objectives (TLOs). The TLOs must include actions, conditions, and standards. Fill in blocks marked 1, 2, 3, and 4 of the attached Learning Objective Analysis Worksheet (LOAW) for each TLO. ✓

3. Classify each of your TLOs into the appropriate learning category (block 6 of the LOAW). ✓

4. Perform a learning analysis of one of two selected TLOs. A suggested numbering system for the analysis is shown on page 23 of the Phase II Manual. The analysis should only proceed as far as the assumptions that are made about the student entry behaviors. Using the LOAW, document the actions, conditions and standards for each LO and designate the LSs for each LO. The LSs may be listed in block 10 of the worksheet. ✓

5. State clearly what applicable skills and knowledge you assume the typical student who will take your course already has. All or most of this should already be available from Exercise 4. If you wish, simply identify those items rather than rewrite them. ✓

6. For each of the TLOs, LOs and LSs developed in Exercise 4, write a test item. These items go in block 5 of the LOAW. ✓

7. State why or why not within-course tests should be used when training the TLOs, LOs and LSs developed in Exercise 4.

8. Why are the concepts of "false positive" and "false negative" important to the test developer?

9. Define the term "fidelity" as it applies to testing.

(NOTE: A Learning Objective Analysis Worksheet is attached for your use. You may get additional Worksheets from the Enabler.)

JPM 4

JOB DATA WORKSHEET

JOB TITLE Wheel Vehicle Mechanic DOS XXA PAGE NO. 1

DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	TASK: Troubleshoot starting system	¼ ton truck; LVCT; TM 9-2320-218-20; TM 9-4910-456-14	Supervisor directs you to determine the cause of starting problems on a ¼ ton truck.	The tests must be performed and correct diagnoses made in each case. All safety rules must be followed.	
	B. Check the battery ground cable and battery to for continuity.		battery cable	Without damage to equipment or injury to personnel.	
	1. Connect LVCT between battery ground terminal and starter frame.				
	a. Connect tester ends of voltmeter test leads to voltmeter binding posts keeping polarity correct.				
	b. Connect opposite (probe) ends of voltmeter test leads between battery ground post and the starter frame.				
	2. Move voltmeter range selector switch to the 50-volt position and operate starter with ignition switch off.				
	a. If voltmeter shows low or no reading, move selector switch to 20-volt position and again read the meter with starter in operation.				
	b. If low or no reading, move selector switch to the 10-volt position and retest.				
	c. Move selector switch to 1-volt position if there is low or no reading in the 10-volt position.				
	d. Locate and correct malfunction or defect, should reading be over 0.1-volt.				
	e. Retest circuit to make sure malfunction is corrected.				

Exercise 1
JPM 4

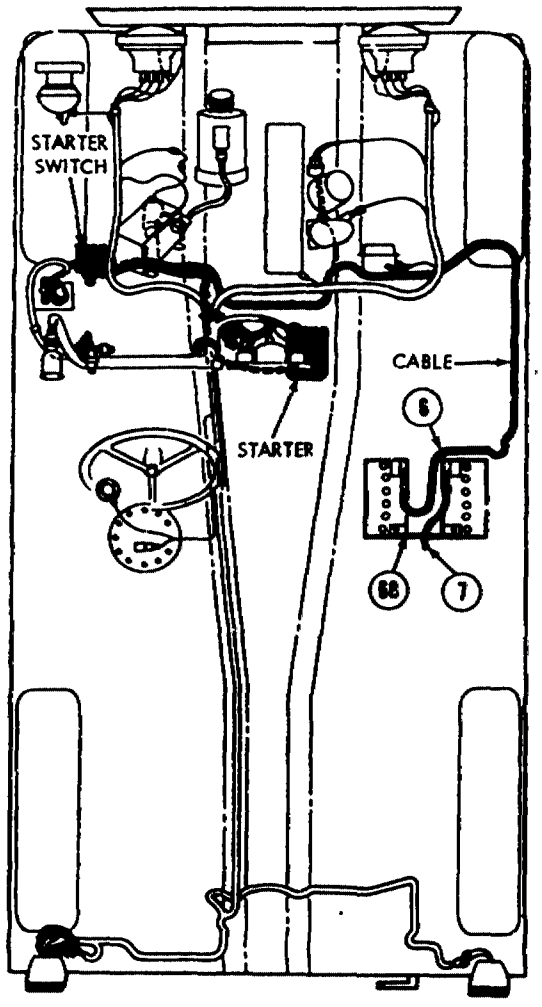
TM-M5-4

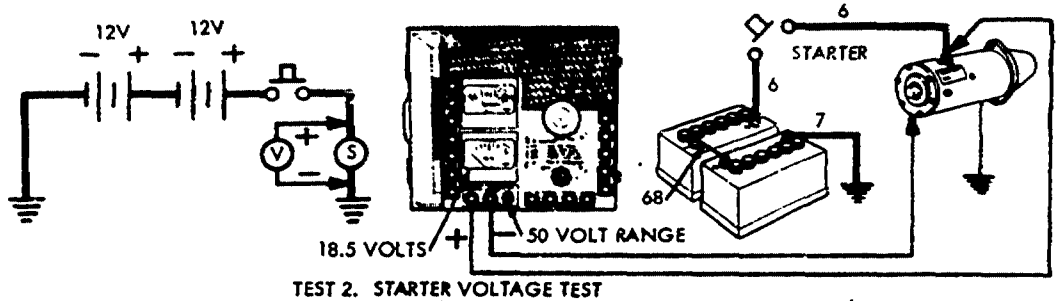
JOB DATA WORKSHEET

JOB TITLE Wheel Vehicle Mechanic DOS XXA

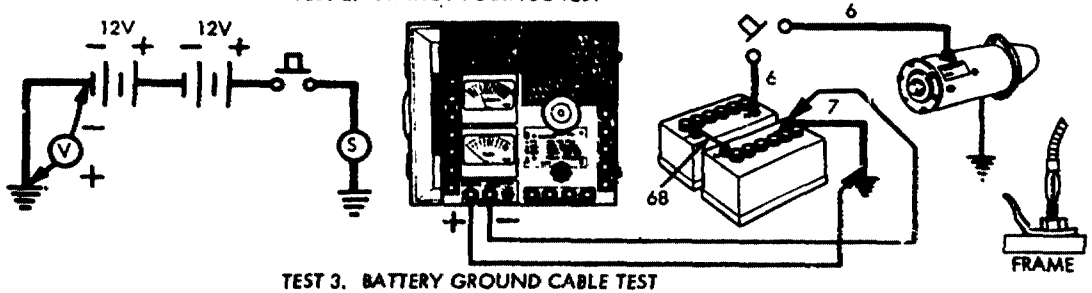
DUTY/CODE LEVEL E1-E3 DATE

ITEM CODE	TASK, ELEMENTS, J.P.M.	CONDITIONS	INITIATING CUES	STANDARDS	NOTES
	3. Connect LVCT to perform battery to battery cable test. a. Position voltmeter range selector switch to off position. b. Connect tester ends of voltmeter test leads to voltmeter binding posts on LVCT keeping polarity correct. c. Turn voltmeter range selector switch to 50-volt position. d. Touch meter probe ends of test leads to battery posts as shown in test 4, fig. 2-18, TM 9-2320-218-20. Operate starter with ignition switch off and read meter; if low or no reading, turn voltmeter range selector switch down range (50 to 20 to 10 to 1) reading the meter at each position. e. If reading over 0.1-volt exists, clean connections and examine battery cable for corroded (eaten away) strands. Replace battery cable if defective. f. Retest circuit to make sure malfunction is corrected.				Exercise 1 JPM 4 (con't) TM-M5-5

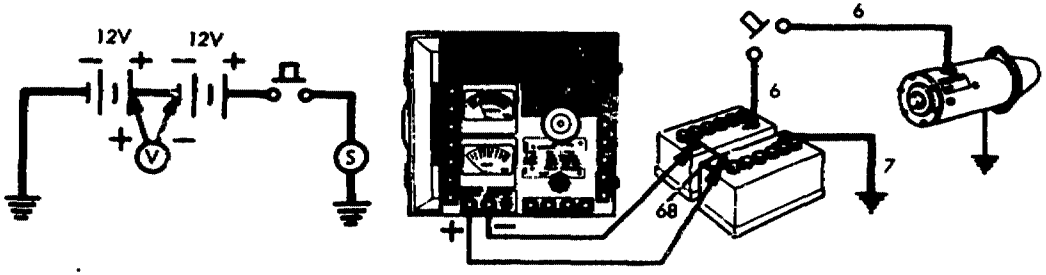




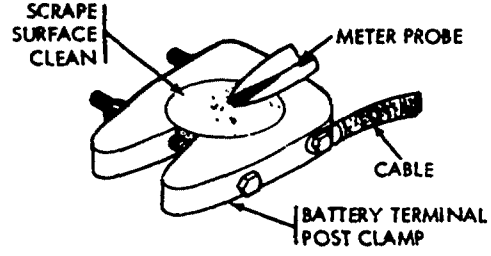
TEST 2. STARTER VOLTAGE TEST



TEST 3. BATTERY GROUND CABLE TEST



TEST 4. BATTERY-TO-BATTERY CABLE TEST



NOTE: WHEN MAKING THESE TESTS, HOLD METER PROBE FIRMLY ON BATTERY POST - NOT ON CLAMP.

AT 9552

Figure 2-18. Starting system tests.

Table 2-4. Electrical Troubleshooting—Continued

STARTING SYSTEM CIRCUIT (fig. 2-18)

Malfunction	Circuit	Test
		NOTE All reference to ground for following tests pertains to vehicle frame.
3. Starter fails to crank or cranks slowly—Continued	6,7,68	Test 2. Perform the starter voltage test. Connect low voltage circuit tester (50-volt range) between starter terminal and starter frame as shown in figure 2-18, test 2. With the ignition switch off, depress starter switch. If reading is 18.5 volts or more, starting switch, cables and batteries are not the cause of slow cranking. Check for tight engine or defective starter. If reading is less than 18.5 volts, perform test 3.
NOTE Coat all battery terminal post clamps with light grease after tests have been completed.		Test 3. Perform the battery ground cable test. Connect low voltage circuit tester (50-volt range) between battery ground terminal and starter frame as shown in figure 2-18, test 3. With the ignition switch off, depress starter switch. If voltmeter shows no or low reading, switch the voltmeter range selector to a lower range until a reading is obtained or the 1-volt range is reached. If reading is more than 0.1 volt, remove battery ground cable and battery terminal post clamp. Clean battery terminal post and battery terminal post clamp with wire brush. Re-install battery cable and terminal post clamp and tighten all bolts securely to assure a good electrical connection. Perform test again. If the voltage reading is still more than 0.1 volt, install a new cable, and retest. If starter still cranks slowly, perform test 4.
	68	Test 4. Perform battery-to-battery cable test. Connect low voltage circuit tester (50-volt range) across battery-to-battery cable. Contact the actual battery posts, and not the terminal post clamp, with positive and negative test leads as shown in figure 2-18, test 4. With the ignition switch off, depress starter switch. If voltmeter shows no or low reading, switch the voltmeter range selector to a lower range until a reading is obtained or the 1-volt range is reached. If reading is 0.1 volts or less, cable is serviceable. If reading is 0.1 or more, remove the battery-to-battery cable. Clean the battery terminal posts and the terminal post clamps on the cable with a wire brush. Re-install the cable and tighten all bolts securely to assure a good electrical connection. Perform test again. If the voltage is still more than 0.1 volt, install a new cable, and retest. If the starter still cranks slowly, perform test 5.
		Test 5. Perform battery positive terminal test. Connect the low voltage circuit tester (50-volt range) between the battery positive post and its terminal post clamp as shown in figure 2-19, test 5. With the ignition switch off, depress the starter switch. If the voltmeter shows no or low reading, switch the voltmeter range selector to a lower range until a reading is obtained or the 1-volt range is reached. If the reading is more than 0.1 volt, remove the battery-to-starter switch terminal post clamp and clean the battery terminal post and the terminal post clamp with a wire brush. Re-install the cable and tighten all bolts securely to assure a good electrical connection. Perform test again. If the voltage is still more than 0.1 volt, install a new cable and retest. If the starter still cranks slowly, perform test 6.
	6,7,68	Test 6. Perform engine-to-frame ground strap test. Connect low voltage circuit tester (50-volt range) negative lead (black wire) to terminal post clamp of the negative (grounded) battery terminal. Connect the positive meter lead (red wire) to the starter frame, as shown in figure 2-19, test 6. With the ignition switch off, depress the starter switch. If the voltmeter shows no or low reading, switch the voltmeter to a lower range until a reading is obtained or the 1-volt range is reached. If the reading is more than 0.2 volts, check for loose bolts in the ground strap. If they are tight, and the reading is still more than 0.2 volts, install a new engine-to-frame ground strap, tightening bolts securely. Make sure frame surface area is clean to assure good electrical contact. Retest. If voltage is less than 0.2 volts and starter still cranks slowly, perform test 7.

urse _____

odule _____

sson _____

Task I.D. No. _____

Learning Objective No. _____

Page No. _____

LEARNING OBJECTIVE ANALYSIS WORKSHEET

rning Objective Action Statement:

6 Learning Category:

7 Sequence Number:

8 Media Selection:

dition:

9 Existing Materials Selected? Yes _____ No _____
If yes, outline below:

de:

t Items:

10 Comments: /LSs

TM-M5-8

INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT

TECHNICAL WORKSHOP

MODULE SIX

WORKSHOP LEARNING OBJECTIVES

1. Given a learning analysis of a TLO, entry test assumptions, entry test items, and data from a trial of the entry test on the target population, interpret entry test results to find out whether entry behavior assumptions were correct and revise the assumptions based on the data.

2. Given TLOs, LOs, LSs, matching test items, and tested entry level assumptions:

   a. Prepare an appropriate entry test, pretest and posttest.
   b. Provide scoring criteria for each item in the tests prepared in (a).
   c. Describe the purpose of the pretest prepared in (a) and explain why it should be used.

3. Given a learning analysis which includes dependent, independent, and supportive learning objectives, sequence dependent and supportive learning objectives.

4. State why independent objectives need not be sequenced by the designer.

WORKSHOP INSTRUCTIONAL MATERIALS

Read Blocks II.3 and II.4 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Use the following information to test entry behavior assumptions and revise them, if necessary, based on the data supplied.

   A. Learning Analysis (See page TW-M6-3).

   B. Entry behavior assumptions:

      1) Trainees can read well enough to use TMs.
      2) Trainees can follow safety rules.
      3) Trainees can identify symptoms.
      4) Trainees can assemble equipment using TM.

   C. Entry test items:

      1) No test was made for assumption 1 that trainees can read.
      2) An information test was given on the safety rules. The items on safety rules are:

Item 1--Is it dangerous to have your boots in water when testing electrical systems?
Item 2--Is it dangerous to touch both battery terminals at the same time?
Item 3--Can you damage the LVCT if you make incorrect connections?

3) Three audio tapes of ¼ ton trucks starting were used for identifying symptoms. The items are:

Item 4--Good quick start sound
Item 5--Slow crank sound
Item 6--Crank barely audible, no start sound

4) A sample performance test using the TM was given for assembly. Items are:

Item 7--Connect LVCT voltmeter test leads to voltmeter binding posts and connect free ends of voltmeter test leads between the battery positive post and its terminal post clamp.
Item 8--Connect LVCT voltmeter test leads to voltmeter binding posts and connect free ends of voltmeter test leads between the starter frame (housing) and the battery negative post clamp.

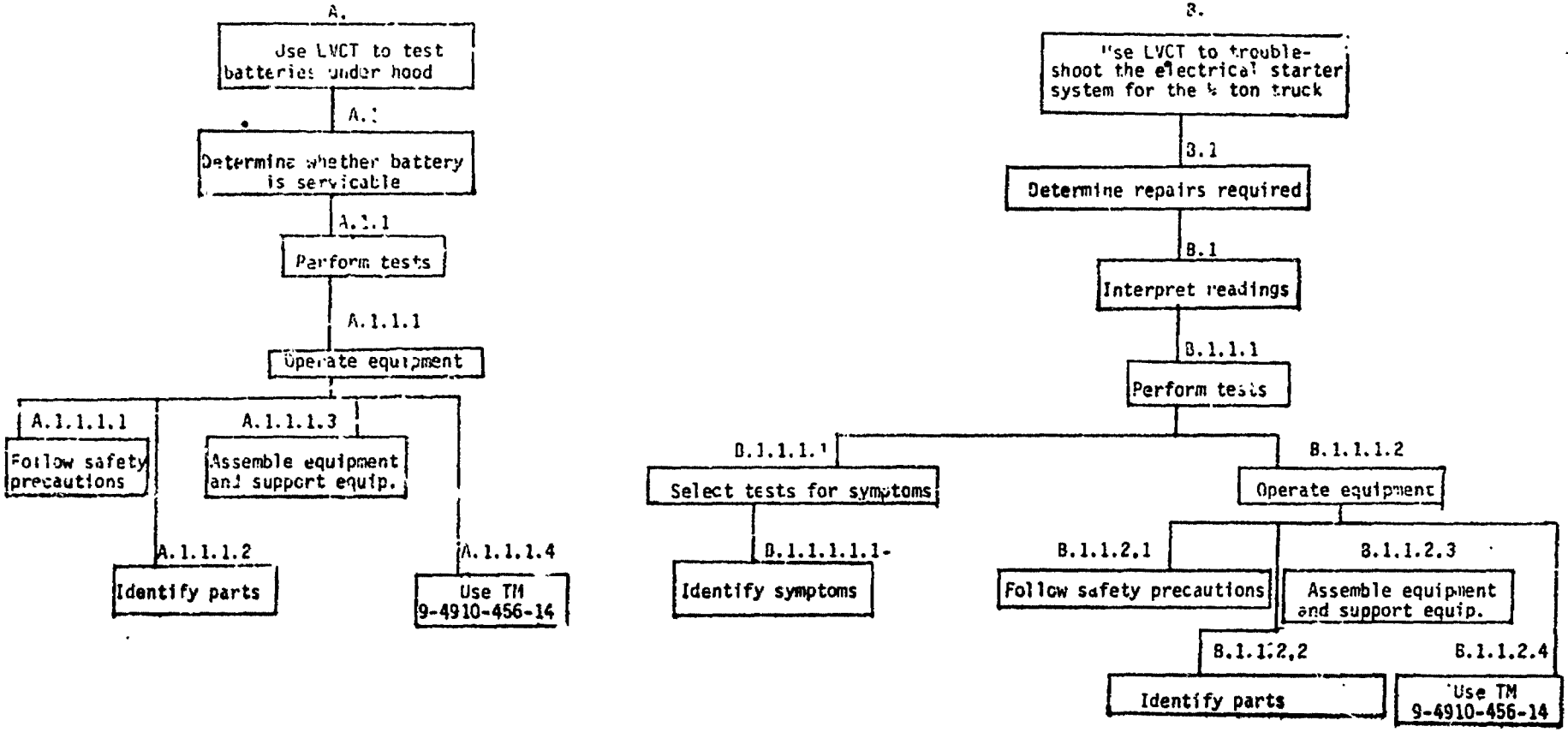
D. Entry test data:

The entry test was given to 10 wheel vehicle mechanic trainees, all E1s and E2s. The data looked like this: (+ means correct, - means incorrect)

TRAINEE	A	B	C	D	E	F	G	H	I	J
ITEM										
1	-	+	-	+	+	+	+	-	+	+
2	+	+	+	-	+	-	+	+	-	+
3	+	+	+	+	+	-	+	+	+	+
4	+	+	+	+	+	+	+	+	+	+
5	+	+	+	+	+	+	+	+	+	+
6	+	+	+	+	+	+	+	+	+	+
7	-	+	-	-	-	+	-	-	-	-
8	-	-	+	-	-	-	+	-	-	-

The errors made in 7 and 8 included mixing up the red and the black leads; also, failure to locate the starter frame (housing).

LEARNING ANALYSIS



TW-M6-3

You are to:

a. Correct the entry behavior assumptions.

b. Extend the learning analysis.

c. Revise the entry test and/or rewrite the statement of entry requirements, if they are necessary, based on the data given. Be sure to look at each test item and the assumptions to decide if the test items are testing the right behaviors.

2. Using the learning analysis from Exercies 1(A) and your revised entry behavior assumptions, sequence the dependent and supportive learning objectives. You may use just the alphanumeric designation (e.g., A.1.1.1) for each LO and TLO.

3. In Module 5 you developed a number of TLOs, LOs and LSs based partly on certain assumptions about student entry behaviors. For this exercise, assume that those assumptions were correct. Develop an entry test for those TLOs, LOs, and LSs. If you have previously written all or some of the test items in other exercises, you may identify the items rather than rewrite them. Describe standards and scoring procedure and the way you will use the pretest in the development and/or implementation process.

4. Develop a pretest and posttest for the TLOs, LOs, and LSs in Exercise 3. As with that exercise, you may identify any existing test items rather than rewrite them.

5. Sequence and structure the above TLOs, LOs, LSs. Give the reason for any major sequencing/structuring decisions. You may use just the alphanumeric designations rather than rewrite all of the objectives.

6. Why is it unnecessary to sequence independent objectives at this point?

7. How does the purpose of a pretest differ from an entry behavior test?

8. How do pairs of dependent and independent learning objectives differ?

INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT

TECHNICAL WORKSHOP

MODULE SEVEN

WORKSHOP LEARNING OBJECTIVES

1. Classify learning objectives into appropriate learning categories and sub-categories.

2. List appropriate learning guidelines for learning objectives or groups of learning objectives obtained from a learning analysis.

3. State an appropriate learning activity for each of the learning guidelines for specific learning objectives.

WORKSHOP INSTRUCTIONAL MATERIALS

Read Block III.1 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. a. Select the correct learning sub-category for the LOs below. Use Table III.6 (pages 12-16) in the Phase III Manual.

Action Statements:

LO-1 Operate LVCT
LO-2 Select tests for given symptoms or test results
LO-3 Perform the following tests:

1) Battery positive terminal test
2) Engine to frame ground strap test
3) Starter voltage test

The conditions for all three LOs are:

¼ ton truck
LVCT w[illegible]pport equipment
TM 9-2[illegible]8-20
TM 9-4910-456-14

The standards for all three LOs are:

Following safety precautions
Correct readings
Correct determination of repairs or replacement requirements

b. Select the learning guidelines for LO-3 (the three objectives should be the same sub-category, therefore the same type of events). Use the guidelines in Appendix A of Block III.1 (page 35-70). List the selected guidelines by number only and write a description of the learning activity beside it. (Use the form provided on the next page. Additional forms are available from the Workshop Enabler.)

2. For each of your TLOs, LOs, and LSs from Module 6, list the appropriate learning sub-category. (See pages 12-16, and 17-23 in Block III.1) You should list the sub-category in the "learning category" section of each Learning Objective Analysis Worksheet.

3. List appropriate learning guidelines for your LOs or groups of LOs. This should be done on the reverse side of the Learning Objective Analysis Worksheets. (Appendix A, pages 35-70)

4. List appropriate learning activities for the guidelines selected in 3 above. Specifically, how will the learning guidelines selected for each TLO be operationalized? (See pages 24-26)

5. Define the following:

   a. Natural feedback
   b. Artificial feedback
   c. Learning activity

		Exercise 1b, Module 7		TW-M7-3
Learning Category	Guide line	Media Selection Criteria	✓	Media Pool
Learning Activity		COMPLEXITY CRITERIA		
		Difficult Motor Acts		
		Smooth Motor Performance at end of Training		
		STIMULUS CRITERIA		
		Visual Form		
		Alphanumeric		
		Pictorial, Plane		
		Line Construction, Plane		
		Object, Solid		
		Full visual environment		
		Visual Movement		
		Still		
		Limited		
		Full		
		Visual Spectrum		
		Black and White		
		Gray Scale		
		Color		
		Scale		
		Exact Scale		
		Audio		Media Selection and Rationale:
		Voice Sound Range		
		Full Sound Range		
		Ambient Sounds		
		Other		
		Tactile Cues		
		Internal Stimulus Motion Cues		
		External Stimulus Motion Cues		
		Fine movement manipulative Acts		
		Broad Movement manipulative Acts		
		TRAINING SETTING CRITERIA		
		Individual Trainee or team training at a Fixed Location		
		Individual Trainees with simultaneous instruction or many locations		
		Individual Trainee or team training with Independent Instruction at any Location		
		Individual Trainee on-the-job		
		Small Group		
		Large Group at Single Location		
		Team Setting		
		ADMINISTRATIVE CRITERIA		
		Site of Courseware Development		
		Local		
		Central		
		Magnitude of Acquisition Cost		
		Low		
		High		

INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT

TECHNICAL WORKSHOP

MODULE EIGHT

WORKSHOP LEARNING OBJECTIVES

1. Determine the appropriate media for each learning objective or group of learning objectives.

2. Specify the instructional management plan necessary to accomplish a provided list of learning objectives.

3. Based on provided pertinent inputs, develop a System Master Plan for a project.

4. Describe three important considerations in selecting media.

5. Name high and low cost media.

WORKSHOP INSTRUCTIONAL MATERIALS

The reading for this module is Block III.2 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Determine the appropriate media mix for the task, "operate LVCT." The learning activities and media selection criteria are shown on the attached Learning Objective Analysis Worksheet. Select the media pool, make a media selection, and provide a rationale for your decisions. Also, annotate your decisions on the LOAW. The decision matrices for media selection can be found in Appendix B (Block III.2), pages 174-184. Criteria for rejecting media can be found on pages 118-123.

2. Determine the appropriate media mix for each of your learning objectives (those you developed in Module 5). Select the media pool, make a media selection, and provide a rationale for your decisions. Also, annotate your decisions on the LOAW (attached). Use the matrices and rejection criteria stated in Exercise 1.

OPERATE LVCT		Module 8, Exercise 1		TW-M8-2
Learning Category 9	Guide line	Media Selection Criteria	✓	Media Pool
Learning Activity		COMPLEXITY CRITERIA		
State the objectives.	1	Difficult Motor Acts		
		Smooth Motor Performance at end of Training		
Demonstrate the procedure visually.	4	STIMULUS CRITERIA		
		Visual Form		
		Alphanumeric	✓	
Use the diagrams in the TM or print them. Inform the trainee that the TM is a job aid he can always use.	6	Pictorial, Plane		
		Line Construction, Plane		
		Object, Solid	✓	
		Full visual environment		
		Visual Movement		
		Still	✓	
Provide practice especially in reading the voltmeter.	10	Limited		
		Full		
		Visual Spectrum		
		Black and White		
Provide visual display of correctly set up LVCT to batteries.	13	Gray Scale		
		Color		
		Scale		
		Exact Scale		
		Audio		
Provide description of the task in relationship to other similar ones.	20	Voice Sound Range		Media Selection and Rationale:
		Full Sound Range		
		Ambient Sounds		
		Other		
		Tactile Cues		
		Internal Stimulus Motion Cues		
		External Stimulus Motion Cues		
		Fine movement manipulative Acts		
		Broad Movement manipulative Acts		
		TRAINING SETTING CRITERIA		
		Individual Trainee or team training at a Fixed Location		
		Individual Trainees with simultaneous instruction or many locations		
		Individual Trainee or team training with Independent Instruction at any Location		
		Individual Trainee on-the-job		
		Small Group		
		Large Group at Single Location		
		Team Setting		
		ADMINISTRATIVE CRITERIA		
		Site of Courseware Development		
		Local		
		Central	✓	
		Magnitude of Acquisition Cost		
		Low		
		High	✓	

		Module 8, Exercise 2		TW-M8-3
Learning Category	Guide line	Media Selection Criteria	✓	Media Pool
Learning Activity				
		COMPLEXITY CRITERIA		
		Difficult Motor Acts		
		Smooth Motor Performance at end of Training		
		STIMULUS CRITERIA		
		Visual Form		
		Alphanumeric		
		Pictorial, Plane		
		Line Construction, Plane		
		Object, Solid		
		Full visual environment		
		Visual Movement		
		Still		
		Limited		
		Full		
		Visual Spectrum		
		Black and White		
		Gray Scale		
		Color		
		Scale		
		Exact Scale		
		Audio		
		Voice Sound Range		Media Selection and Rationale.
		Full Sound Range		
		Ambient Sounds		
		Other		
		Tactile Cues		
		Internal Stimulus Motion Cues		
		External Stimulus Motion Cues		
		Fine movement manipulative Acts		
		Broad Movement manipulative Acts		
		TRAINING SETTING CRITERIA		
		Individual Trainee or team training at a Fixed Location		
		Individual Trainees with simultaneous instruction or many locations		
		Individual Trainee or team training with Independent Instruction at any Location		
		Individual Trainee on-the-job		
		Small Group		
		Large Group at Single Location		
		Team Setting		
		ADMINISTRATIVE CRITERIA		
		Site of Courseware Development		
		Local		
		Central		
		Magnitude of Acquisition Cost		
		Low		
		High		

3. Determine the appropriate instructional management plan for your learning objectives or group of objectives. This plan should include:

   a. Mode of instruction
   b. Course management
   c. Student decisions
   d. Completions and accumulations
   e. Identification and control of marginal students
   f. Program completion
   g. Instructor decisions
   h. Support personnel
   i. Facilities and equipment
   j. Consumablessand courseware ✓

4. Develop a System Master Plan for the instruction you are developing. Remember that you already prepared large portions of this plan when you were developing the instructional management plan. The System Master Plan should include:

   a. Media requirements
   b. Material requirements
   c. Testing procedures
   d. Instructor responsibilities
   e. Time schedules
   f. Placement and advancement
   g. Physical layout and facilities requirements
   h. Equipment requirements
   i. Setting-specific problems

      1) Job Performance Aids
      2) Self-Teaching Exportable Packages
      3) Formal On-the-Job Training
      4) Installation Support Schools
      5) Resident Schools ✓

5. What are three important considerations in selecting media?

6. List two low cost and two high cost delivery systems. ✓

INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT

TECHNICAL WORKSHOP

MODULE NINE

WORKSHOP LEARNING OBJECTIVES

1. Using reports by reviewers of existing materials, TLOs, LOs, and LSs, matching test items, selected media and management plan, select or reject the existing materials and state the reason for your decision. (See pages Tw-M9-3 through 5 for existing material.)

2. Given TLOS, LOs, LSs, matching test items, selected media and management plan, describe a search procedure for existing materials.

3. Using existing instructional materials, TLOs, LOs, LSs, matching test items, selected media and management plan, evaluate the materials, select any that match the TLOs, LOs, etc., and give the rationale for your decision.

4. Given the TLOs, LOs, LSs, matching tests, media selected, management plan, and selected existing materials:

   a. Prepare a package to give the script writer, the artist, and/or any other support personnel.
   b. Use existing materials to prepare an adjunct program to meet the TLO.

5. Given the TLOs, LOs, LSs, matching tests, media selected, management plan, selected existing materials and the adjunct program, prepare a brief instructor's manual (in outline form) for the materials in (1) above.

WORKSHOP INSTRUCTIONAL MATERIALS

The readings for this module are Blocks III.3 and III.2 of the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Given the following learning objectives and the delivery system, look at the review of the STEP lesson on the AN/PRC-77 and the data and determine if you will select or reject it. (NOTE: The TEC lesson on this is available in print and in slide/tape format if you wish to look at it in its entirety.)

   a. Your learning objectives are:

      1) Preset two frequencies in the <u>same</u> band (upper and lower).
      2) Preset two frequencies, each in a <u>different</u> band (upper and lower).

b. Data from 30 students:

performance test	pass	fail
objective 1	30	0
objective 2	20	10

c. You selected slide/tape as the delivery system.✓

2. Describe specifically how you would go about locating existing materials for your particular instruction.✓

3. Using the learning objectives you developed in Exercise 1, Module 5, evaluate existing materials and select any portions suitable for use as training materials.✓

4. a. Prepare the materials and instruction that you would give to the script writer, artists, etc. (NOTE: The Enabler will designate a portion of the learning objectives for this exercise.)

   b. Use existing materials to prepare an adjunct program.✓

5. Prepare a brief instructor's manual (in outline form) for your instructional materials.✓

6. What factors should you consider when deciding whether to use "off-the-shelf" materials?✓

Exercise 1 TW-M9-3

REVIEW SHEET FOR EXISTING INSTRUCTION

Title of Document: Signal Subcourse, Radio Set AN/PRC-77

Author: U. S. Army Signal School

Volume and Number: _____ Date: n/d

Publisher: U. S. Army

Any Other Identifying Info.: Army Correspondence ~~Course~~ Official Document?: yes

Medium: Print

Delivery System: print

Developed by ISD Method?: Yes x No _____

Job Analysis Data:

Front End Analysis

Job Analysis

Do. within the past 5 years? can't tell

Any system changes? several doctrine changes

What were the sources?

Can you generalize this situation to your situation? yes

Is the data difficult to locate? No; information given

Any other comments?

Select Tasks

Are these tasks based on the same criteria of tasks that your command is? yes

Is the data used to select tasks based on the same geographic location, skill levels, etc.? appears to be very closely related

Was task selection based on the same constraints? yes

Job Performance Measures

Can you review all JPMs? Attach list. _____

_____

What parts match the objectives? _____

_____

Any other comments? _____

_____

DECISION: Accept: _____

Accept Partially: _____

Reject: _____

Reconsider at Block III.3: _____

CONTENTS

... ...

SUBCOURSE CREDIT HOURS 5

INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT

TECHNICAL WORKSHOP

MODULE TEN

WORKSHOP LEARNING OBJECTIVES

1. Using TLOs, LOs, LSs, entry tests, pretests, posttests, the instructional materials, and data from a group validation:

   a. Make a revision plan including deletions, replacements, additions.
   b. Rewrite any parts of the instruction.
   c. Write a description of any further formative evaluation required.

2. a. Using draft materials, do a one-on-one trail.
   b. Use data from a one-on-one trial to revise draft materials.
   c. Do a one-on-one trial of the revised draft materials.

3. Describe the validation process.

WORKSHOP INSTRUCTIONAL MATERIALS

The reading for this module is Block III.5 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Based on the following validation data, identify problem areas in the instruction. The lesson has been validated on a group of six students. The objectives are:

   a. Make the transmissions required by the Net Control Station (NCS) to open a net.
   b. Make the transmissions required by the subordinate stations to reply to the initial call.

   The pre and posttest are the same and are attached (next page). The pre and posttest data are displayed on page TW-M10-3, followed by the entry test results and the within-course test results.

Exercise 1

PRETEST AND POSTTEST ITEMS:

1. List the machine functions which must precede all radio teletypewriter transmissions.

2. List the maximum number of characters, including spaces which may be typed on a line in radio teletypewriter operations.

3. List the end of line machine functions which must be used in radio teletypewriter operations.

   NOTE: For problems 4 through 10, use the call signs in the CEOI Extract.

4. Assume you are the operator at the Net Control Station (NCS). List the first transmission necessary to establish communications with the substations in your net.

5. Now assume you are the operator at the first substation. List the reply to the initial call made by the NCS to establish communications. (The call received from the NCS was "clear.")

6. Now list the transmission the operator at the Net Control Station should make in reply to the call of the first substation. (The transmission received from the first substation was "clear.")

7. Now, suppose you are the NCS and the transmission received from the first substation in problem five was received garbled. List the transmission the operator at the NCS would send if the transmission received from the first substation was garbled.

8. Assume you are the NCS and have established communications with the substations. List the initial transmission the operator at the NCS should make to open the net.

9. You are the operator at the first substation. List the transmission to reply to the Net Control Station's initial transmission to open the net.

10. You are the NCS and all substations have answered your initial transmission to open the net. List the transmission the NCS would make to acknowledge the replies of the substations.

Exercise 1

PRETEST:

Item	Student 1	2	3	4	5	6
1	+	-	-	-	-	-
2	+	-	-	-	-	+
3	+	-	-	-	-	-
4	-	-	-	-	-	-
5	-	-	-	-	-	-
6	-	-	-	-	-	-
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	-	-	-	-

POSTTEST:

1	+	-	+	+	+	+
2	+	+	+	+	+	+
3	+	+	-	+	+	+
4	+	-	-	+	-	-
5	+	-	-	-	-	+
6	+	-	-	-	-	+
7	+	-	-	-	-	-
8	+	-	-	-	-	-
9	+	-	-	-	-	-
10	-	-	-	-	-	-

Exercise 1

ENTRY TEST RESULTS ARE:

	1	2	3	4	5	6	
A	+	+	+	+	+	+	(Entry test skill A)
B	+	+	+	+	+	+	(Entry test skill B)
C	+	+	+	+	+	+	(Entry test skill C)
D	+	+	+	+	+	+	(Entry test skill D)

The within-course data, shown by numbers corresponding to the posttest items, are as follows: (Most topics were covered more than once. This is a summary, not shown by student.)

WITHIN-COURSE:

1.	+	+	-	-	-	-	(The first time an equivalent of item 1 was presented.)
	+	+	+	+	+	+	(The second time an equivalent of item 1 was presented.)
	+	+	+	+	+	+	(The third time an equivalent of item 1 was presented.)
2.	+	+	+	+	+	+	(The first time an equivalent of item 2 was presented)
	+	+	+	+	+	+	(The second time an equivalent of item 2 was presented.)
3.	+	+	+	-	-	-	(The first time an equivalent of item 3 was presented.)
4.	+	+			-	-	etc.
	+	+	-	-	-	-	
	+	+	+	+	-	-	
5.	+	+	+	+	+	+	
6.	+	+	+	+	-	-	
7.	+	+	-	-	-	-	
8.	+	+	+	-	-	-	
9.	+	-	-	-	-	-	
	+	+	+	-	-	-	
	-	-	-	-	-	-	
10.	+	+	-	-	-	-	
	+	+	+	-	-	-	

Use the data to identify trouble areas by test item number. Note any special problems you see, such as in #1, #2, and #9. Assume that all the test items are appropriate and properly written.

2. a. Using the instructional materials you prepared in Module 9, do an individual (one-on-one) trial on another workshop participant or other appropriate student. Display the data in a format such as the one suggested in Block III.5 (pages 304-307).

   b. Analyze the data from the trial. Based on this data, what revisions are indicated. ✓

   c. Using the data gathered in the one-on-one evaluation, revise the instruction. Revising instruction based on certain data "patterns" is discussed on pages 332-336.

   d. After the instruction has been revised, do a second one-on-one trial on another student. Display the data in a useful format. ✓

3. Describe the validation process. ✓

INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT

TECHNICAL WORKSHOP

MODULE ELEVEN

WORKSHOP LEARNING OBJECTIVES

1. Using instructional materials, tests, instructional management plan, and instructor's guide, identify or describe training and resources required to carry out the instruction by an individual who has been assigned as instructor.

2. Using the instructional materials, tests, instructional management plan, and instructor's guide, specify any required additional instructions to an assigned group of students.

3. Make comparisons between the role of an instructor in a self-paced course and the role of an instructor in a platform instruction course. List the kinds of problems the instructors might have in each. State ways to minimize these problems.

4. State the likely effect on an instructional program if the instructor fails to accurately document any deviation from the instructional plan.

5. State the purpose of the instructional management plan and describe how the plan is used in IPISD.

6. Define hard and soft data.

WORKSHOP INSTRUCTIONAL MATERIALS

The readings for this module are Blocks IV.1 and IV.2 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Assume that the student sitting next to you has been assigned to deliver the instruction you have developed. Describe everything he will need--Instructor's Manual, special training, supplementary instructions, etc. (Note: You may wish to interview him to see what training he has already had.)

2. Assume that you will present your instruction to this group of students, in this location, tomorrow morning. Describe any additional instructions you would prepare for students (e.g., when and where the class will meet and what the students should bring to class).

3. Compare the role of an instructor in a self-paced course with the role of an instructor in a platform instruction course. Indicate what types of problems each might encounter and how these problems may be minimized.

4. Describe what might happen if an instructor does not accurately document the operation of his course by noting any changes in the plan and describing any substitutions.

5. Who uses the instructional management plan and how is it used?

6. Define hard and soft data.

INTERSERVICE PROCEDURES FOR INSTRUCTIONAL SYSTEMS DEVELOPMENT

TECHNICAL WORKSHOP

MODULE TWELVE

WORKSHOP LEARNING OBJECTIVES

1. Using the products from all previous blocks, develop an internal evaluation plan.

2. Prepare an internal evaluation report based on data gathered during an internal evaluation.

3. Given appropriate products from previous blocks, develop an external evaluation plan.

4. Prepare an external evaluation report based on data gathered during an external evaluation.

5. Prepare a system revision plan based on a provided System Master Plan, INER, and EXER.

6. Give a written explanation of where the ISD process stops.

7. List at least five reasons which will indicate that a course needs to be revised.

8. Describe how continuous revisions of a product, after an initial revision, effect reductions in time taken to complete a course.

WORKSHOP INSTRUCTIONAL MATERIALS

The readings for this module are Blocks V.1, V.2, and V.3 in the ISD Manuals. If there is any part that you do not understand, ask the Workshop Enabler for assistance.

WORKSHOP EXERCISES

1. Develop an internal evaluation plan for the instruction developed in Module 9. Document any assumptions you made in preparing the plan. Your plan should include:

   a. A progress evaluation plan
   b. A process evaluation plan
   c. A performance evaluation plan
   d. A plan for collecting information from students and instructors

2. Tables a, b, and c are internal evaluation data obtained during the evaluation of an existing course. Based on these data and the following assumptions, prepare an internal evaluation report (INER) for the existing course. Your report should consist primarily of:

a. Your interpretation of the evaluation data
b. Recommendations for revisi

Assumptions---

1. The course is administered on a self-paced basis. As soon as the student has completed a lesson or unit, he is given the posttest. If he passes, he goes to the next lesson; if he does not, he repeats the objectives on which he had a "no-go".
2. Posttest 1 refers to the first time the test was taken, posttest 2 to the second time (if required), and posttest 3 to the final time (if required). For example, in Table b, 75 students passed the Unit 1 posttest the first time it was administered. An additional 20 students passed it the second time, and 3 more passed it the third time.
3. Any posttest can be taken only three times; however, any student who fails the test three times is allowed to stay in the course.
4. The objectives of Unit 2 do not depend on mastery of Unit 1. Also, the Unit 3 objectives do not depend on mastery of Units 1 or 2.
5. After going through the instruction and taking the posttests for all four lessons in a unit, a unit posttest is given covering all significant items in the unit.
6. Average time is based on all students who took the course.
7. The original plan was for each unit to require 20-30 hours for the typical student to complete.
8. Students were not given advanced placement as a result of pretest scores.
9. The instructional designers have no control over which students take the course; however, the entry behaviors of students have been relatively stable over time.
10. Instructors reported they had to provide additional individual instruction to many students in Unit 2.
11 No remedial work is included in the program.
12. The only possible scores on the posttests are a "go" or a "no-go".

TABLE a: Project Schedule--

Event No.	Event Name	Activity	Estimated Completion	Actual Completion	Note
001	Begin Block I.1	Conduct Job Analysis	1 May	2 May	(1)
002	Begin Block I.2	Select Tasks/ Functions	15 June	12 July	(2)
003	Begin Block	Construct JPMs	1 August	20 August	(2)
.					
.					
.					
006	Begin Block II.1	Develop Objectives	15 October	17 October	
007	Begin Block II.2	Develop Tests	1 November	1 November	
008	Begin Block II.3	Describe Entry Behavior	20 November	18 November	(3)
.					
.					
.					
019	Begin Block	Revise System	1 March		(15)

Notes:

(1) Pending approval from Command HQ; expected 15 April.
(2) Travel funds delayed.
(3) Preferred students not available; substituted members of another DOS who were awaiting shipment.

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(15) Printing deadlines arranged from Command HQ.

TABLE b: Summary Test Data--

	Average Entry Test Score (Out of a possible 50)	Average Pretest Score	Posttest Results (No. Passing out of 100) 1	2	3	Total	Average Time in Hours	Attitude Scale Poor	Fair	Sat.	Good	Excel.
UNIT 1	45	6	75	20	3	98	101.9	0	12	33	30	25
Lesson 1			55	35	6	96	27.4	0	12	33	30	25
Lesson 2			90	10	-	100	26.8	3	13	36	28	20
Lesson 3			50	30	15	95	24.9	2	8	48	31	11
Lesson 4			60	29	8	97	22.8	7	7	64	14	8
UNIT 2	32	4	3	17	47	67	192.5					
Lesson 1			49	20	22	91	32.0	29	44	14	12	1
Lesson 2			2	29	33	64	60.5	32	40	27	1	0
Lesson 3			5	40	27	72	51.6	33	53	12	2	0
Lesson 4			14	38	31	83	48.4	28	51	16	4	1
UNIT 3	49	41	93	7	-	100	58.3					
Lesson 1			96	4	-	100	16.5	9	24	45	14	8
Lesson 2			100	-	-	100	15.3	22	31	35	6	6
Lesson 3			93	6	1	100	14.2	19	30	37	9	5
Lesson 4			94	4	2	100	12.3	13	27	36	15	9

TABLE c: Student Performance Data:

Student	Entry Test Score (Out of possible 50)			Pretest Score (Out of possible 50)			Go/No-Go		
	Unit 1	Unit 2	Unit 3	Unit 1	Unit 2	Unit 3	Unit 1	Unit 2	Unit 3
01	45	33	50	7	4	41	GO	GO	GO
02	50	43	50	12	7	49	GO	GO	GO
03	46	31	50	8	5	40	GO	NO-GO	GO
04	41	22	45	0	0	35	NO-GO	NO-GO	GO
05	47	32	49	9	2	45	GO	NO-GO	GO
06	40	25	46	1	0	36	NO-GO	NO-GO	GO
07	46	35	50	6	4	39	GO	GO	GO
08	44	37	50	8	6	41	GO	GO	GO
09	49	41	50	11	7	49	GO	GO	GO
10	45	31	49	4	6	44	GO	NO-GO	GO
11	39	23	46	0	0	37	GO	NO-GO	GO
12	45	29	49	7	4	42	GO	NO-GO	GO
13	47	36	50	3	3	40	GO	GO	GO
14	44	32	49	4	2	43	GO	NO-GO	GO
15	50	42	50	10	6	48	GO	GO	GO
16	49	40	50	11	7	49	GO	GO	GO
17	46	29	49	5	5	39	GO	NO-GO	GO
18	47	37	50	6	4	41	GO	GO	GO
19	45	34	49	5	4	43	GO	GO	GO
20	42	24	47	1	0	37	GO	NO-GO	GO
.									
.									
.									
100	43	35	50	6	3	44	GO	GO	GO

3. DEVELOP AN EXTERNAL EVALUATION PLAN for the instruction developed in Module 9. Document any assumptions you make in preparing the plan. Your plan should include:

   a. Data sources
   b. What data are required
   c. When external evaluation will take place
   d. How the data will be gathered

4. Tables d - g are external evaluation data obtained during external evaluation of the same course discussed in Exercise 2. Based on these data and any pertinent data from Exercises 1 and 2, PREPARE AN EXTERNAL EVALUATION REPORT (EXER) for the course. The report should consist primarily of·

   a. Your interpretation of the evaluation data
   b. Recommendations for revision

TABLE d: Student Baseline Data--

Performance on JPMs for job incumbents who were trained under the "old" instructional program:

	Responses of Job Incumbents Passing JPMs											
	Instructional Unit #1					Instructional Unit #2				Instructional Unit #3		
Student Number	JPM (Task) No.					JPM (Task) No.				JPM (Task) No.		
	1	2	3	4...30		31	32	33...97		98	99...168	
01	P	P	P	F	P	P	P	F	P	P	P	P
02	P	P	F	P	P	F	P	F	P	P	P	P
03	P	P	P	P	P	P	P	P	F	P	P	P
04	P	P	F	P	P	P	P	F	P	P	P	P
05	P	P	P	P	P	P	P	P	P	P	P	P
.												
.												
.												
150	P	F	P	P	P	P	F	P	P	P	P	P
% Passing JPM (Task)	96	82	95	84	92	94	82	86	95	100	100	100

P = pass, F = fail

NOTE: Tasks 1 - 30 taught in unit one
Tasks 31 - 97 taught in unit two
Tasks 98 - 168 taught in unit three

TABLE e: Graduates' Evaluation--

Responses of graduates of "new" instructional program:

Student Number	Unit #1 Task No. 1	2	3....30		Unit #2 Task No. 31	32....97		98	Unit #3 Task No. 99....158	
01	+	-	+		+	-	+	+	+	+
02	+	+	-	+	-	+	+	+	+	+
03	-	+	+	+	-	+	+	+	+	+
04	+	+	+	+	+	+	+	+	+	+
.										
.										
.										
150	+	-	+	-	+	+	-	+	+	+
% Responding with +	92	86	94	97	81	86	87	100	100	100

+ = Felt training adequately prepared me for the task
- = Felt training did not adequately prepare me for the task

Consistent comments:

1. I knew most of the tasks in Unit 3 before I went through the instruction.

2. I had a very difficult time with Unit 2. This was the stock inventory system. And, now that I am on the job, we don't do those tasks anyway. They have a new computer inventory system, and I don't know anything about that.

TABLE f: Supervisor's Evaluation--

Consistent comments:

1. They all do well on tasks 98 - 168, but that isn't uncommon. Our men have always done better on those tasks.

2. The new computer inventory system requires proficiency in a couple of dozen tasks that these trainees don't know the first thing about.

3. Most of the men are much stronger in tasks 1 - 30 than they used to be under the old system of training.

4. Some of these trainees talk about tasks that we just don't do anymore now that we use a computerized inventory system.

5. The men are strong in tasks 1 - 30 and 98 - 168, but their performance in tasks 31 - 97 is very spotty. Some tasks they perform reasonably well; others, not very well at all.

TABLE g: Evaluation Team Report--

1. Overall, trainees better prepared than trainees tested one year ago.

2. Trainees unable to perform tasks related to computer inventory system.

3. Trainees stronger on tasks 1 - 30 than trainees tested one year ago.

4. Trainees as strong on tasks 98 - 168 as trainees tested one year ago.

5. Trainees slightly weaker on tasks 31 - 97 than trainees tested one year ago.

5. Using the System Master Plan developed in Exercise 3 of Module 8 and the INER and EXER developed in this Module, prepare a revision plan for your course. Follow the revision plan format given on page 113 of Block V.3. Since, in this workshop, some of the data will not be available, you will have to make some assumptions. Document these assumptions.

6. If a course is to be revised, what reasons are there for revising it?

7. If a course has been revised twice and substantial time has been saved, what are the chances that further efforts will be successful in more time reductions? Explain?

8. Does the ISD process stop here? Explain.

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18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Validate	Control	External evaluation
Design	Analyze	Learning Objectives
Develop	Job analysis	Entry Behavior
Implement	Task Analysis	Performance Measures
Tests		Internal Evaluation

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report contains workbooks for 12 modules in the Interservice Procedures for Instructional Systems Development Technical Level Workshop.

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