

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523
BIBLIOGRAPHIC INPUT SHEET

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Batch 39

1. SUBJECT CLASSI- FICATION	A. PRIMARY	TEMPORARY
	B. SECONDARY	

2. TITLE AND SUBTITLE
The processes of training development

3. AUTHOR(S)
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4. DOCUMENT DATE 1973	5. NUMBER OF PAGES 11p.	6. ARC NUMBER ARC
--------------------------	----------------------------	----------------------

7. REFERENCE ORGANIZATION NAME AND ADDRESS
Fla.State

8. SUPPLEMENTARY NOTES (*Sponsoring Organization, Publishers, Availability*)

9. ABSTRACT

(EDUCATION R & D)

10. CONTROL NUMBER PN-AAC-528	11. PRICE OF DOCUMENT
----------------------------------	-----------------------

12. DESCRIPTORS	13. PROJECT NUMBER
	14. CONTRACT NUMBER CSD-2945 211(d)
	15. TYPE OF DOCUMENT

CSD-2095 211(d) 2
PN-AAC-528

FLORIDA STATE UNIVERSITY / COLLEGE OF EDUCATION / CENTER FOR EDUCATIONAL TECHNOLOGY

WORKING PAPER

Hannum, Wallace. "The Processes of Training Development."

THE PROCESSES OF TRAINING DEVELOPMENT

A. The Design Model

Analysis, planning, development, evaluation, revision, and management are common elements found in most modern treatments of instructional design and implementation. Regardless of whether one intends to deliver instruction through programmed instructional textbooks, instructional television, motion pictures, or other forms, the model for planning, design and implementation remains essentially the same.

This report assumes a clear difference in the operational definition of Job Tasks and Training Tasks. This difference is elaborated elsewhere in this report. In this section, the procedure for instructional development assumes that Job Tasks have been validated and that they represent the minimum acceptable performance for a duty position or clearly identifiable subset of the skills necessary for a duty position.

The developmental model presented below, then, is for the design of training and emphasizes the analytic and evaluative procedures relevant to the training environment.

The process of training development involves three distinct phases. The first of these phases is the Instructional Design Phase and begins as indicated on the flow chart (See Figure 1.) in block 1.0 with Problem Analysis.

INSTRUCTIONAL DESIGN PHASE

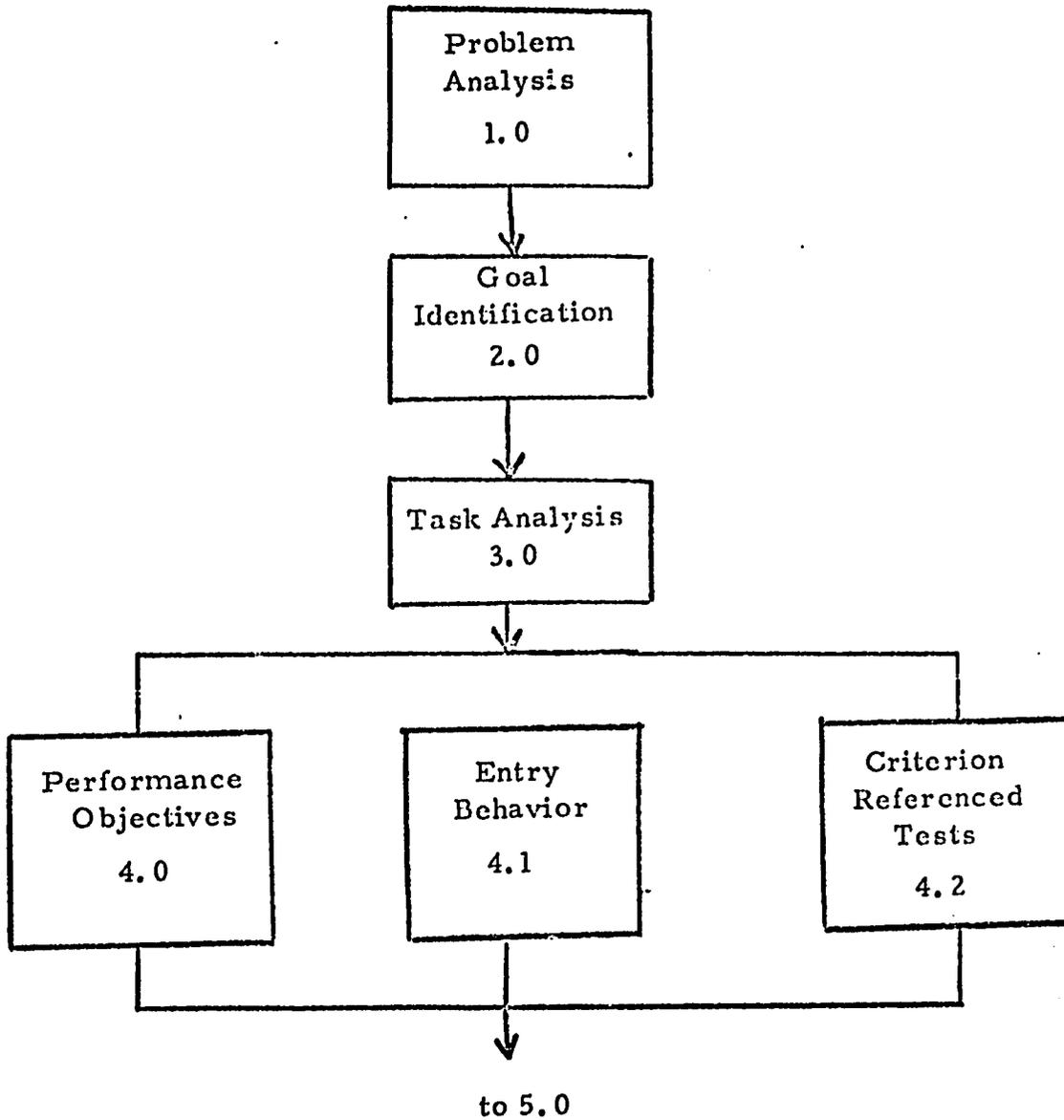


Figure 1

Problem Analysis (1.0): The procedure followed in problem analysis is that of attempting to relate job performance to the training environment and make a determination as to where and how the specific training should be conducted. If training is to be done at a school, or on the job, the training problem should be clearly specified.

Goal Identification (2.0): The specific training goals to be achieved in school or training center settings are spelled out. Particularly those elements of interest to TRADOC Schools are clearly defined and limited.

Task Analysis (3.0): The logic and procedure of task analysis, specific to the peculiarities of training tasks, are carried out according to the procedure described. Essentially, the kinds of learning and the conditions necessary to produce that learning are spelled out.

Block 4 involves the clear specification of three interdependent steps:

Performance Objectives (4.0): The standard behavioral objectives which describe the behavior, conditions and standards under which the performance will be exhibited.

Entry Behavior (4.1): Each objective or training task will assume certain entry level skills and knowledges on the part of the trainee. This would include reading to a certain degree of proficiency, trouble shooting techniques, etc. Methods for determination of this entry behavior are also specified.

Criterion-Referenced Tests (4.2): (More recently called objective referenced tests.) The performance measures and techniques for determining

whether or not a student has satisfied the requirements of the objective. The method of measurement, conditions of measurement, and procedures are all specified at this point. Questions of reliability and validity of the tests are settled at this point.

Phase 2 of the procedure is the Instructional Development Phase (Figure 2):

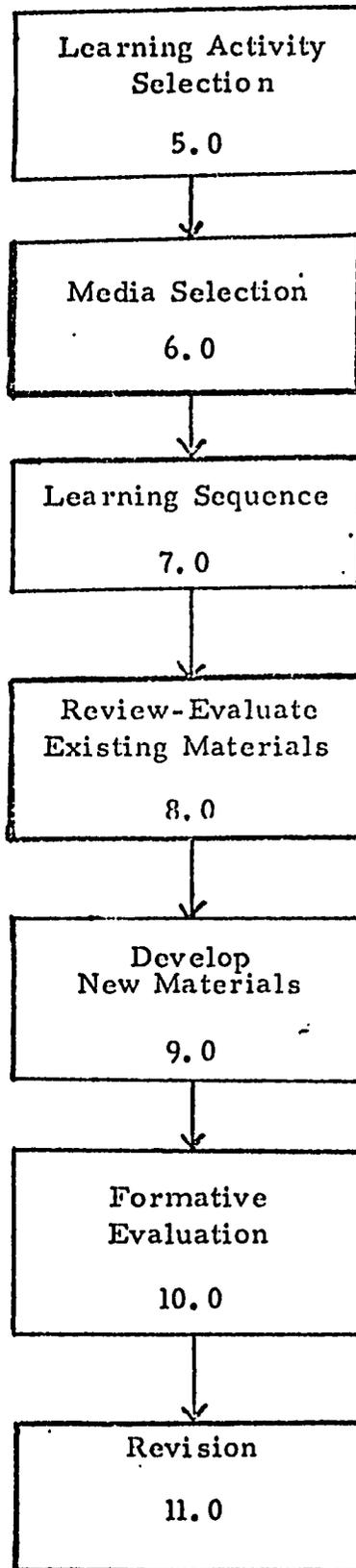
Learning Activity Selection (5.0): The task analysis as performed will, to a very large extent, specify the kinds of learning activities necessary to move trainees from their current level of knowledge and skill to mastery of the objective. The learning activities may or may not involve direct instruction, but would certainly encompass many of the products and procedures described in Section IV on Instructional Delivery Systems.

Media Selection (6.0): The varieties of media available and the procedures available in the literature for selection among alternatives are quite large. It is not anticipated that a specially designed new media selection scheme will be developed but a number will be selected for possible consideration. Instructional media can be used in various delivery systems.

Learning Sequences (7.0): Once the activities and the media have been determined then the instruction can be sequenced. It must be sequenced according to the best order of learning as determined by the task analysis in the Design Phase.

Review-Evaluate Existing Materials (8.0): One of the more profound discoveries in recent years in instructional technology is that there is a

INSTRUCTIONAL DEVELOPMENT PHASE



to 12.0

Figure 2

very rich supply of available off-the-shelf materials dealing with almost any subject one might wish to review. Further, these materials exist in a variety of forms: videotape, slide/tape presentations, textbooks, etc. Hopefully, it will be possible to encourage instructional designers to look first for off-the-shelf existing materials before writing the specifications for new materials.

Develop New Materials (9.0): Depending on the kinds of learning experiences in the learning analysis, the range of new materials to be developed would include everything from programmed videotape to computer managed instruction, and special forms of job aids and training aids. Expenses can be minimized if new material development is held down.

Formative Evaluation (10.0): Throughout the entire instructional development procedure, including the Design Phase, a continuous monitoring and evaluation procedure is in place. The most typical method of evaluating learning materials and procedures is to try them out under realistic conditions on a selected group from the target population. Typically, a very small group of trainees first goes through the materials and sequences and, if necessary, the materials are revised based on the data provided by these trainees. The data collected is intended to be used for decision making about the quality of the instruction. This process of collecting data from trainees then proceeds to larger groups and on the basis of the large group tryout, recommendations for further revisions are made.

Revision (11.0): Revision applies to each of the steps in instructional development. It may be that the test questions must be revised. It may be that the objectives must be refined. It may be that the learning sequences and learning materials have specific problems associated with them. Based upon the formative evaluation data, revision decisions are made and a product is then declared ready for Phase 3, the Instructional Delivery Phase.

The Instructional Delivery Phase (Figure 3):

Delivery System Alternatives (12.0): Any instruction possible can be delivered in more than one form. There are many operating, environmental, and financial constraints to the selection of alternative delivery systems and equipment. Hopefully, there will be enough flexibility in delivery system and equipment alternatives to make the developed materials and learning experiences work.

Implementation/ Conversion Strategies (13.0): Often, when the most desirable delivery system is not available it is necessary to implement the program by converting it to another form of delivery. This might include conversion from group mode to individualized mode or vice versa.

Instructional Management (14.0): The words and concept "management of instruction" have in the past fifteen years taken on a completely new meaning. Management, in this context, means precisely what it means in other contexts: The utilization of men, material, and resources to achieve an objective. It specifically does not mean teaching (platform instruction).

INSTRUCTIONAL DELIVERY PHASE

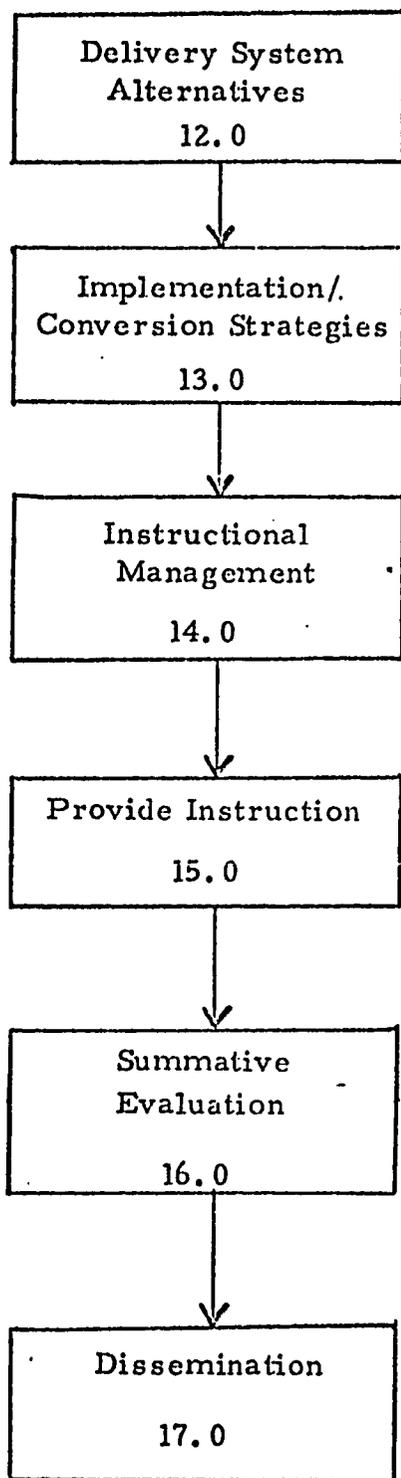


Figure 3

In this context then, the management of instruction implies that the designed material, sequences, record keeping, etc., will be continued until such time as the objective has been completed. It does not mean that one simply applies a process to a group of trainees and hopes that it takes effect.

Provide Instruction (15.0): The provision of instruction can come in any one of the products or processes that has been described earlier. It simply means that one manages the implementation of the plan and has trainees participate in the program as they were intended to do.

Summative Evaluation (16.0): After having delivered the instruction in an operational mode for a sufficient period of time it is necessary to compare results with planned results. Summative evaluation implies that results will be compared with plans. Should there be a discrepancy between what was planned and what was achieved the implication should be clear that further work, revision, and re-design may be necessary.

Dissemination (17.0): The final and probably most misunderstood part of the instructional development process is dissemination. For a number of reasons including pride of authorship, the "not-invented-here (NIH)" syndrome, and lack of adequate planning, effective instructional presentations often exist in one location without being transported to another location having the same needs.

It is clearly the responsibility of management to improve utilization of resources.

There are two important aspects to the dissemination of innovative and empirically designed training programs. First is the marketing aspect.

Whether the request for change from the old to the new system emanates from the bottom and is submitted for approval to commanding authority, or whether the impetus comes from headquarters and is promulgated as an order will make a very large difference in the approach one takes to institutionalizing planned changes in training. Experienced instructional technologists recognize that both levels must be informed, competent, and well intended in order for a well designed training program to be adopted, particularly if it was developed elsewhere. Alternative approaches to this problem are considered in the dissemination program.