

LEVEL II

12

A109192

YU

AD A109450

Research Product 81-25b

A LEARNING-BASED MODEL
FOR MEDIA SELECTION:
DEVELOPMENT

DTIC
ELECTE
S E D
JAN 08 1982
E

SIMULATION SYSTEMS TECHNICAL AREA

March 1981

DTIC FILE COPY

82 01 08 042



U.S. ARMY RESEARCH INSTITUTE for the BEHAVIORAL and SOCIAL SCIENCES

Approved for public release; distribution unlimited.

C-1

140

**U. S. ARMY RESEARCH INSTITUTE
FOR THE BEHAVIORAL AND SOCIAL SCIENCES**

**A Field Operating Agency under the Jurisdiction of the
Deputy Chief of Staff for Personnel**

**JOSEPH ZEIDNER
Technical Director**

**L. NEALE COSBY
Colonel, IN
Commander**

**Research accomplished under contract
to the Department of the Army**

Florida State University

NOTICES

FINAL DISPOSITION: This Research Product may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: This Research Product is not to be construed as an official Department of the Army document in its present form.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Research Product 81-25b	2. GOVT ACCESSION NO. AD-A109 450	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) A LEARNING-BASED MODEL FOR MEDIA SELECTION: DEVELOPMENT		5. TYPE OF REPORT & PERIOD COVERED Final Report 1/15/80 - 1/15/81
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Robert A. Reiser		8. CONTRACT OR GRANT NUMBER(s) MDA903-80-C-0218
9. PERFORMING ORGANIZATION NAME AND ADDRESS Center for Educational Technology Florida State University Tallahassee, FL. 32306		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 2Q762772A764 2Q263744A795
11. CONTROLLING OFFICE NAME AND ADDRESS Army Research Institute 5001 Eisenhower Avenue Alexandria, VA 22333		12. REPORT DATE March 1981
		13. NUMBER OF PAGES 60
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES ARI Contracting Officer's Representative was Thomas J. Houston.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Media Selection Instructional Development Instructional Systems Development Education and Training Training Development		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report describes a project which was conducted in order to collect information about instructional media selection procedures and problems in the U.S. Army and to recommend means of improving the media selection process. The media selection procedures and problems that were identified are described and analyzed. Also described are the procedures that were used during the development and formative evaluation of a new media selection model. Results of the formative evaluation effort are discussed and suggestions for disseminating the model are presented.		

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

i

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

**A LEARNING-BASED MODEL
FOR MEDIA SELECTION:**

DEVELOPMENT

**Robert A. Reiser
Florida State University**

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	

**Approved by:
Frank J. Harris, Chief
SIMULATION SYSTEMS TECHNICAL AREA**

**Approved by:
Milton S. Katz, Director
TRAINING RESEARCH LABORATORY**

**U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
5001 Eisenhower Avenue, Alexandria, Virginia 22333**

**Office, Deputy Chief of Staff for Personnel
Department of the Army**

March 1981

**Army Project Number
2Q762772A764
2Q263744A795**

**Training and Education
Training Simulation**

Approved for public release; distribution unlimited.

FOREWORD

The research leading to the development of these Research Products was begun under RDTE Project Number 2Q762772A764, ARI FY 78 and 79 Work Program (Training and Education). The results of these efforts were fed into subsequent research conducted under RDTE Project Number 2Q263744A795, ARI FY 80 Work Program (Training Simulation). The final research was conducted by the Learning Systems Institute of Florida State University under contract number MDA 903-80-C-0218.

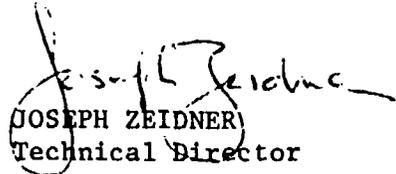
The research had as its major objectives to assess current models and the state of the art in selection of alternative instructional delivery systems, to determine the type and extent of problems encountered in applying existing models, and to recommend changes and improvements.

The research is directly responsive to the expressed needs of the Army Training Support Center (ATSC) of the Training and Doctrine Command (TRADOC).

Research Product 81-25A describes the theoretical background of the research in selection of Instructional Media.

Product 81-25C presents the Model itself, its attendant flowchart, and Users Guide.

Mr. T.J. Houston of the Simulation Systems Technical Area served as COR for this research.


JOSEPH ZEIDNER
Technical Director

EXECUTIVE SUMMARY

Requirement:

This report describes a project that was conducted in order to collect information about instructional media selection procedures and problems in the U.S. Army and to recommend means of improving the media selection process.

Procedure:

In order to identify procedures and problems, four Army schools were visited and 29 instructional developers who made media selection decisions were interviewed. After procedures and problems were identified, a new media selection model was developed. The model was revised several times. The first revision was based upon feedback from 12 instructional designers (eight faculty and four graduate students) at Florida State University who were asked to review the model. Subsequent revisions were based upon formative evaluation data collected from six graduate students in instructional design, six instructional developers at Fort Gordon, and five instructional developers at Fort Rucker.

Findings:

A systematic means of selecting media is rarely used. An existing media selection model that is perceived as too complex often leads to the selection of media based on convenience and the developer's intuition and experience. However, the majority of Army instructional developers who reviewed the new media selection model indicated that there was a high probability that it would be used on the job.

Utilization of Findings:

Whether instructional developers in the Army use the model depends largely upon whether the model is properly disseminated. If the model is disseminated properly, it could have a very positive effect upon the media selection procedure used in the Army.

A Learning-Based Model for Media Selection: Development

Table of Contents

<u>Section</u>	<u>Page</u>
Introduction.....	1
Preliminary Activities.....	1
Current Media Selection Procedures.....	3
Current Problems in Selecting Media	4
Analysis of the Media Selection Problems.....	8
Development of a New Media Selection Model.....	10
Dissemination of the New Media Selection Model.....	14
Summary and Conclusion.....	15
Appendix A: Copy of the General Information Questionnaire.....	16
Appendix B: Copy of the Interview Questionnaire.....	20
Appendix C: Summary of the Responses to the General Information Questionnaire.....	28
Appendix D: Summary of the Responses to the Interview Questionnaire.....	34
Appendix E: Description of Formative Evaluation Procedures.....	48
Appendix F: Forms Used During Formative Evaluation Sessions.....	53
Appendix G: Summary of Attitude Data Collected at Fort Gordon.....	57
Appendix H: Summary of Attitude Data Collected at Fort Rucker.....	59

A Learning-Based Model for Media Selection: Development

In January, 1980, the Center for Educational Technology (CET) at Florida State University was awarded a contract with the U.S. Army Research Institute (ARI) to collect information about instructional media selection procedures and problems in the Army and to recommend means of improving the media selection process. Specifically, the tasks of the contract were:

- (1) Identify and document, at selected local sites, current formal and informal procedures for implementing decisions on selecting instructional delivery systems.
- (2) Determine problems encountered by instructional decision makers, in following the procedures identified in Task 1.
- (3) Categorize and analyze the problems encountered.
- (4) Based upon analysis in Task 3, make specific, detailed, feasible recommendations for steps to improving media selection for local (School) implementation (i.e., develop guidelines for "how to do it").

This report will describe the contract activities the CET staff undertook and will present the results of those activities.

Preliminary Activities

During the first six months of the contract, members of the CET staff visited four Army schools in order to (a) identify the instructional media selection procedures followed at those schools and (b) identify the problems instructional developers face in selecting instructional media. Prior to visiting the schools, the CET staff developed two questionnaires

designed to be used during the visits to the schools. The first questionnaire, referred to as the general information questionnaire, consisted of three parts:

- (a) a background information sheet, asking the respondent to describe his current job duties and tasks, as well as his training for that job;
- (b) a media availability and selection questionnaire, asking the respondent to indicate whether various media were available for him to choose as a means of delivering instruction, and, if the medium was available, how frequently the respondent chose that medium;
- (c) a learning categories questionnaire, asking the respondent to indicate what learning categories, if any, the respondent used in order to classify types of learning.

A copy of the three parts of the general information questionnaire is contained in Appendix A.

The second questionnaire developed for this contract, referred to as the interview questionnaire, consisted of four parts:

- (a) a set of questions about the instructional development and media selection procedures the respondent followed;
- (b) a set of questions about the media selection guidelines the respondent used;
- (c) a set of questions about the media selection problems the respondent encountered;
- (d) a set of questions asking the respondent to identify appropriate solutions to the media selection problems he faced.

A copy of the four parts of the interview questionnaire is contained in Appendix B.

After the questionnaires were developed, members of the CET staff visited four Army schools. These schools, which were visited during March and April of 1980, included the Engineers School at Fort Belvoir, the

Intelligence School at Fort Devens, the Signal School at Fort Gordon, and the Aviation School at Fort Rucker.

At each school, the Directorate of Training Developments identified those individuals most heavily involved in the media selection process. During a group meeting, each of these individuals was asked to complete the general information questionnaire. CET personnel reviewed the responses to these questionnaires and then conducted individual interviews with those respondents whom they felt could provide the most useful additional information. A total of 49 individuals responded to the general information questionnaire. Of this number, 29 individuals were selected to be interviewed on an individual basis. A summary of the responses to the general information questionnaire is contained in Appendix C. Appendix D contains a summary of the responses to the interview questionnaire.

Current Media Selection Procedures

Based upon the responses to the interview questionnaire, the following statements can be made regarding the media selection procedures used at the schools.

- 1) No set of guidelines for media selection is regularly used. The most common media selection model mentioned was the model contained in ISD Phase III.2. However, this model was considered by most developers to be too complicated. Only one-third of those interviewed indicated that they were influenced by ISD in selecting a medium for instruction, and many of these individuals indicated they did not strictly adhere to the ISD guidelines.
- 2) Media selection decisions are often made in advance of development activities. This "preselection" of the medium or delivery system is the result of a number of different factors, including school policy, the preferences of instructional and administra-

tive staff, cost, and availability. For example, standard policy at one school visited was to use print unless another medium was specifically justified.

- 3) More than 40% of the developers interviewed indicated that they have had no formal training in media selection or developing instruction for non-print media. Although not directly addressed in the questionnaire, it might be reasoned that this would have an effect on the media selection process. It is likely that these persons would choose print over other media due to their familiarity with the development and production processes for this medium.
- 4) Media are often chosen on the basis of convenience and time. Developers tend to choose those processes that are convenient to them, and that take the least time to produce. This is a major reason why print is often the medium selected.

In summary, no consistent set of media selection procedures is regularly used at the schools. In some cases there is a predetermination of what media or delivery system will be used (the delivery system is chosen before the individual objectives of the course have been analyzed to find out what system would be most suitable). A lack of training of the developers, and an existing model that is perceived as being too complex, often lead to the selection of media based on convenience and the developer's intuition and experience.

Current Problems in Selecting Media

There are many problems instructional developers working for the Army face when they select media. Three of these problems were identified in the statement of work for this contract; these three problems are the first ones discussed in this section. The other problems discussed in this section were consistently mentioned by those individuals who responded to the interview questionnaire.

a) Adapting instruction on the basis of individual differences and learner characteristics

Over 50% of the developers interviewed at the schools stated that they did not attend to "individual differences" per se. That is, most instruction is produced in only one mode and aimed at the general characteristics of the target audience. The primary characteristic that seemed to be considered was reading ability. There was almost unanimous agreement that the reading ability of the soldiers is much lower than it used to be, and as a result, much of the old material is being rewritten at a lower reading level. Audio-visual materials are often developed when it is known that the reading level of the students is going to be very low.

b) Deciding between group-paced and self-paced instruction

The decision to develop self-paced or group-paced instruction is often made early in the development process. This decision often has a major impact on the media selection decisions that eventually follow it.

A group-paced course is generally taught by an instructor(s). These instructors or their supervisors often have strong opinions on how to "best" teach the group-paced courses, and therefore on what media to use. Indeed, if the instructor is not consulted when the media selection decision is made for a group-paced course, he will often "override" that decision when he is teaching the course. That is, the instructor will often teach the course using what he considers to be the most appropriate media or medium, no matter what media or medium was developed for use in the course. This problem often inhibits the developer's selection of media for group-paced courses.

The self-paced course is usually "monitored" by an instructor or assistant instructors who deliver and supervise the use of self-paced materials. There seems to be more flexibility in the choice of media for self-paced courses as the instructor's role is more one of management, evaluation, and remediation. When the instructor does not attempt to go beyond this role, the self-paced materials must provide the learner with practice and feedback, when the task demands it. This limits the types of media that can be used, especially when the type of learner and the instructional setting, as well as the type of task, are considered. Thus, it is often difficult to select the proper medium for self-paced courses. Unfortunately, whether or not the developer selects the proper medium, his decision is occasionally negated by instructors who attempt to restructure courses from a self-paced to a group-paced mode.

c) Deciding when to reject print

Print is often selected as the instructional medium for a variety of factors, including low cost, quick production and revision time, and developer familiarity with the medium. These factors often seem to override the issue of whether print is the appropriate medium for a given type of learner and type of learning task. Indeed, less than one half of the developers interviewed indicated that they considered the type of learning involved when they selected media.

Thus, the problem seems to be twofold: first, many developers do not examine the factors in the learning situation that might obviate the use of print; second, even if such factors are considered, developers often choose print instruction because it is easier for them to develop, even if it might not be the optimal medium for teaching a particular task.

d) Time factors

Over 75% of the group expressed concern over the amount of time allowed for materials development. Print was often the medium chosen in cases where time factors were important. This is one of several problems that involve constraints which decrease the probability that the "best" medium will be chosen for teaching a particular task.

e) Cost

Another constraint developers seem to face in selecting the "best" medium is cost. Almost two-thirds of the developers indicated that cost was a problem when choosing a medium. However, few developers described specific instances where cost was a problem. Thus, it might be concluded that even during the initial stages of instructional development, many media are not considered because of perceived or real cost factors.

f) Personnel problems

Nearly two-thirds (64%) of the interviewees identified personnel problems as a factor affecting media selection decisions. The personnel problems identified usually involved a shortage in instructional development staff and/or problems in getting instructors to accept changes in instructional tactics.

g) Training in media selection

Over 50% of the respondents felt that their lack of training in media selection was a problem. Several respondents also felt that their supervisors needed training in media selection. While a few respondents felt that they were able to acquire the necessary media selection skills by reading the ISD media selection procedures, the majority felt those procedures were too complex to use without training.

h) Availability of media

Half of the respondents felt that some media were not readily available to them and that this factor inhibited their efforts to select appropriate media. The lack of availability of many media can often be attributed to cost problems or administrative factors like lengthy request procedures.

i) Suitability of the current media selection guidelines

While only 29% of the respondents indicated that the current guidelines (ISD) are not suitable for use in the media selection process, less than 10% of the respondents actually use the guidelines. Thus, it appears that the current guidelines do not aid many developers in the media selection process.

Analysis of the Media Selection Problems

The previous section of this report described nine problems instructional developers face when they select media. All these problems seem to be real, and surely each of them has affected the way instructional developers select media. However, if one focuses too much attention on these specific problems, one can overlook the more basic problem that seems to pervade the media selection process in the Army. The basic problem is that a valid systematic means of selecting media is rarely used. Over 50% of the respondents we questioned indicated that they do not refer to any guidelines in selecting media. Another 33% indicated that they use the ISD media selection guidelines in an informal manner, but could not really describe what that informal manner entailed. Only about 10% of the respondents were able to describe a systematic media selection procedure that they used and provide evidence that they had used it.

We believe that there are basically two reasons why instructional developers in the Army do not use systematic media selection procedures:

- 1) Either the media selection decision is made for the developer, or,
- 2) the developer feels more comfortable selecting media based on his own judgment than based upon a decision reached by using some set of media selection guidelines.

Media selection decisions are often made before the developer becomes involved in the development process. Administrative policy, influenced by such factors as personnel availability, time constraints, media availability, and cost, often dictates the medium that will be used.

It is likely that administrative policy will continue to affect media selection decisions. At the very least, however, developers should use some systematic media selection process to assess the validity of the media choices that are made for them.

There are several reasons why developers, when they do select media, usually do not use systematic media selection procedures. The developers either:

- o feel that the current media selection guidelines (ISD) are too complex and therefore do not use them;
- o feel that constraints such as time, money, and personnel limit media options to the extent that a model is not needed in order to select an appropriate medium; or
- o prefer to develop instruction using a particular medium, and therefore usually choose that medium.

Sometimes two or more of the factors listed above influence the developer's decision not to use a systematic media selection procedure.

Development of a New Media Selection Model

The first of the three factors listed above has been addressed directly by this project. Many (80%) of the developers interviewed felt that the current guidelines should be revised. Suggested revisions included:

- simplify and condense the present guidelines;
- define terms;
- limit the number of learning categories; and
- provide examples.

Based upon these suggestions, the CET staff began developing a new media selection model.

Work on the new media selection model began in March, 1980, after members of the CET staff had visited two Army schools and had identified the media selection problems there. As work on the model continued, members of the CET staff visited two other Army schools to gather further information about media selection procedures and problems. This information was used by the CET staff as they went about designing the initial version of the new media selection model.

In May, the initial version of the new media selection model and several accompanying documents were completed. The model was in flowchart form and was accompanied by a set of detailed directions describing how to use the flowchart, a briefer version of those directions, and a list of media definitions.

The materials described above were reviewed by twelve instructional designers at Florida State University who were not directly involved in the initial development effort. Eight of the reviewers were faculty mem-

bers and four were graduate students. Each reviewer examined the materials independently and prepared a written critique.

After each reviewer submitted his or her comments, all of the comments were reviewed, and numerous changes in the flowchart and accompanying materials were decided upon. Many of the changes involved the wording used on the flowchart and in the list of media definitions.

In addition to the changes in wording that were decided upon, several decisions were made regarding how the materials would be packaged. For example, it was decided that the flowchart would be produced as a job performance aid in fold-out form. It was also decided that the detailed directions and the media definitions would be part of a "User's Guide," which would serve as a companion document to the flowchart.

While the flowchart and User's Guide were being developed, procedures for formatively evaluating those documents were being planned. Two members of the CET staff, a faculty member and a graduate student, developed the formative evaluation procedures and revised them based upon the comments provided by another Florida State University faculty member, an expert in formative evaluation, who reviewed the proposed procedures. A description of the formative evaluation procedures that were finally used is contained in Appendix E. The forms used during the formative evaluation sessions are contained in Appendix F.

In September and early October, after draft versions of the flowchart and User's Guide were produced, both documents were formatively evaluated, using six graduate students in the instructional design program at Florida State University as subjects. Four of the students had previously designed instruction for the military.

Based on the formative evaluation data collected from the Florida State students, several changes in the flowchart and User's Guide were made. The most important change, made after two of the students had served as subjects, was the addition of a detailed example of how to use the flowchart, which was added to the User's Guide.

After the flowchart and User's Guide were revised on the basis of the formative evaluation data collected at Florida State University, one of the CEI faculty members visited Fort Gordon to conduct further tryouts. Six instructional developers at Fort Gordon served as subjects in the formative testing, which involved procedures essentially the same as those employed at Florida State.

As indicated by their responses to a questionnaire (see Appendix G), the developers at Fort Gordon had very positive attitudes toward the new media selection model. However, based upon the problems the developers had when they attempted to use the model, and the comments they made while using it, several changes were made both in the flowchart and in the User's Guide. The major change involved rewording of one of the questions included in the flowchart. The question, which had read "Is it a skill? (mental or motor)," was revised to read "Is it an attitude; or verbal information?" Both questions were intended to require the developer to properly classify an objective into one of four categories of learning. When the former question appeared in the flowchart, however, many of the developers incorrectly classified verbal information objectives in the mental skills category. It was felt that rewording the question as indicated above, and rewording the explanation that accompanied it would, alle-

viate this problem. Later tryouts of the model indicated that the problem was alleviated by making this change.

After the model was revised based on the data collected at Fort Gordon, it was taken to Fort Rucker, where additional tryouts of the model occurred. The five instructional developers at Fort Rucker who reviewed the model also had positive attitudes toward it (see Appendix H). While the feedback these developers provided also indicated that some changes in the model were necessary, the changes were few in number and were all fairly minor. The current version of the model incorporates those changes. A copy of the model (flowchart) can be found inside the User's Guide.

The model emphasizes those instructional principles, such as directing attention and providing feedback, known to affect human learning. The manner in which these principles should be incorporated in an instructional sequence varies across different types of learning tasks, and the ability to incorporate these principles varies across media. The model is designed to enable instructional developers to identify those media most capable of properly incorporating the necessary instructional principles for teaching a given learning task. A detailed description of the theoretical principles upon which the model is based is contained in an accompanying technical report.

The model also emphasizes the importance of using a systematic media selection procedure even when the choice of media is limited. Processes for accounting for the constraints placed upon media selection decisions

are included as part of the model. Thus, the model addresses another of the problems typically faced by instructional developers when they are selecting media.

Dissemination of the New Media Selection Model

Although it is felt that this model addresses several of the problems involved in media selection, the model cannot solve those problems unless instructional developers use it, and use it properly. Thus, if the efforts devoted to this project are to have any effect upon the media selection procedures employed in the U.S. Army, it is essential that a dissemination plan be developed and implemented. This plan should be designed to ensure that the new media selection model will be used by instructional developers in the Army who are, or should be, making media selection decisions.

One step in the dissemination plan would involve distributing the new model. Since the model has been designed to be an integral part of the ISD process, it could replace, or serve as alternative to, the current ISD media selection guidelines. TRADOC might be asked to issue it as either a replacement or a supplement. Or, if TRADOC proceeds with plans to revise the ISD manuals, the new media selection model could be incorporated into the revision.

Another step in the dissemination plan would involve teaching instructional developers how to use the model. Although the new model is designed so that instructional developers can use it just by reading the flowchart and User's Guide, it might be helpful to conduct short workshops designed to introduce the model to developers and provide them with practice in using it.

Procedures similar to those used during the formative evaluation sessions, perhaps adapted for use with small groups, might be successfully employed during a workshop. Instructional developers who participated in the evaluation sessions became quite proficient in using the model and indicated a keen interest in using it on the job.

Summary and Conclusion

Our research has indicated that instructional developers working for the U.S. Army rarely use a systematic means of selecting media. One of the primary reasons they fail to do so is because they consider the current media selection model to be too complex. The new model we have developed is designed to be less complex and yet account for those instructional principles known to affect human learning.

The model has gone through extensive formative testing. This testing has helped to improve the model. Furthermore, the data collected during the testing has indicated that the model is easy to use and is viewed positively by most instructional developers.

Whether instructional developers in the Army use the model depends largely upon whether the model is properly disseminated. If the model is disseminated properly, it could have a very positive effect upon the media selection procedures used in the Army.

Appendix A

Copy of the General Information Questionnaire

Media Selection Interview Guide
Background Information Sheet

Name _____ Military Rank _____

Civilian GS _____

Branch _____ Job Title _____

Current Assignment Date _____ Expected Transfer Date _____

Primary MOS _____ Duty MOS _____

Secondary MOS _____

Next Probable Job Assignment (if military) _____

Do you view instructional design as a career? _____

How long have you been designing instruction? _____

Do you make media selection decisions? _____ If so, how frequently?

(circle) Often Sometimes Rarely

Immediate Supervisor _____ Supervisor Rank/GS Level _____

Briefly describe your job duties and tasks (list of things you do). Please indicate how much of your time is spent performing each task (i.e., % time spent).

Describe training in instructional design or teaching, if any (e.g., Mager workshop, ISD workshop, college courses, Army instructor's training course, etc.)

Media Availability and Selection Questionnaire

Listed below are some of the media you might select to deliver instruction. Please indicate whether each medium is available for you to select and, if so, how frequently you select it. Circle the appropriate responses.

Media	Available?		How frequently do you select it? (O=Often S=Sometimes N=Never)		
	Yes	No	O	S	N
Live Instructors	Yes	No	0	S	N
Print Materials (TM,FM)	Yes	No	0	S	N
Programmed Text	Yes	No	0	S	N
Slide/Tape presentations	Yes	No	0	S	N
Filmstrips with audio	Yes	No	0	S	N
Slides or Filmstrips without audio	Yes	No	0	S	N
Microforms (Fiche, Film, etc.)	Yes	No	0	S	N
Motion Pictures	Yes	No	0	S	N
Overhead Transparencies (Viewgraphs)	Yes	No	0	S	N
Opaque Projector	Yes	No	0	S	N
TV Cassette	Yes	No	0	S	N
Broadcast Television	Yes	No	0	S	N
Programmed TV (Videodisc)	Yes	No	0	S	N
Audio Tapes	Yes	No	0	S	N
Broadcast Radio	Yes	No	0	S	N
Computers	Yes	No	0	S	N
Study Cards	Yes	No	0	S	N
Games	Yes	No	0	S	N
Charts and Graphs	Yes	No	0	S	N
Operational Equipment	Yes	No	0	S	N
Models and Mock-ups	Yes	No	0	S	N
Component Objects (part of a real equipment system)	Yes	No	0	S	N
Procedure Trainers	Yes	No	0	S	N
Simulators	Yes	No	0	S	N
Others (please list)					
_____	Yes	No	0	S	N
_____	Yes	No	0	S	N

Learning Categories Questionnaire

1. In arriving at media selection decisions, do you classify learning into specific types or categories? _____
2. If your answer to question 1 was "yes," please indicate which, if any, of the following categories you use. For those categories you do use, please indicate the frequency of use. Circle the appropriate responses.

Category	Do You Use It?		How Frequently Do You Use It? (O=Often S=Sometimes R=Rarely)		
	Yes	No	O	S	R
Rule Learning and Using	Yes	No	0	S	R
Classifying-Recognizing Patterns	Yes	No	0	S	R
Identifying symbols	Yes	No	0	S	R
Detecting	Yes	No	0	S	R
Making Decisions	Yes	No	0	S	R
Recalling Bodies of Knowledge	Yes	No	0	S	R
Performing Gross Motor Skills	Yes	No	0	S	R
Steering and Guiding - Continuous Movement	Yes	No	0	S	R
Positioning Movement and Recalling Procedures	Yes	No	0	S	R
Voice Communicating	Yes	No	0	S	R
Attitude Learning	Yes	No	0	S	R

3. If you use categories other than those listed above, please indicate the categories you use and how frequently you use them.

Category	Frequency of Use (O=Often S=Sometimes R=Rarely)		
	O	S	R
_____	0	S	R
_____	0	S	R
_____	0	S	R
_____	0	S	R

Appendix B
Copy of the Interview Questionnaire

Interview Questionnaire

Interviewee _____

Interviewer _____

Part I: Instructional Development and Media Selection Procedures Followed

General question:

A. How do you go about developing instruction?

B. How do you select media to deliver instruction?**Specific Questions:**

1. When are media selected?
2. What percentage of your time is spent selecting media?
3. What selection process or strategy do you use?
4. Do you consider:
 - (a) learning categories?
 - (b) learner interaction?
 - (c) costs?
 - (d) individual differences?
 - (e) instructional setting?
5. Who reviews and approves your selection decisions?
6. What percentage of your decisions are approved?

7. What media do you usually select?

Part II: Guidelines Used

General Questions:

A. What written guidelines for the selection of media do you use regularly? How do you use them?

B. What training did you receive on the use of guidelines?

C. Are you familiar with the ISD model for media selection? Do you use it? Why? Why not?

Specific Questions:

1. Do you find the ISD learning sub-categories useful? (Show the Learning Categories Questionnaire.) Why? Do you use them to help you make media selection decisions?
2. Do you use the Learning Objective Analysis Worksheet? Why? (Show a LOAW.)
3. Do you consider the ISD learning sub-category matrices useful? (Show sample matrix.)
4. Do you think the media rejection factors listed in the ISD Model are useful? (Show copy of pp. 120-121, Phase III.)
5. Do you usually prepare a rationale for the media selection decisions you make? Do you think that preparing a rationale is a worthwhile activity? Why?

Part III: Constraints Faced

General Questions:

A. What constraints or problems do you face in selecting media?

Specific Questions:

Which of the following are problems for you?

1. Suitability of current media selection guidelines?
2. Training in media selection?
3. Availability of particular media?
4. Supervisor preferences of media?
5. Time factors?
6. Cost, budget?
7. Personnel?
8. Equipment and materials?
9. Facilities for delivering instruction?
10. Other? (Include, as appropriate, factors described by other personnel interviewed.)

Part IV: Solutions Suggested

General question:

- A. What do you see as possible solutions to the media selection problems you face?

Specific Questions:

1. What would help you eliminate the constraints or problems you have identified?
2. Would training in the use of the current guidelines be helpful?
3. Should current guidelines be revised? How?
4. Should new media selection guidelines be developed?
5. How should the new guidelines be structured?
 - a) flowchart?
 - (b) matrix?
 - (c) job performance aid? What do you mean by job performance aid?
Can we see an example?
 - (d) other?
6. Is it likely that you would use new guidelines? Why?
7. Other? (Include, as appropriate, factors described by other personnel interviewed.)

Appendix C

Summary of the Responses to the General Information Questionnaire

Summary of Responses to the General Information Questionnaire

I. Composite view of media availability and selection at the four Army schools visited

A. Number of Respondents = 49 (Several respondents failed to respond to all of the questions)

B. Availability

1. The media most available were print material (43), slide/tape (43), operational equipment (41), programmed text (40), audio tapes (40), charts/graphs (40), and models/mock-ups (40).

Notes: a) The "video tape" category only appeared on the Gordon questionnaire. Nineteen (100%) of the respondents said that it was available. If this information were pooled with the TV cassette data from the other questionnaires, then 44 respondents would indicate that TV tapes/cassettes are available.

b) The Gordon questionnaire only had the category of "filmstrip" as opposed to the two categories of more recent questionnaires which were "filmstrips with audio" and "filmstrips without audio." For purposes of tabulation and this discussion, the Gordon "filmstrip" data was subsumed into the category of "filmstrips without audio." Thirteen out of a possible nineteen Gordon respondents said filmstrips were available.

2. The media least available were broadcast radio (6), programmed TV (13), microforms (13), opaque projector (15), and computers (17).

3. With the exceptions of radio (12%), all of the media were indicated as being available by at least 25% of the respondents.

C. Frequency of Selections

1. Those materials receiving most responses in the "often" category were operational equipment (30) and print material (29).
2. Those materials receiving most responses in the combination of both "often" and "sometimes" categories were print materials (40), operational equipment (39), and models/mock-ups (38). Also, if video tapes and TV cassettes data were pooled, the combined category would be included here with 39 respondents.

Note: For more detailed information, see item #3 on the next page.

3. Below is a table showing the frequency of responses for often/sometimes categories.

	<u>Often</u>	<u>Sometimes</u>	<u>Often/Sometimes</u>
Print Materials	29	11	40
Operational Equipment	30	9	39
Video Tapes + Cassettes	6+11=17	10+12=22	17+22=39
Models/Mock-ups	9	29	38
Charts/Graphs	14	23	37
Slide/Tape	16	21	37
Programmed Text	14	23	37
Live Instruction	19	15	34
Audio Tapes	4	29	33
Overhead Transparencies	11	20	31

4. Those media selected least often/sometimes were radio (2), microforms (4), opaque projector (6), programmed TV (7), and games (8).

II. Composite view of learning categories used at the four Army schools visited

- A. Answers to the question "do you classify learning into specific types or categories?"

Number of "yes" respondents =	36
Number of "no" respondents =	7
Number of respondents not answering =	6
Total =	49

- B. Statements summarized from 43 respondents

1. All 11 types of learning listed on the questionnaire were selected either "often" or "sometimes" by at least 14 respondents. Below are listed those types having the greatest number of responses in the combined "often/sometimes" categories.

Identify Symbols	29
Making Decisions	28
Rule Learning	27
Classifying	25
Recalling Knowledge	24
Voice Communicating	24

2. The categories receiving the least number of responses in the combined "often" and "sometimes" categories were steering/guiding (14) and detecting (17).

III. Tabulation of responses to the Media Availability + Selection Questionnaire

Media	Available?		How frequently do you select it? (O=Often S=Sometimes N=Never)		
	Yes	No	O	S	N
Live Instructors	35	3	19	15	0
Print Materials (TM,FM)	43	0	29	11	2
Programmed Text	40	0	14	23	3
Slide/Tape presentation	43	0	16	21	5
Filmstrips with audio	18	0	7	8	3
Slides or Filmstrips without audio	33	5	7	20	5
Microforms (Fiche, film, etc.)	13	11	0	4	9
Motion Pictures	37	2	5	24	8
Overhead Transparencies (Viewgraphs)	39	2	11	20	7
Opaque Projector	15	2	1	5	8
TV Cassette	25	0	11	12	0
Broadcast Television	23	5	6	8	9
Programmed TV (Videodisc)	13	1	3	4	5
Audio Tapes	40	1	4	29	5
Broadcast Radio	6	15	1	1	4
Computers	17	7	0	13	4
Study Cards	24	7	2	11	11
Games	19	10	0	8	11
Charts and Graphs	40	0	14	23	3
Operational Equipment	41	0	30	9	0
Models and Mock-ups	40	0	9	29	1

(Continued)

<u>Media</u>	<u>Available?</u>		<u>How frequently do you select it?</u> <u>(O=Often S=Sometimes N=Never)</u>		
	<u>Yes</u>	<u>No</u>			
Component Objects (part of a real equipment system)	19	0	5	14	0
Procedure Trainers	29	3	6	22	1
Simulators	33	1	8	22	3
Video Tapes	19	0	6	10	3
Other media listed: JPA, Non-Instructional Texts, Correspondence Courses, Language Labs.					

IV. Tabulation of responses to the Learning Categories questionnaire

<u>Learning Category</u>	<u>Do You Use It?</u>		<u>How Frequently Do You Use It?</u> (O=Often S=Sometimes R=Rarely)		
	<u>Yes</u>	<u>No</u>			
Rule Learning and Using	29	14	14	13	2
Classifying-Recognizing Patterns	26	17	10	15	1
Identifying Symbols	29	14	14	15	0
Detecting	18	25	11	6	1
Making Decisions	30	13	16	12	2
Recalling Bodies of Knowledge	26	17	12	12	2
Performing Gross Motor Skills	29	14	13	13	3
Steering and Guiding - Continuous Movement	16	27	5	9	2
Positioning Movement and Recalling Procedures	24	19	11	9	4
Voice Communicating	25	18	14	10	1
Attitude Learning	22	21	10	11	1

Other categories listed: Judging proficiency, recall of procedures and logic, trouble-shooting requiring motor skills, and discrimination.

Appendix D**Summary of the Responses to the Interview Questionnaire¹**

¹This summary was prepared by Janet L. Winner

Summary of Responses to the Interview Questionnaire

The following description represents a summary of the input received from instructional development personnel at the four Army schools visited as part of this contract (Forts Belvoir, Devens, Gordon, and Rucker). The input was obtained by asking these personnel to respond to a interview questionnaire developed for the contract. The respondents to the questionnaire were both military (N=6) and civilian (N=23) employees and had been selected from a larger group (49 individuals) than designated by DTI branch chiefs as having involvement in the media selection process. The questionnaire was administered during March and April, 1980 by staff members of the Center for Educational Technology (CET). Responses are summarized by question. The numbers in parentheses following each question indicate the number of individuals responding to that question.

I. Instructional Development and Media Selection Procedures Followed

How do you go about developing instruction? (N=19)

All of the people responding to this question indicated that they used some sort of systematic instructional development procedure to design instructional materials. Over one-quarter (26%) of these respondents replied that they followed, to some degree, ISD procedures in their development process. Another third of the group (37%) developed instruction using procedures similar to ISD, although such procedures were not described. While other respondents did not acknowledge using ISD, or a variation thereof, their answers appear to suggest that some systematic approach is taken in the process of developing instruction.

Each of the following development procedures was mentioned at least once in response to this question:

1. - identify and obtain critical task list(s)
2. - generate objectives (sometimes they are classified according to learning categories)
3. - develop tests
4. - develop instruction
5. - field test or validate instruction.

No single respondent gave this complete list of procedures as his particular development process. However, it seems that course development is generally approached in a fairly systematic manner.

How do you select media to deliver instruction? (N=20)

In response to this question, 20% of the respondents believe that the selection of media is usually determined prior to the development effort. About one third of those responding indicated that they were influenced by ISD in selecting a medium for instruction, though they did not strictly adhere to the ISD guidelines. Another 20% of the respondents replied that they tried to ascertain the nature of the task, i.e., whether it required memorization, hands-on experience, visualization, or motion. The medium selected was then based on the type of task or skill to be trained.

When choosing media, 20% of the respondents considered comments or recommendations offered by the instructors. Cost, in terms of availability of media, was viewed as a factor in media selection by 10% of the developers.

When are media selected? (N=13)

The responses of over two-thirds of the developers interviewed indicated that media were selected after the specification of objectives, tests and learning activities. The remaining responses to this question suggest that the media are chosen before the developer becomes involved in the development process.

What percentage of your time is spent selecting media? (N=12)

The majority (83%) of developers said they spent less than 5% of their time in the selection process. In two instances, developers stated they spent between 15 - 25% of their time in selecting media; however, such an inordinate amount of time suggests that a unique training situation may have been present.

What selection process or strategy do you use? (N=9)

One-third of the respondents replied that the instructional setting dictated the media selection process. Other responses were assorted and included:

- use print unless it is shown to be ineffective;
- if content is recognition type, use slides;
- consider type of equipment, motivation and existing materials;
- do what "feels" like the best thing.

Do you consider the following when selecting media?

Learning categories? (N=21). Slightly less than one-half (43%) of the respondents addressed the learning category of the subject matter content in their design of instruction. Within this group, a particular note was made of the importance of attitudes in media

selection. An equal number of people responding to this question did not consider learning categories.

Learner interaction? (N=10). Seven of the ten respondents acknowledged that they considered learner interaction in their design process, however, this was never operationally defined. The remaining 30% of the developers did not address learner interaction.

Costs? (N=25). Sixty percent of the developers questioned felt that costs were a major restriction in developing training. It was not clear what these costs included, e.g., personnel, equipment, media, etc. The remaining 40% of the interviewees did not believe cost factors were important considerations in selecting media.

Individual differences? (N=13). Over half of the developers designed instruction to a particular audience and not to individual differences. Most of them said that reading level was an important factor to consider, and when designing instruction for poor readers, they primarily used audio-visual materials.

Instructional setting? (N=17). One-third of the developers agreed that instructional setting was considered in selecting media. The setting was thought to be important by some developers because it influenced accessibility of hands-on equipment and availability of electricity. For still other respondents, the use of the instruction in a non-resident site meant the medium selected was usually print.

Who reviews and approves your selection decisions? (N=21)

Nearly one-half (48%) of the respondents replied that their selection decisions were not reviewed. Approximately 20% of the developers said that their supervisors "checked" the selection decisions, however this checking process was not described.

What percentage of your decisions are approved? (N=19)

Nearly half of the developers did not feel their decisions were either approved or disapproved, rather such decisions were agreed upon, taking into account available resources.

II. Guidelines Used

What written guidelines for the selection of media do you use regularly? How do you use them? (N=24)

It does not appear as though a standard set of guidelines is widely used across schools. While it is evident that guidelines are available, it seems as though the developers have identified their own functional strategies for media selection. One-third of the developers used at least a part of the ISD guidelines when selecting media. Over one-half of the group did not refer to any guidelines. Two other approaches mentioned and used were guidelines from the University of Wisconsin and Catholic University.

What training did you receive on the use of guidelines? (N=28)

From the preceding question it is clear that few of the developers actually utilize media selection guidelines. It is interesting to note that, with respect to this question, 43% of the developers replied that they had not received any training in the use of guidelines for media selection. At this point one might wonder if there is a causal relationship operating here. Other responses about training included: the ISD workshops (21%); on-the-job training (18%); and the CRI Workshop (14%).

Are you familiar with the ISD model for media selection? Do you use it? Why? Why not? (N=26)

Over two-thirds of the developers interviewed were familiar with the ISD approach to media selection. Of these, most do not regularly use the selection criteria, though portions of the ISD criteria list

may be considered. The media selection model is not used either because it is too complex or there is no opportunity to apply it.

Do you find the ISD learning subcategories useful? Why? Do you use them to help you make media selection decisions? (N=23)

Nearly everyone responding to this question agreed that the subcategories were useful, in varying degrees. Comments about the subcategories indicated that they could be condensed since not all eleven of them were used regularly. Also, some subcategories are difficult to understand. While most developers agreed with the utility of such learning categories, few actually use all of them in designing instruction.

Do you use the Learning Objective Analysis Worksheet (LOAW)? Why? (N=21)

Over 70% of the respondents acknowledged that they used a revised version of the LOAW. The remaining developers either did not find the LOAW applicable to their situation or received the preliminary information in another form from Training Analysis.

Do you consider the ISD learning subcategory matrices for media selection useful? (N=26)

Nearly every interviewee (96%) believed the ISD matrices were too complicated or too unwieldy to be of practical value when designing instruction. When used, the matrices primarily verified decisions already made.

Do you think the media rejection factors listed in the ISD model are useful? (N=22)

The vast majority (95%) of the respondents did not consciously use the rejection factors and, therefore, replied that such factors were not useful in their decision-making.

Do you usually prepare a rationale for the media selection decisions you make? Do you think that preparing a rationale is a worthwhile activity? Why? (N=24)

Most developers (67%) did not feel it was necessary to generate a rationale.

III. Constraints

What constraints or problems do you face in selecting media? (N=3)

Within this portion of the questionnaire many specific questions related to constraints were asked. The general comments on this topic included the observation that the reading level of the trainee was a problem in deciding on the media. Also, TRADOC requires a specified number of videotapes to be produced each year, which automatically "selects" the medium for some of the instruction.

Suitability of current media selection guidelines? (N=21)

Most respondents (71%) did not feel that current guidelines were a problem; however, it may be inferred from the responses that this question was not applicable to many developers because most of them did not follow the ISD media selection guidelines.

Training in media selection? (N=23)

Over one-half of the respondents felt that some type of training would be helpful. Such training may take the form of a "How-to..."

manual for media selection or additional training for new employees or TEC branch people. The remaining developers (43%) felt that training was not a problem in the media selection process.

Availability of particular media? (N=24)

Half of the people responding to this question agreed that availability was a problem; half disagreed. Availability problems included: the restricted selection of media for TEC, the tedious approval process in using job performance aids, the difficulty in obtaining videotape recorders, and the prohibitive cost of acquiring real equipment for training purposes.

Supervisor preferences of media? (N=26)

Two-thirds of the respondents did not believe that their supervisor's preferences for media were problematic. Several of the remaining one-third stated that TRADOC wanted print, while TEC called for audio-visual instruction.

Time factors? (N=25)

Over three-fourths of the group interviewed expressed concern over the issue of time. Lecture and print were the media chosen in cases where the time factors were important. Print, in particular, was often chosen because it requires less time to develop and can be mass produced quickly (as opposed to slides or videotape, for example).

Cost, budget? (N=22)

Nearly two-thirds (64%) of the developers responded that cost was a problematic factor, although few developers described specific instances where cost was a problem.

Personnel? (N=23)

Nearly two-thirds of the interviewees identified personnel problems as a factor affecting media selection decisions. Problems with personnel were of an assorted nature and included:

- cut-backs without replacements;
- instructors resisting change;
- military transfer of trained staff;
- insufficient manpower.

Equipment and Materials? (N=25)

Only one-third of the developers identified equipment and materials as problems. The chief cause of the problem seemed to be either lack of availability or poor maintenance for both real equipment and media hardware.

Facilities for delivering instruction? (N=25)

The majority (88%) of the developers did not have problems with the facilities. The only concern voiced about facilities was the accessibility of electricity for mediated instruction delivered in the field.

IV. Solutions Suggested

What do you see as possible solutions to the media selection problems you face? (N=7)

The solutions which developers suggested were fairly predictable, given the responses to specific constraints faced. The same solutions were offered by several respondents and included availability of and accessibility to the following:

- more money;
- more time;
- more training;
- more people.

One individual replied that TEC should allow for more media choices.

What would help you eliminate the constraints or problems you have identified? (N=4)

Again, the responses to this specific question were very similar to the preceding suggestions. Specific answers included: training personnel, stabilizing the turnover situation, and providing additional money.

Would training in the use of current guidelines be helpful? (N=18)

While it was not necessarily felt that training was needed in use of the current guidelines, 61% of the developers responding agreed that training in media selection would be helpful. A suggestion was made that this training should address the attitudes of designers and administrators toward media selection.

Should current guidelines be revised? How? (N=25)

Eighty percent of the interviewees supported the idea of revising the guidelines. Comments substantiating the value of revisions included:

- simplify and condense present guidelines;
- define terms;
- make ISD more specific;

- cut down on the learning categories; and
- provide more examples.

One respondent observed that the guidelines currently include a lot of "what to do" but not much "how to do it."

Should new media selection guidelines be developed? (N=18)

Over one-half of the developers who responded to this question agreed that new guidelines should be developed, provided they were simpler than existing guidelines.

How should new guidelines be structured?

Flowchart? (N=18)

Over 70% of those who commented on this option felt that a flowchart approach would be useful if it included examples of how to work through the components of the flowcharts.

Matrix? (N=18)

Nearly two-thirds of those responding supported the use of a matrix if it were simpler than the ISD matrix and if it included explanations.

Job performance aids, (JPAs)? (N=19)

The majority (84%) of developers responded favorably to the use of a JPA. Most of the developers defined JPAs as step-by-step procedural guides that could appear in list or flowchart form.

Is it likely that you would use new guidelines? Why? (N=26)

Over one-half of the respondents indicated they would use new guidelines, especially if such guidelines responded to a need.

Summary

Twenty-nine military and civilian instructional developers were interviewed by CET staff members during March and April, 1980. The developers had been selected based on their involvement in the media selection process. As a result of the interviews, it was apparent that in the vast majority of instances, media appeared to be selected without the use of guidelines.

The media selection technique described in ISD is considered by most developers as too complicated to be of value on a regular basis. Much of the ISD media selection information is not especially useful to the developers interviewed. Problems faced in selecting media were primarily: not enough money; too little time; too few people; and insufficient training. Nearly one-half of the respondents had received no formal training in media selection procedures. With respect to training, the consensus of opinion seemed to be that training should be concerned with media selection procedures and should address the attitudes of developers and administrators toward media selection.

The majority of developers felt the current media selection guidelines should be revised. They felt the revised version should be simplified and perhaps appear as a JPA in either list or flowchart form.

Appendix E
Description of Formative Evaluation Procedures

Media Selection Model
Formative Evaluation Procedures*

General Directions

1. The purpose of formative evaluation is to gather data to be used in revising the product. Therefore, in general, record only those things which will have some bearing on revisions we will make in the model.
2. When participants ask questions about parts of the model, don't answer them directly without first making sure you have understood and recorded the real problem.
3. Ask questions at all points the participant diverges from the ideal path we have defined for an objective.
4. The following materials will be needed:
 - a. two copies of the flowchart,
 - b. two copies of the "User's Guide,"
 - c. copies of the Media Selection worksheet,
 - d. these directions,
 - e. several copies of the observation form,
 - f. the attitude questionnaire,
 - g. the objectives we developed for use in evaluating the model,
 - h. the formative evaluation JPA,
 - i. a pencil or pen,
 - j. a watch.

*NOTE: The procedures listed here are presented in the form of directions. These directions were given to those CET staff members who conducted the formative evaluation sessions.

Procedure

1. Before the participant arrives, record your name, his or her name, and the number of each objective to be used at the top of copies of the observation form. Label one "Directions" and one "Example." Have a supply of blank forms close at hand.
2. Explain the participant's role to him. Say that we are developing an alternative media selection model for the ISD process, and that his or her comments will be used to help revise the current draft.
3. Begin with the form you labelled "Directions." Record the starting time.
4. Have the participant read the general directions titled "What You Will Need" and "How to Proceed." Tell the participant to comment when anything is unclear. List comments on the observation form, recording the number of the direction the comments refer to.
5. When the participant finishes with the directions, record the time at the bottom of the form you are on and at the top of the sheet you have labeled "Example."
6. Have the participant read the example of how to use the flowchart contained in the User's Guide. Tell the participant to comment when anything is unclear. List comments on the observation form, recording the number of the direction the comments refer to.
7. When the participant finishes with the example, record the time at the bottom of the form you are on and at the top of the sheet you have labelled "Objective 1."
8. Show the participant the first objective. Instruct him to use the model to select the appropriate media to teach it. Have him use the other information listed with the objective as well. Have him use his own judgement where answers

to questions are not given. Instruct the participant to think out loud and explain each decision he makes, also to ask questions or make any suggestions he may have. Tell him he may write comments on the flowchart.

9. On this and all passes through the model, record your observations and the participant's comments on the observation form. Reference decisions by number in the column at the left on the observation form. Always have the participant start with Chart A.

10. Always ask questions when there is a divergence from the ideal path noted on the formative evaluation JPA. Obtain an adequate understanding of why the participant went the way he did. Don't let the participant see the listing of the ideal path while he goes through the model. Also, be sure to record every occasion the participant refers to the detailed directions in the User's Guide.

11. When the bottom line is reached, record the stop time and the letter of the box selected at the bottom of the observation form. Have the participant use the Media Selection Worksheet. If the participant deviated from the correct path, go back to the point of divergence and have him proceed again using the correct decision at that point.

12. For each objective, have the participant go through the final selection procedure. Start with a clean observation form labelled "FSP" and the objective number. Have him assume the production constraints are like those he would typically encounter in his work. Say that each objective should be treated as if it were part of a set of objectives for an entire course. Use the Flowchart and User's Guide instruction numbers and letters as references on the observation form. Keep any pertinent notes the participant makes in his final decision.

13. Before going to the next objective, ask the participant if he would really be likely to use the media he selected if he were actually asked to design instruction for the objective.
14. After performing step 13, set aside the forms for the objective you have been working on and go to the next one. Repeat steps 8 through 13 for the remaining objectives.
15. Have the participant fill out the attitude questionnaire.
16. While the participant fills out the questionnaire, check that each set of the forms you filled out is in order. Place all the sets of forms for this participant together in one stack.
17. Look over the attitude questionnaire when it is complete and ask for any clarifications of the answers. Ask follow-up questions based on the answers. Record the answers to your follow-up questions on the back of the questionnaire.
18. Thank the participant for his time and the usefulness of his responses.

Appendix F
Forms Used During Formative Evaluation Sessions

Formative Evaluation JPA*

1. Explain what we are doing
2. S reads What you need and How to Proceed (pp. 1 & 2 of flowchart).
Note comments.
3. S reads Example of How to Use Flowchart. Note comments.
4. S talks aloud while using flowchart for objective 1. Note comments.
5. S uses MS Worksheet to record candidate media. Note comments.
6. S uses final selection procedure for objective 1. Note comments.
7. Ask S if he would really use media selected. Note comments.
8. Repeat steps 4-7 for objectives 2-6.
9. S fills out attitude questionnaire.
10. Ask follow-up questions re questionnaire responses. Note comments.

Paths

1. A.1 & F.1
2. D.3 or D.4 (or F.4 or F.5)
3. A.41 & E.1 (or C.1)
4. B.3, D.3, or F.3
- 5a. D.2 or F.2
- 5b. D.3 or F.3
6. A.1 & B.1

*NOTE: This JPA was used by CET staff members during the formative evaluation sessions.

Objectives Used During the Formative Evaluation Sessions*

Directions: Use the Media Selection Flowchart to choose appropriate media to teach the following objectives.

Objective 1: From a height of 5 feet, exit a hovering helicopter and land on the ground without injury.

(This objective is a Motor Skill intended for trainees who cannot read.)

Objective 2: Name two Army NBC devices and state how often each should be inspected or serviced.

(This objective is a Verbal Information objective intended for trainees who cannot read.)

Objective 3: Perform mouth-to-mouth resuscitation and external heart massage.

(This objective is a Motor Skill intended for trainees who can read.)

Objective 4: Choose to exhibit a positive disposition about being in the Army.

(This objective is an Attitude, intended for all trainees.)

Objectives 5a & 5b (Note: The two objectives below are to be taught as part of the same lesson.):

5a. Identify the grid square of a point on a map.

(This objective is a Mental Skill intended for trainees who cannot read.)

5b. Choose to use a straight edge when drawing lines on a map.

(This objective is an Attitude intended for trainees who cannot read.)

Objective 6: Classify incoming radar signals as friendly or hostile.

(This objective is a Mental Skill designed to be taught in a broadcast setting.)

*NOTE: The information listed here is presented in the form in which it was presented to participants during the formative evaluation sessions.

OBSERVATION FORM

Page _____

Interviewer: _____

Objective: _____

Interviewee: _____

Starting Time: _____

Item #	Participant's Responses and Comments	Interviewer's Observations and Comments

Box Selected: _____

Stop Time: _____

Final Media Selected: _____

Appendix G
Summary of Attitude Data Collected at Fort Gordon

Attitude Questionnaire

Data from Fort Gordon
(N=6)

A = Strongly Agree
B = Agree
C = Neutral
D = Disagree
E = Strongly Disagree

	A	B	C	D	E
1. Use of this model seems to result in media choices appropriate for the task to be trained.	3	3	0	0	0
2. The amount of time spent in using the model is justified by the results.	4	1	0	1	0
3. The language in the model is appropriate for the people that will be using it.	1	4	0	1	0
4. The "flowchart" format of the model is convenient to use.	6	0	0	0	0
5. The definitions of the categories of media are appropriate for military applications.	2	4	0	0	0
6. The procedures for using the model are easy to learn.	3	2	0	1	0
7. The number of decisions necessary to select a medium (media) are manageable.	3	3	0	0	0
8. The fold-out format is a convenient way to package the model.	5	1	0	0	0
9. The probability that the model will be used on the job is high.	1	1	4	0	0
10. A media selection model should be used when choosing instructional media for use in the military.	2	4	0	0	0
11. The model includes most of the important questions that should be asked when selecting media.	2	4	0	0	0

Appendix H
Summary of Attitude Data Collected at Fort Rucker

Attitude Questionnaire

Data from Fort Rucker
(N=5)

A = Strongly Agree
B = Agree
C = Neutral
D = Disagree
E = Strongly Disagree

	A	B	C	D	E
1. Use of this model seems to result in media choices appropriate for the task to be trained.	3	2	0	0	0
2. The amount of time spent in using the model is justified by the results.	3	1	1	0	0
3. The language in the model is appropriate for the people that will be using it.	2	2	0	1	0
4. The "flowchart" format of the model is convenient to use.	4	1	0	0	0
5. The definitions of the categories of media are appropriate for military applications.	3	1	1	0	0
6. The procedures for using the model are easy to learn.	4	1	0	0	0
7. The number of decisions necessary to select a medium (media) are manageable.	4	1	0	0	0
8. The fold-out format is a convenient way to package the model.	4	1	0	0	0
9. The probability that the model will be used on the job is high.	2	2	1	0	0
10. A media selection model should be used when choosing instructional media for use in the military.	3	1	1	0	0
11. The model includes most of the important questions that should be asked when selecting media.	4	1	0	0	0