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ABSTRACT

Decision Oriented Evaluation System (DOES) for community development training presents a system for training evaluation in prototypic form. This handbook provides a comprehensive overview of training evaluation methodology as well as details on specific functions involved in the training evaluation process. This model for evaluation is broken into three major categories, i.e., three modes of evaluation: (1) training, (2) job performance, and (3) community impact. Each of these three modes of evaluation are discussed in terms of input evaluation, process evaluation, and outcome evaluation. (Author/BW)

project CATE

d-o-e-s Handbook

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*DOES HANDBOOK

*Decision Oriented Evaluation System for Community Development Training.

Research and Development Center for Teacher Education

The University of Texas at Austin

June 1973

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COMMUNITY AFFAIRS TRAINING EVALUATION

Project CATE: DOES Handbook

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By

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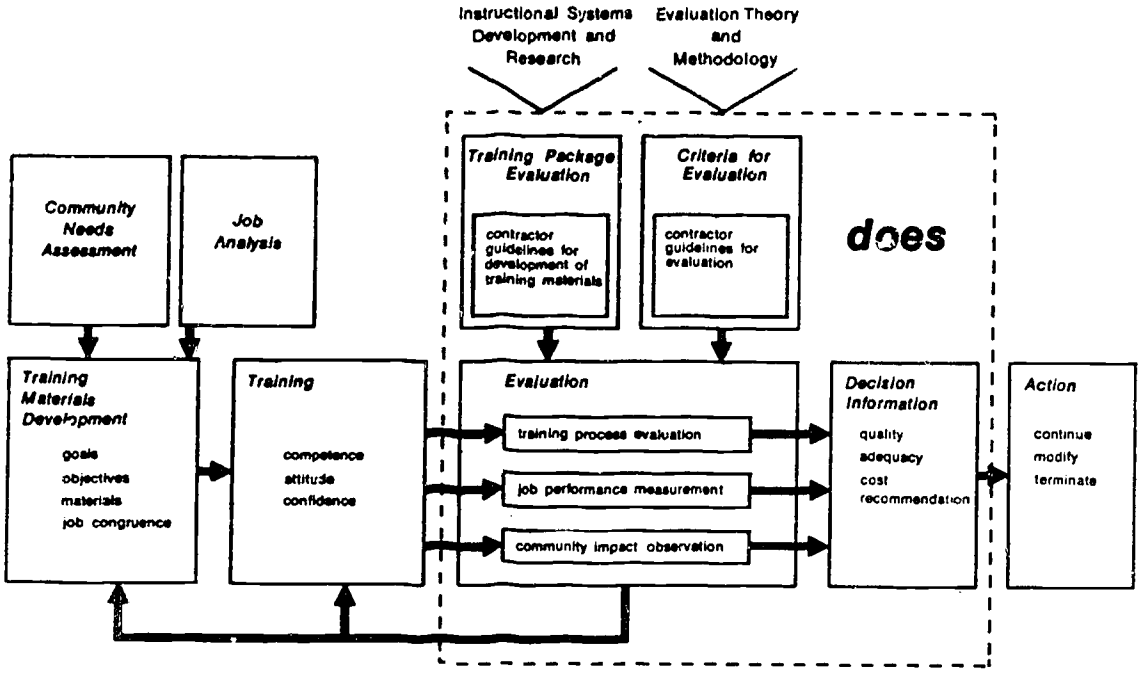
Instructional Systems Development and Research
Evaluation Theory and Methodology
Community Needs Assessment
Job Analysis
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contractor guidelines for development of training materials
Criteria for Evaluation
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Training Materials Development
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job congruence
Training
competence
attitude
confidence
Evaluation
training process evaluation
job performance measurement
community impact observation
Decision Information
quality
adequacy
cost
recommendation
Action
continue
modify
terminate

SECTION I

INTRODUCTION

The administrator of community-related programs plays a unique role. He functions as a vital decision-making link between two complex systems, the political/professional world of funding agencies and the community itself. In that position the administrator needs an evaluation methodology which helps him make intelligent decisions related to both of these worlds.

Purpose

The ongoing process of community development training necessitates the operation of training systems which are congruent with the needs of communities. If training is to be relevant to the long-range developmental objectives of community administrators and public officials, they need evaluation systems which: (1) provide fast and effective decision-making information; and (2) insure that this information is appropriate to the decisions that have to be made.

DOES

Such an evaluation system, called a Decision Oriented Evaluation System, is presently under development by Project CATE (Community Affairs Training Evaluation) at the University of Texas Research and Development Center for Teacher Education. This handbook, which presents the DOES system in prototypic form, is designed to be expanded and refined as the system undergoes further development and testing.

The Decision Oriented Evaluation System treats the processes of training and evaluation as complimentary, integrated functions; an effective training system will contain evaluation mechanisms as an integral part of its operation. Therefore, an effective *evaluation* system for training must have input into the development and implementation of training activities, and must concern itself with the developmental objectives of the training system. The community or public administrator, then, needs access to information on both training and evaluation, whether he performs his own training and evaluation, or has them subcontracted.

The Handbook

The DOES Handbook is designed for practical and frequent use. For use in over-all training system development, it provides a comprehensive overview of training evaluation methodology; for details on specific functions involved in the training evaluation process, it gives quick reference keys on pg. 9.

Technical Report

For theoretical principles, rationale, recommendations, position papers and detailed documentation on design and development of the DOES, see *Project Cate Final Report*.

SECTION II

COMPONENTS OF DOES

If your job is to make decisions related to training and evaluation of training, your first task is to orient yourself to the system which gives you your information. There are three major categories of information needed for systematic evaluation. These are called *modes of evaluation*. These modes, or information bases, are concerned with:

Modes

(1) training

(2) job performance

(3) community impact

training

Mode 1 is concerned with determining the prerequisites for training evaluation, implementing procedures for observing training, and determining skill acquisition by trainees. For training evaluation to be effective, *specific* goals of training must be established, *specific* objectives must be derived from those goals, and *specific* observable behaviors must be specified as a function of training. *Unless these conditions are met it will be exceedingly difficult to judge the effect of training and to conduct training evaluation.*

job performance

Mode 2 assesses the transfer effects of training to on-the-job performance of trainees within a natural job context. Job performance evaluation is a natural outgrowth of training evaluation. In this regard, decision-makers

ask the important question, "Did training actually change the on-the-job performance of individuals trained?" Job performance evaluation is difficult unless the training and the job include specific observable operations; even then, the judgment of quality becomes a rather difficult problem.

community impact

Mode 3 traces or observes the effects of training on community impact indicators, (i.e., it attempts to answer the question, "Are there any observable community benefits which can be related to as having improved the job performance of individuals?" "Has training improved the job performance of individuals in a way which can be related to observable community benefits?").

Community impact evaluation is a newer and less refined process than either training evaluation or job performance evaluation. Additionally, an enormous complex of variables are dynamically interacting within a community, making attempts to isolate the effects of specific training difficult or impossible. For this reason, community impact evaluation for the most part can only implement indirect rather than direct measures, i.e., evaluators should look for changes or trends in information elicited as part of the "natural process records" within a community.

Stages

Each of the three modes discussed above is operationalized in three *stages*. The stages are *input evaluation, process evaluation and outcome evaluation.*

input

Input evaluation refers to the gathering of data and information which are prerequisite to the execution of both process and outcome evaluation. The input stage of evaluation operates across all three modes; for example, there is an input stage for training evaluation, one for job performance evaluation, and one for community impact evaluation.

process

The process stage is that set of procedures which occurs while training evaluation, job performance measurement and community impact observation activities are actually taking place. The major objectives of the process stage of evaluation are: (1) to determine the observable consistency of training activities, job performance observation and monitoring of community data with the stated objectives and goals; (2) to gather and feed back information to participants, developers and sponsors regarding the effectiveness of training, job performance and community observation; and (3) to verify the training activities, job performance measurements and community impact indicators are congruent with the needs, objectives and outcomes specified in the input evaluation stage.

outcome

The outcome evaluation stage is concerned with gathering data relative to effectiveness, that is, what returns are being realized for the investment in training: (1) in and of itself to provide a quality training process; (2) in terms of improving job performance; and (3) with respect to producing observable changes in the community. In summary, the input stage provides the background for proceeding in the three modes of evaluation; the process stage specifies the kinds of data to be gathered while training is in operation, when job performance is being observed, or when community indicators are being monitored; the outcome stage gathers data related to payoff.

SECTION III

OPERATIONALIZING DOES

The DOES model features its *modes* of evaluation as per evaluation requirements of the Texas Department of Community Affairs; the *stages* of the model are basically conditions in the process of evaluation for each of the modes (see Figure 1). Each of the modes is taken through its three stages by evaluation *procedures* (i.e., "needs assessment, job description and analysis") which implement basic evaluation principles. The procedures are operationalized by *steps* (e.g., "develop a plan to conduct needs assessment").

This section presents the DOES system as operationalized by *modes*, and for practical use is divided into Parts A, B, and C, which take the respective modes of evaluation through their stages. (see Fig. 1)

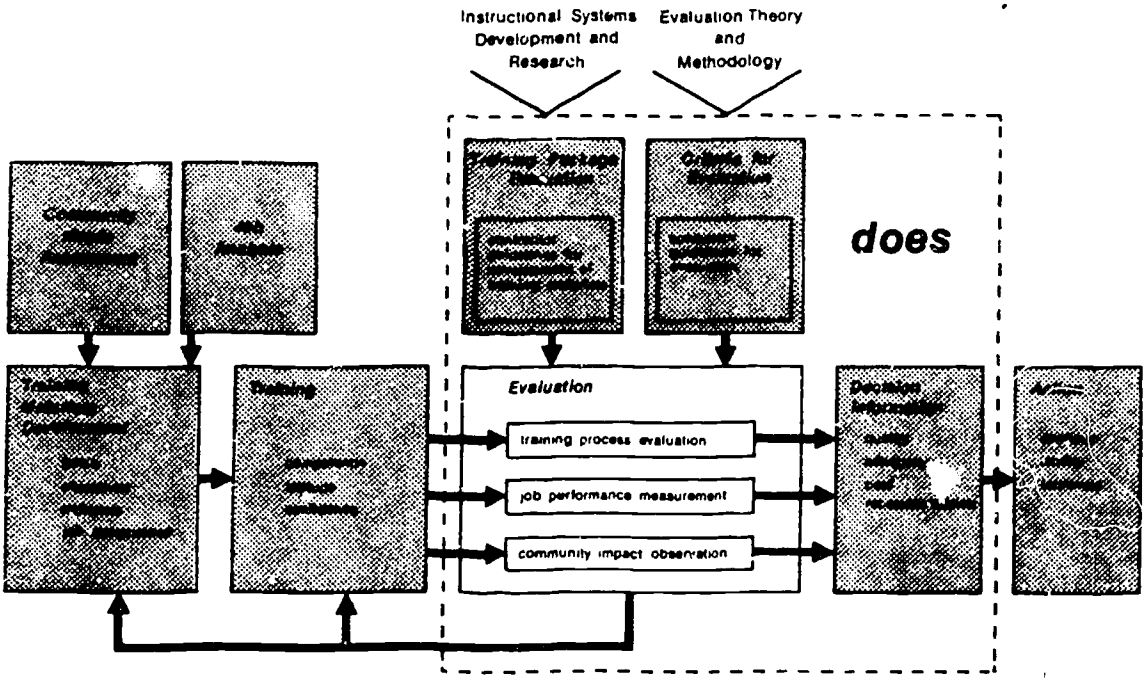


Figure 1. DOES model, *modes* of evaluation

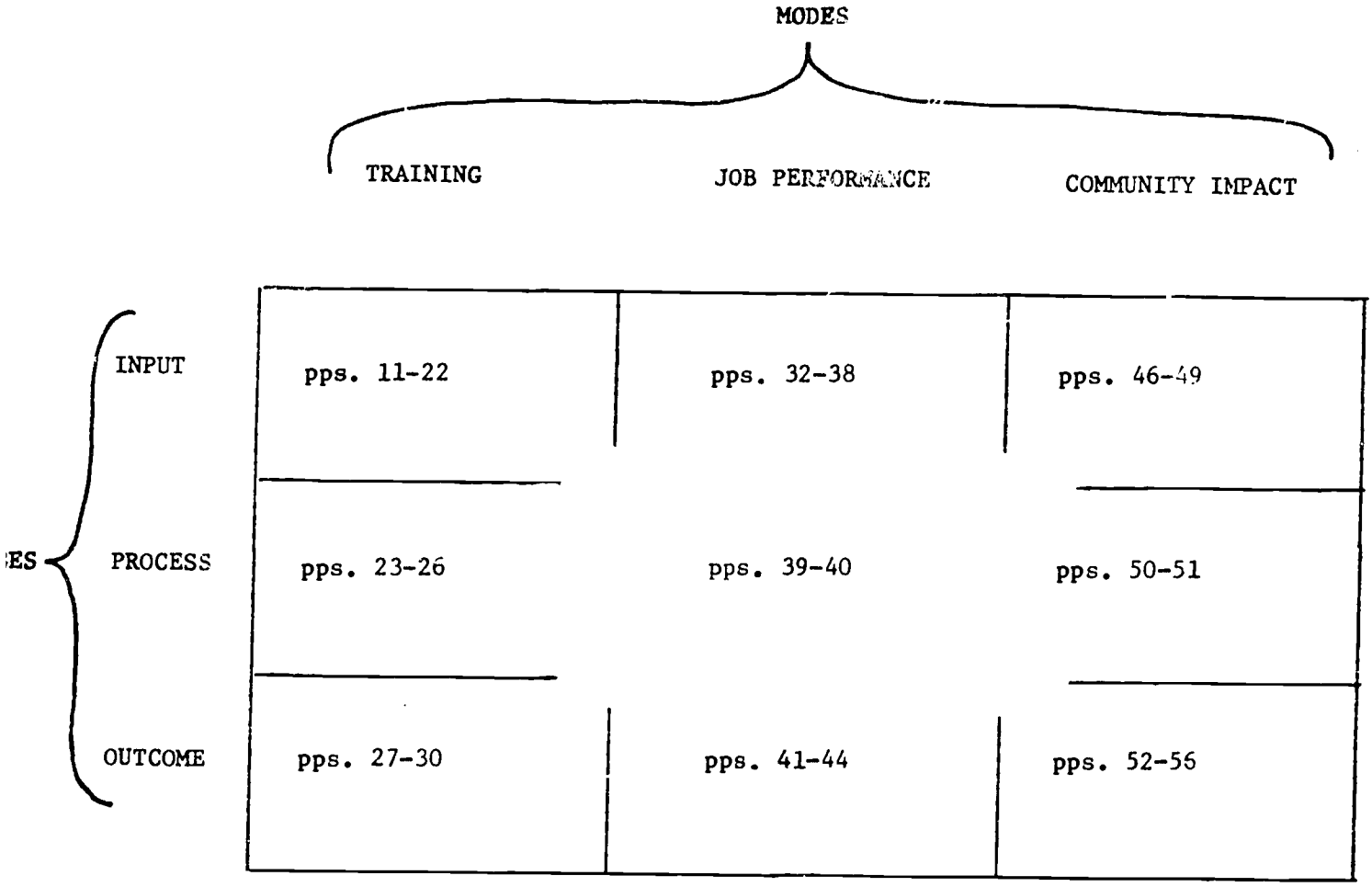


Figure 2. Operationalizing DOES

SECTION III, OPERATIONALIZING
THE DOES SYSTEM

Part A: **Training Evaluation**

	Activities
input stage	*1. Needs Assessment*
	2. Specification of Training Behavioral Outcomes
	3. Contextual Assessment
	4. Training Materials Selection
	5. Evaluation Design and Instrumentation
process stage	*6. Consistency Evaluation*
	7. Behavioral Observation and Feedback
outcome stage	*8. Training Level Outcome - Performance*
	9. Training Level Outcome - Knowle[illegible]
	10. Training Level Outcome - Awareness
	11. Training Outcomes - Affective

1. Needs Assessment

A needs assessment is a discrepancy analysis - a statement of the difference between *where you now are* and where you would *like to be*. The purpose of a needs assessment in DOES is to establish a list of priorities in government, at all levels, that can be addressed by training.

The following steps will assist in completing a needs assessment.

(1) Develop a plan to conduct a needs assessment; involve personnel from the community and as many levels of government as is feasible (e.g., local, county, state, federal).

(2) Identify and list problem symptoms related to community life.

(3) From the list developed in No. 2, select a focus for the needs assessment. (Note: It is assumed that the list of needs that could be assessed will be far greater than would be possible to meet.)

(4) Identify possible needs assessment tools and procedures, (e.g., questionnaires, records, interviews) select the best one(s), and obtain the participation of the community leaders and members in planning for gathering of information.

(5) Describe the current state of affairs with respect to the target area of needs assessment; include job descriptions and current levels of proficiency in job performance. Describe the context within which a job is being performed

and the general characteristics of the workers in that job.

(6) Be sure that you have stated the current level of job performance in measurable, behavioral terms (e.g., it now takes an average of fifteen minutes for local police to receive and respond to an emergency call).

(7) Specify the desired conditions of job performance in measurable, behavioral terms (e.g., the average amount of time required for local police to receive and respond to an emergency call shall be reduced from fifteen minutes to five minutes).

(8) Having completed discrepancy identification, identify those needs for which training appears to be the answer. (Note: Training may not always be the best solution to a problem. Changes in personnel selection procedures, shifts in job assignment, new equipment purchase may be more viable solutions to the job performance discrepancies identified.

(9) Establish priorities among the discrepancies identified as the first step in deciding to train.

(10) Decide on a course of action to conduct training.

(11) Provide for continual revision of the needs assessment on at least an annual basis. A needs assessment is never completed. It must continually be updated to reflect emerging conditions in the community.

2. *Specification of Training Behavioral Outcomes*

The quality of training and training evaluation is largely a function of the scope and quality of the objectives specified. Good objectives not only make the job of constructing test items/situations easy, but they also help in the development of training materials and carrying out training programs. The following steps will assist in specification:

(1) The statement of training outcomes should be in the form of behavior that a trainee should demonstrate *at the end of the training course.*

(2) These terminal behavioral outcomes should be directly related to the discrepancies identified in the needs assessment (i.e., terminal training behaviors should represent the ideal state of affairs).

(3) Training behavioral outcomes should have the following characteristics:

(a) The conditions under which the behavior is to be demonstrated must be stated (e.g., when provided a malfunctioning electrical circuit caused by...).

(b) The specific behavior required of the trainee must be stated in unambiguous action-oriented terms (e.g., the trainee will locate the source of the wiring problem and correctly affix the wiring...).

(c) The acceptable standards must be included in the statement of the objective (e.g., within a five-

minute period).

(d) The three criteria for an adequate training objective are summarized as follows:

1. *Conditions* under which the behavior is to be observed must be stated.
2. *Performance* required of the trainee must be stated in precise language.
3. *Standards* for acceptable perfo-mance must be listed.

(e) When the outcomes of training are concerned with knowledge, or attitudinal outcomes, the following sources should be consulted:

Bloom, B. S., et al. *Taxonomy of educational objectives: cognitive domain.* New York: David McKay Co., Inc., 1956.

Krathwohl, D. R., et al. *Taxonomy of educational objectives: affective domain.* New York: David McKay Co , Inc., 1964.

(f) Two general sources that provide good examples and guidelines for writing behavioral cutcomes of training are:

Gronlund, N. E. *Stating behavioral objectives for classroom instruction.* New York: The Macmillan Co., 1970.

Mager, R. F. *Preparing instructional objectives.* San Francisco: Fearon Publishers, 1962.

3. *Contextual Assessment*

Ultimate effectiveness or ineffectiveness of a training program can often be dictated by circumstances or variables in the training environment that are beyond the control of a sponsoring agency or instructors. It is important that an evaluator/sponsor anticipate in advance those variables by doing the following:

(1) Provide a description of the location of the training and list those aspects of the environment that may assist or detract from training effectiveness. (Note: Many a training program has been rendered ineffective by poor instructional space.)

(2) Analyze the training program and materials to be used and record the type of space and equipment required to conduct training. Check these requirements against the training space available. Is there enough room?

(3) Prepare a full written description of the training population including age, sex, education, work experience and the like. If it is not possible to do this prior to training, then prepare an estimated description of the population. (Note: Training programs may fail if they are geared above or below the experience, educational level or sophistication of the trainees.)

(4) Obtain and record background information on the instructors who will conduct the course.

(5) Analyze the training program and materials, including

the instructor's guide, to prepare a short list of behaviors you would expect to *observe* for both trainees and instructors. (Note: Oftentimes training programs fail when instructors fail to use materials or use them in a manner contrary to their intended use.)

(6) After conducting the above analyses, make a list of other things that you think might or could go wrong and thus impair the quality of the training (e.g., "The training may be too short in duration". "I think the trainees don't have enough practice time to be able to reach the criterion.")

(7) Keep an accurate record of the above to be used as a reference point when process and outcome evaluation stages are being conducted.

4. *Training Materials Selection*

The selection of existing training materials (as opposed to subcontracting the development of them) is an important activity. The quality of training is often governed by the quality of the materials and activities presented to trainees. To insure the selection of quality training materials, do the following steps:

(1) Specify: training population - who is to be trained?

length of training in hours - how long?

general goals of training - what do you want from training?

type of training - what kind of experience do you want for trainees?

cost - how much can you pay? how much can trainee pay?

(2) Define what you mean by training:

Do you inte l your training to:	yes	no
1. present information	___	___
2. develop awareness	___	___
3. communicate theory/knowledge	___	___
4. promote identification and application of principles	___	___
5. develop an orientation	___	___
6. change attitudes	___	___
7. produce skilled behavior	___	___

(3) Examine and judge the goals and objectives of the training package in terms of:

	acceptable to you	unacceptable to you
1. correspondence with your objectives	_____	_____
2. course length	_____	_____
3. relevance to your needs	_____	_____
4. scope of objectives	_____	_____
5. behavioral quality of objectives	_____	_____
6. cost per trainee	_____	_____

(4) Examine and judge the experiences provided for trainees:

	yes	no
1. Are they related to your objectives?	___	___
2. Do they require active participation of trainees?	___	___
3. Are experiences varied?	___	___
4. Are they likely to be favorably received by trainees?	___	___

(5) Examine and judge built-in evaluation devices:

1. Are trainees made explicitly aware of outcomes?	___	___
2. Are trainees given opportunity to evaluate their own knowledge of skill acquisition?	___	___
3. Are trainees provided feedback on their experience?	___	___
4. Do trainees have opportunity to rate effectiveness of training?	___	___

(6) Examine and judge background information on training program:

	yes	no
1. Do developers have adequate qualifications?	___	___
2. Is instructor's role clearly specified?	___	___
3. Is previous evaluation data presented?	___	___

(7) Summarize your judgments and decide:

1. Use program as is.
2. Seek modifications in the program to make it more congruent with your needs.
3. Judge it as inadequate for your needs.

5. *Evaluation Design and Instrumentation*

This activity is a critical part of the training evaluation mode, input stage. In all probability, this should be a major responsibility of the evaluation subcontractor - unless you have in-house capability. The steps to be followed closely parallel the guidelines for subcontracting evaluation, presented in Section IV.

(1) Specify the type of evaluation design to be used (e.g., pre-post test, control group design; post test only, control group design).

(2) (a) List the evaluation instruments to be used from commercial sources and/or

(b) State the type of evaluation instrument to be developed (e.g., multiple choice items; mini-case study; forced choice items).

(3) Specify the type of analyses to be performed.

(4) Specify the form in which the data are to be reported (e.g., Decision Information Summary).

Notes:

A. The development of evaluation items is both a demanding and a creative task. To gain some idea of the type of items that can be developed, a perusal of the following sources is recommended:

Bloom, B. S., et al. *Handbook on formative and summative evaluation of student learning.* New York: McGraw-Hill, 1971.

Bloom, B. S., et al. *Taxonomy of educational objectives: cognitive domain.* New York: David McKay Co., Inc., 1956.

Gronlund, N. E. *Constructing achievement tests.* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968.

Krathwohl, D. R., et al. *Taxonomy of educational objectives: affective domain.* New York: David McKay Co., Inc., 1964.

Thorndike, R. L. (Ed.) *Educational measurement.* (2nd Ed.) Washington, D.C.: American Council on Education, 1971.

B. Testing as part of a training program is generally perceived to be a threat by most adults. Usually the threat arises from fear of being rated, or fear of not performing well on the test. This threat factor can be greatly minimized by using the following techniques (though grumbling should still be expected):

(1) Stress the fact that information is being gathered to evaluate the effectiveness of the course - not to rate or grade the trainees.

(2) Assure anonymity of response by not requiring names on papers; if more than one administration is required, use a coding system. If coding is used have one of the trainees keep the master code sheet and destroy it at the end of training.

(3) Humor the trainees through the "test"; they will usually take it in stride if presented properly.

C. The threat of testing can also be minimized by developing test items that can be used as part of instructional sequences. For example, case studies could be presented with multiple choice answers. The trainee

responses could be tabulated and recorded orally, providing group data for the evaluator, and then the item could be used for discussion purposes. Gathering data of this type would be helpful in providing feedback to instructors and developers; exercises of this type could also prepare the trainee for end-of-course testing by giving him a chance to practice on items similar to the criterion items.

6. *Consistency Evaluation*

This evaluation activity is conducted by an observer when training is in operation. The purpose is to ascertain that the "paper plans" and the actual operation of training are the same. Lack of correspondence of training in action with information gathered in the training evaluation input stage will likely invalidate the entire evaluation (as well as training) process. The following steps should be followed by the observer:

(1) Place yourself unobtrusively, yet strategically, in the training environment where you can view the trainees and the instructor.

(2) Place open in front of you for easy reference copies of the objectives for training, instructor's manual, trainee's material, and contextual assessment information (from Training Evaluation Input No. 3).

(3) During the instruction, make extensive notes on the activities being conducted, actions taken by the instructor, responses given by the trainees. *Do not make inferences at this point*; merely keep a running record of the action taking place.

(4) During the first long break (usually the lunch hour) do the following:

(a) Review your notes and *summarize* the types of learning *activities* engaged in by trainees and instructors - do not impose judgments at this point.

(b) Review your notes and summarize the most frequently *observed* behaviors of both trainees and instructors.

(c) Review all the contextual assessment information gathered prior to training.

(d) Now make tentative judgments about the consistency of your observations with the objectives, pre-specified training activities, and pre-specified role expectations (behaviors) for trainees and instructors.

(5) If you judge your observations to be consistent with the pre-specified information, the proceed to Step 7 of the Training Evaluation Process Stage.

(6) If you judge that your observations are inconsistent with the pre-specified information, then do some or all of the following:

(a) Select no more than two of the most serious discrepancies you have observed.

(b) Take extensive, descriptive notes of behaviors, (actions, reactions) during the next session including as much actual record of verbal behavior as possible.

(c) Generate hypotheses as to why the lack of correspondence exists and gather information as in (6)(b) to verify or negate your hypotheses.

(d) Talk informally with trainees about the training activity and ask questions - what do you enjoy most about the training? What ways do you think the training might be improved?

(e) Talk with the instructor and ask him questions about the trainee group, the way things are going, the extent to which his expectations for the course are being fulfilled.

(f) If during informal discussion with the instructor he does not refer to the discrepancies that you have observed, bring the point up in discussion. Present your information diplomatically and ask for his interpretation of your information. State the assumption that *you* may have erred in your observations and ask him to straighten *you* out. To do otherwise will guarantee that you will become a *persona non grata* and cut off the instructor as a source of information.

(7) Summarize your findings from all of the above and file for the record.

7. Behavioral Observation and Feedback

Behavioral observation and feedback can be formal, informal or both. Formal observation usually requires the use of valid observation system with trained observers/recorders. Informal observation assumes that a program is being implemented as planned (no serious discrepancies identified); its purpose is to provide confirmatory feedback or corrective feedback to instructors, trainees or program developers. Unobtrusively gathered information may also provide valuable data for program improvement. Steps to be employed are as follows:

(1) If there is a compelling reason to use formal observation systems and trained observers, then -

decide if you want

(a) a trainee-instructor interaction system or

(b) a task observation rating scale.

(2) If a behavioral interaction system is required then consult the following source and select the most relevant system; train personnel to use it:

Simon, A. & Boyer, E. G. *Mirrors for behavior II, an anthology of observation instruments.* Philadelphia: Research for Better Schools, 1970.

(3) Use some of the informal information procedures suggested under consistency evaluation.

(4) Develop behavioral task list to use as a means of recording the frequency with which behaviors are observed. (See Job Performance Measurement mode for specific examples of job rating tasks.)

8. Training Outcome - Performance

Outcomes of training presumably reflect the objectives stated for training listed in the "Input Stage". The four levels of outcomes specified in the DOES chart may occur in any one training program. Where skill training is involved, this type of evaluation is the most important.

Steps for implementing the performance outcomes follow:

(1) Confirm or deny the Input evaluation activity that the Behavioral outcomes and instruments specified are still relevant performance outcomes following your observation of training.

(2) Confirm the Process stage evaluation activities that:

(a) training was indeed directed toward the criterion performance objectives contained in the evaluation instrument;

(b) trainees were actually given the opportunity to practice the types of performance behavior required by the evaluation instruments.

(Note: If you are unable to confirm the above, the outcome evaluation will probably be invalid.)

(3) Review the conditions and directions specified for test administration to insure that it is being properly administered. (Failure to insure this may invalidate results.)

(4) Collect, analyze and report the data; formulate decisions.

9. *Training Outcome - Knowledge*

Knowledge outcomes are legitimate training outcomes, particularly when terminology or concepts are required to communicate within the field. The nature of training may require that the trainees deal with abstract problems as opposed to real world problems.

Steps for knowledge outcomes:

(1) Check out behavioral outcomes, training materials and evaluation instruments to ascertain what the knowledge outcomes are, how they are to be presented and tested.

(2) Review key terms in behavioral specification - (e.g., understand, paraphrase, apply, and compare them *carefully* with the test items).

(3) Review Bloom's *Taxonomy of educational objectives: cognitive domain* (cited elsewhere) to verify the level of cognitive functioning as being appropriate to the key words used in the behavioral objectives; also, check the model test items presented by Bloom against the items to be used.

(4) Review notes and information from process evaluation activities to insure that terms, concepts, principles, have actually been presented.

(5) If time permits and a subject is willing, go over test items with the subject to gain an understanding of how items were interpreted and the reasoning process used to arrive at an answer.

10. Training Outcome - Awareness

Some "training" courses may have as their only objective to increase the level of awareness of the trainee or provide him with information. These courses are usually of short duration and if they are judged to be worthy of evaluation, then these steps should be followed:

(1) Review the input stage information to verify the type and level of awareness desired as a function of training as expressed in: needs assessment, behavioral outcomes, evaluation instrumentation.

(2) Review process stage information to confirm the consistency among goals, objectives, training activities and evaluation items.

(3) Observe "test" administration to insure conformity with prearranged conditions.

(4) Gather unobtrusive information, (e.g., number and type of comments about training).

(5) Process and report data.

11. Training Outcomes - Affective

Often equally important to performance and knowledge outcomes of a training course are the affective "feelings" it produces in trainees. If a course is designed to make trainees become more confident in their job performance, as well as more competent, then it is important to attempt to measure these outcomes. The following steps pertain:

(1) Review the affective behavioral outcomes for the training course.

(2) Review the affective evaluation instruments or items to determine congruence with objectives.

(3) Review process stage data for any evidence of direct or unobtrusive information related to affective outcomes.

(4) Conduct interviews with selected trainees and try to gather, directly or indirectly, information related to affective outcomes.

(5) Review data from test instruments.

Note:

Interviews may result in unreliable information. Trainees may tend to tell you what they think you want to hear. If they have been released from their normal work load to attend the course, they are likely to feel positively about it - unless they have been soundly turned off. Why should they "knock" a good thing? Consequently the evaluator may have to employ more "creative ways" of gathering this data than through interviews or questionnaires.

Part B: Job Performance Evaluation

	Activities
input stage	*1. Job Analysis and Description*
	2. Task Inventory
	3. Task Analysis
	4. Feedback of Task Analysis Information to Training Development
	5. Development of Performance Measures
	6. Specification of Performance Criteria
	7. Observer Selection and Training
process stage	*8. Consistency Evaluation*
	9. Observation of Performance and Feedback
outcome stage	*10. Training Level Outcome - Performance*
	11. Training Level Outcome - Affective
	12. Formative Evaluation of Performance Measuring Instruments
	13. Recommendations for Decisions

1. Job Analysis and Description

Job analysis and description involves the identification of performance requirements for an occupation. The steps are:

(1) Collect and review sources of job performance data.

(a) Organizational charts

(b) Dictionary of Occupational Titles (U.S. Department of Labor, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.)

(c) Job performance literature, e.g., handbooks, manuals, bulletins

(d) Interviews

(e) Questionnaires

(f) Materials and equipment used in performing work

(g) Observation of performance

(h) Performance of the job by the analyst

(2) For the particular job under consideration set down a list of tentative descriptions for that job.

2. *Task Inventory*

The task inventory is a procedure which identifies specific tasks performed on the job for each job category. The six steps for task inventory follow:

(1) Review job descriptions, training packages, catalogs and other standard references.

(2) Survey of supervisors and other job experts (interviews and/or questionnaires).

(3) Surveys of job incumbents (interviews and/or questionnaires).

(4) Behavioral observations.

(5) Performance of tasks by the analyst or evaluator.

(6) Formulation of behavior-referenced task statements according to the following criteria:

(a) Use *action* verbs (e.g., "troubleshoots refrigerator thermostatic control", *not* "refrigeration maintenance").

(b) Use clear, unambiguous language (e.g., "repairs leaky gaskets in faucets", *not* "maintains plumbing").

(c) Use "time rateable" statements to indicate a clear idea of how much time it takes to perform a task.

(d) Task statements should, insofar as possible, be mutually exclusive.

(e) The list of task statements should be reasonably exhaustive for the particular job.

(f) Tasks should be realistic (Morsh & Archer, September 1967).

3. *Task Analysis*

The procedure of selecting and categorizing tasks to form the basis for training objectives and job performance measurement is called task analysis. Steps which implement this procedure are:

(1) From task inventory prepare a rating instrument that ascertains for each task its
   (a) realism
   (b) time rating
   (c) importance
   (d) source of training.

(2) Specify criteria for selection of task items on the basis of ratings listed in Step 1.

(3) (Pilot test). Administer task inventory instrument to panel of experts (e.g., first-line supervisory and a sample of job incumbents. Call for additional task items to be listed.

(4) Perform statistical analysis of task ratings to select tacks meeting criteria specified in Step 2.

(5) On the basis of Steps 3 and 4 revise task inventory and administer to large sample of job incumbents.

(6) Repeat Step 4 and revise instrument if necessary.

(7) Categorize task into functional groupings based on common behavioral elements; e.g., communication, troubleshooting, repair, supervisory tasks, etc.

4. Feedback of Task Analysis Information to Training Development

Task analysis information is fed back into development of training so that desired behavioral outcomes of training can be specified. The steps are:

(1) Review commonality among tasks and functional groupings to facilitate development and organization of course materials, and to

(2) Translate into training objectives.

5. *Development of Performance Measures*

Development of performance measures, i.e., performance tests, performance rating scales, and critical incident logs is the procedure which provides task-derived instruments for measuring *transfer of training to job performance.*

(1) Where feasible, on the basis of cost, availability of equipment, and availability of "trainees" time, develop performance tests within these functional groupings of tasks (biggest payoff comes from being able to represent large task-groupings with a single, generalizeable performance test - probably never achievable).

Note: Make the items in the performance test correspond to the tasks performed on the job (Fredrickson, 1962; Wilson, 1953, 1962).

(2) Where development of performance tests is not feasible, develop a performance check-list or performance rating scale based on task items determined from task analysis. This is done to make the rating methodology task-specific. The scale should tap individual competency and proficiency in performance of tasks and lead to diagnosis of individual training needs for both formal course training and on-the-job training (Wilson, 1962).

6. *Specification of Performance Criteria*

Performance criteria must be specified to provide standards for evaluating performance measures. To do this:

(1) Have panel of experts rank order or assign weights to performance measurement items.

(2) Have panel of experts establish cut-off scores for each item as criteria of successful training.

7. Observer Selection and Training

To insure that observers have knowledge of task performance skills and can use the performance measuring instrument, follow these steps:

(1) Select observers who have experience in performing incumbents' tasks and who have opportunities to observe incumbents at work (e.g., first-line supervisors).

(2) Instruct and train observers in use of performance measuring instruments. Give observers skill practice with instrument under supervision of evaluator.

8. Consistency Evaluation

Consistency evaluation helps determine the degree of cong[illegible]between measurable tasks and training objectives and experiences. (This procedure is analogous to Training Process Evaluation Procedure No. 6). The steps are:

(1) Review curriculum objectives and lesson plans to ascertain whether specific job tasks are included in training program.

(2) Observe instructional process to ascertain inclusion of specific job tasks.

(3) Interview trainees to determine whether instruction was received on specific job tasks.

8. *Observation of Performance and Feedback*

This procedure provides developers and evaluators with information on the effectiveness of training relative to specific tasks as performed (analogous to Training Process Evaluation Procedure No. 7). The steps are:

(1) *Prior to training*, administer performance measuring instruments to sample of incumbents.

(2) *Subsequent to training*, administer performance measuring instrument to sample of trained and untrained incumbents.

10. Training Level Outcome - Performance

To determine the extent of transfer of training to job performance (analogous to Training Process Evaluation No. 8):

(1) Analyze results of pre- and post-administration of performance measuring instrument to determine the transfer effect of training.

11. Training Level Outcome - Affective

This procedure is to determine the extent to which training has increased confidence of trainees to perform their job. Steps to be followed:

(1) Analyze pre- and post-administration of confidence questionnaire.

(2) Interview job incumbents before and after training.

12. Formative Evaluation of Performance Measuring Instruments

This evaluation procedure makes possible the improvement of measuring instruments. Follow these steps:

(1) Develop design for evaluation of performance measuring instruments, including standards for the instrument.

(2) Conduct formative evaluation of performance measurement methods (performance tests, performance checklists, performance rating scales, etc.).

(3) Revision, evaluation, revision cycle until standard is met.

(4) Determine utility of performance measuring instruments as criteria for validating training outcome measures.

(5) Retain performance instruments that demonstrate acceptable utility as criteria for training.

(6) Use performance measures to produce decision information about training activity.

13. *Recommendations for Decisions*

This evaluation procedure involves providing feedback of job performance information to training developers and sponsors to improve quality of training services as well as feedback to personnel departments for assessment of specific training needs for particular individuals.

(1) Apply criteria in Procedure 6 to completion of Decision Information Summary for evaluation of training activity in job performance mode. Feedback to training developers, personnel and training supervisors.

(2) Feedback to personnel and training supervisors information assessing units and individual needs for training.

Part C: Community Impact Observation

Activities

input stage	1.	*Community Needs Assessment*
	2.	*Community Indicator Identification and Selection*
	3.	*Impact Analysis Design*
process stage	4.	*Monitoring*
	5.	*Unobtrusive Evaluation*
outcome stage	6.	*Evaluation of Trends*
	7.	*Survey Evaluation*

1. Community Needs Assessment

In order to identify community needs, relevant community agencies inside and outside of government must be contacted for information. A need is defined as a discrepancy between the current and desired state of affairs; community needs, then, relate to the discrepancy between the "quality of life" as it is as it should be in a given community. To conduct a community needs assessment, the following steps are recommended:

(1) Develop or subcontract the development of a survey instrument (questionnaire) to gather information on community needs.

(2) Identify relevant social and civic organizations and governmental units to be used as sources of data in conducting the needs assessment, administer survey instrument to each agency.

(3) Develop a sampling plan for gathering information from randomly selected citizens; administer survey instrument or conduct structured interviews.

(4) Develop a plan for setting priorities among the needs identified by the various groups to whom the survey instrument is administered. (You may consider use of the Delphi Technique in achieving this priority setting, See Cook, D. S.).

(5) Set priorities among the various needs identified.

(6) When priorities have been established, review the list to identify the type and number of needs that you judge can be satisfied by training of municipal employees.

(7) Review the list generated by the above process and for each need:

(a) Estimate the cost of training required to meet the need (e.g., dollar cost per trainee).

(b) Estimate the penalty of ignoring the need (e.g., what is likely to happen if you ignore it).

(c) Classify training activities on a cost-benefit continuum (e.g., the cost of training street maintenance personnel is low, the direct community benefits are high, the cost of training supervisors is high, the short range direct community benefit is low).

(8) Convene a panel of consultants knowledgeable in municipal affairs and ask them to critique your needs assessment.

(9) Revise community needs assessment and publish. (Note: A needs assessment is *never* complete. It must constantly be updated to reflect emerging conditions.)

2. *Community Indicator Identification and Selection*

The problem of evaluating community impact can probably best be handled through the gathering and processing of natural data on community life. In this respect, it is important that accurate records be maintained and made accessible. To identify and select indicators:

(1) Ask all municipal departments, community social, civic and recreational agencies (and state agencies where applicable) to provide a list of the type of records they keep.

(2) Ask for samples of the records kept.

(3) Compile a list of the various types of data available from each of the agencies and classify each type as unrelated or related in some way to a community need.

(4) Re-examine the list of data types and classify them as being directly related to a need identified in the community needs assessment. (Note: Citizen complaints may provide the best indicators of the quality of life in a community. While indirect, albeit negative indicators, citizen complaints are likely to bear a high degree of relationship to needs identified.)

(5) Decide on a list of indicators for which accurate data will be kept as a means of evaluating impact.

(6) Institute procedures, where necessary, to standardize the format of data collection and presentation so that later analysis is made easier. (Note: See appendix in the Technical Report to view the public service system developed by Mayor Hubbard of Dearborn, Michigan.)

3. *Impact Analysis Design*

This activity of the Input Stage requires a technical expert in research/evaluation design. The activity involves the following steps:

(1) Review the information gathered in previous input stage activities; refine the research/evaluation questions.

(2) Specify the data to be collected, when it is to be collected, and the method/conditions of collection.

(3) Specify the analysis and reporting procedures to be employed.

4. *Monitoring*

The purpose of this activity is to insure that data collection procedures are being carried out as planned. The following activities are included:

(1) Review the information from *all sources* in the Community Impact Observation Input Stage.

(2) Review the data as they come in to insure:

(a) that data are being reported accurately and in useful form;

(b) that there are no missing data;

(c) that there is conformity to prespecified data collection decisions;

(d) that "trouble" is not brewing.

(3) Review data to see if trends are developing. If they are not developing you may want to question *your* assumptions, procedures and hypothesize why the data are as they are. (Note: Impact evaluation is a very new field, fraught with conceptual and methodological problems - don't except too much!)

5. *Unobtrusive Evaluation*

Some of the most powerful data on community impact as a function of training may come from unrelated sources. To remain alert to these potential sources of influence we recommend the following steps:

(1) Personnel in government (sponsoring) agencies, trainees, evaluators should brainstorm potential sources of data (as a source for brainstorming techniques you may wish to use Parnes, S. *Creative Behavior Workbook.* New York: Charles Scribners, 1967.

(2) Read Webb, E. J., et al. *Unobtrusive measure: non-reactive research in the social sciences.* Chicago: Rand McNally, 1966.

(3) Analyze the information gathered from Activities 1 and 2 in this section and narrow the range of choice.

(4) Based on the above, decide if it is feasible to collect some unobtrusive data; if so develop and implement a design.

6. *Evaluation of Trends*

Analyses of naturalistic data on community life (e.g., police records, unemployment, service delivery records) provide the basis for evaluation of trends. It should be noted that it may take a year or more to collect and analyze data for this type of evaluation. To be useful, naturalistic data should be carefully recorded and easily retrievable. Evaluation of trends requires the following steps:

(1) Review all information from Community Impact Observation Input and Process activities to "posture" yourself for the evaluation.

(2) Pay particular attention, in your review, to the quality of data collected during the process stage; are they "fine enough" to detect differences (e.g., are data recorded in workable units of time sufficient to detect shifts in frequency or response time?).

(3) Look for some measurable attributes of the effect of training in your data (e.g., reduction of mean down time of machinery, reduction in number of complaints about police, reduction in mean repair time required to fill pot holes in city streets).

(4) Reanalyze the research/evaluation question and design in the input stage and question its adequacy with respect to the quality and quantity of the data you have. Redesign the analyses if the conditions of the data warrant

it. Be prepared to abandon data if they shed no light on the questions of interest.

(5) If there appear to be "effects" in the data that are unaccounted for by your questions or analyses:

(a) generate new hypotheses for the occurence of changes detected;

(b) design and perform sequential analyses to account for the data.

(6) Look for patterns in the data as potential assignable "causes" for the observed trends in the data.

(7) Continue the evaluation of trends until you are satisfied that you are:

(a) asking the "right questions";

(b) getting reasonable, economical answers;

(c) getting "good data"; achieving stable change;

(d) detecting assignable causes that lead to the generation of new training programs.

7. *Survey Evaluation*

There are times when well designed questionnaires and well conducted interviews are highly desirable forms of gathering data on community impact. Deficiencies in these types of data collection are treated in the position paper on Community Impact Evaluation. If you decide to use questionnaires/interviews, do the following:

(1) Review the information collected from the Input Stage and Process Stage:
   (a) pay special attention to the community indicators identification;
   (b) review the process stage data (where applicable).

(2) Review *all* evaluative data from all stages of both the Training Evaluation and Job Performance Measurement:
   (a) be sure you know what the *objectives* of training were and what the outcomes of training evaluation were;
   (b) review the Job Performance Measurement information from all three stages.

(3) Decide on which form (questionnaire/interview) you will use and what the *focus* will be.

(4) If you decide on a questionnaire, use the following steps:
   (a) make a clear, concise statement of the information you are seeking;

(b) decide on the type of questionnaire you will use (e.g., open-ended, forced response);

(c) develop a first draft of the questionnaire;

(d) re-examine the questions with reference to Items 1-3 in this general category;

(e) pre-test the questionnaire on a sample of the population;

(f) revise based on pre-test;

(g) prepare administration procedures for the questionnaire.

Good sources for help in questionnaire construction include the following:

Kornhauser, A. & Sheatsley, P. B. Appendix C. Questionnaire Construction and Interview Procedure, in Selltiz, C., et al. *Research Methods in Social Relations*. New York: Holt, Rinehart & Winston, 1959.

Oppenheim, A. H. *Questionnaire Design and Attitude Measurement*. New York: Basic Books, 1966.

(5) If you decide to use an interview procedure, follow the same steps in construction as presented in Item 4. In addition to the reference sources mentioned above, Chapter 7 in Selltiz, 1959, is recommended for reading (Chapter 7, Data Collection II: Questionnaires and Interviews).

A note on community impact evaluation:

Impact evaluation measures have, for the most part, been developed for projects or programs which

can define a "closed" target population as in military units or business institutions. In publicly administered programs, however, administrators do not have direct access to impact information. This situation requires the evaluator to rely on "natural process records" (routine data collected for another purpose: e.g., city complaint files) for possible indicators of impact of training. In such cases, *the evaluator must have a working knowledge of community and training objectives as derived from Needs Assessment.* Using these objectives as a yardstick, he can measure community impact against such natural process data as can be obtained.

Although a community needs assessment can focus on specifically observable phenomena, it is important to understand that "social indicators" offer some considerations for decision-makers. Henriot (1972) suggests that:

> *"social indicators are quantitative data that serve as measures of socially important conditions of society.* These indicators may measure both 'objective' conditions of society and persons (e.g., health, education, crime, mobility, etc.) and 'subjective' perceptions of life experiences (e.g., satisfactions, aspirations, alienation, etc.) (p. 3)."

More importantly, however, it is pointed out that social indicators "...are basically a matter of values, of interest, of policies - hence, of politics (Henriot, p. 5)." The basis for this statement is provided by the following points:

> "1. *The concern for 'quality of life' is a highly political concern; hence measurement of the quality of life (a practical objective of social indicators work) has inevitable political implications* (p.5).
>
> 2. *The commitment to social indicators work springs from an identifiable political position* (pp. 6-7).
>
> 3. *The generation and utilization of social indicators takes place in a thoroughly political environment* (p. 7)."

And it is concluded that "It is simply not possible - or desirable - to isolate the social indicators task from political influences (p. 8)."

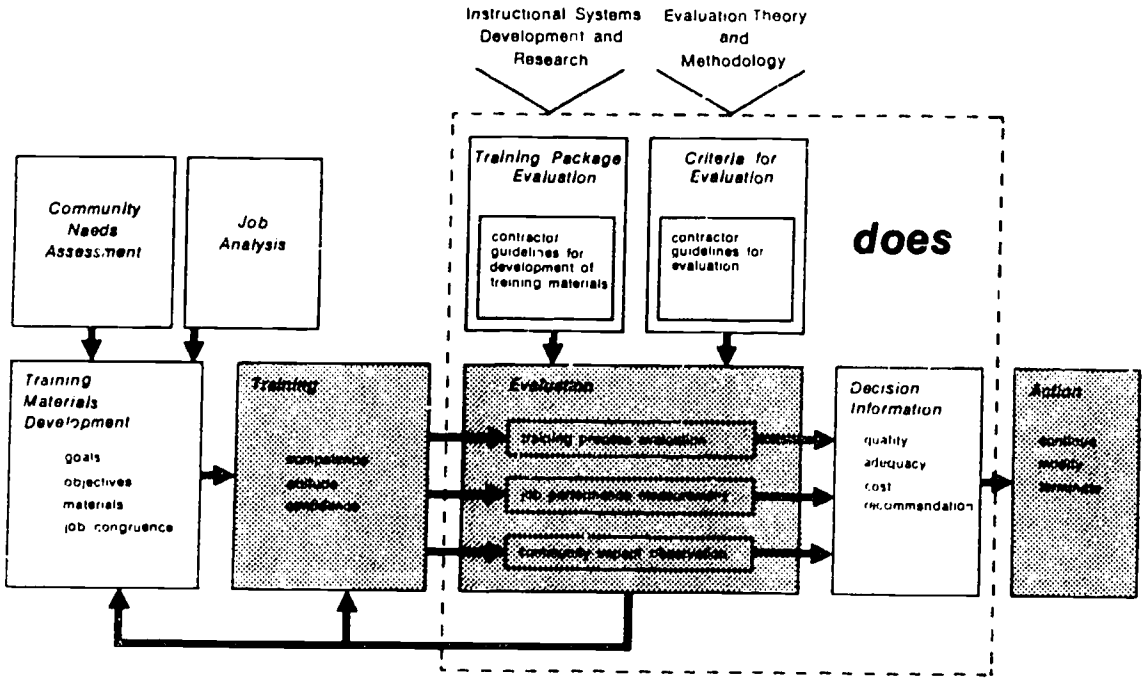


Figure 3. *Supporting Components* of DOES

SECTION IV

SUPPORTING COMPONENTS

The activities which operationalize DOES have been detailed in the preceding section. This section presents important *supportive procedures* as follows:

1. *Recommendations for Search and Analysis Procedures*
2. *How to State Goals and Objectives for Training*
3. *Procedures for Securing RFP's for Training Materials Development*
4. *How to Subcontract Evaluation Studies*
5. *A Guide for Non-Evaluators: How to Judge the Quality of an Evaluation Study*
6. *How to Use the DOES Reporting System*

1. Recommendations for Search and Analysis Procedures

(1) Ideally, the first stage of an application-oriented search and analysis effort should include a search for materials in the immediate community. These materials will provide a basis for general reading in the subject area. Frequently, community agencies are able to offer background information and help place otherwise isolated data into context.

(2) The second stage is to establish analysis criteria of acceptable information or a general outline based on the initial collection of material. This should include not only information from the immediate community, but also examination of such general reference sources as encyclopedias in relevant fields, annual reviews of literature, and so forth. If an outline is used, it should be broad enough to absorb new material and data which are collected at a later date.

(3) The next stage is to search for material within specifically defined areas of inquiry (based on the outline/criteria established). Information should be collected from the following sources:

(a) interviews and site visits (first within the immediate area and then elsewhere);

(b) computer searches for literature (in some fields, basic research information is indexed in machine-readable form and stored on computer tapes);

(c) key journals should be searched individually, issue by issue, for at least the last five years;

(d) bibliographies and reference information from journal articles should be continually searched and recorded;

(e) microfiche should be ordered when possible, since it reduces the purchase price of documents considerably;

(f) information should be continuously solicited through correspondence, since much of the most recent information is not obtainable in city and university library systems;

(g) books covering the general area should be searched for specific information which satisfies analysis criteria or outline information needs;

(h) specialized reference sources such as *Psychological Abstracts* should be systematically searched.

(4) As material arrives, it should be handled in the following manner:

(a) All material should be put in some presentable form and photocopied. If abstracts or other information taking less than a full page are collected, they should be cut and pasted on a sheet of full typing paper. The originals can then be filed alphabetically. From this point on, only the copies are handled, the originals are now in their final files.

(b) Reference notecards in American Psychological Association form should be filed in a file box in alphabetical order. Copies of these cards should be attached to each copy of reference material. It should be emphasized that complete

reference information must be collected when the original reference is first retrieved.

(c) The reference materials (copies) should be categorized according to the established outline/criteria as they are collected.

(d) The reference material should be regularly distributed to individuals requesting information for evaluation and categorization.

(e) Each reference card should be marked stating the category in which the material has been placed.

(f) A method for the organization of information:

(1) Underline key passages of material or abstract the material.

(2) In order to make these abstracts or underlining available to all members of a project (to cut down on their reading time and to facilitate any writing task) a master outline should be gradually developed by placing these passages in the appropriate places within the outline or under the criteria headings which they support.

(3) In order to keep accurate reference information, it is necessary to include in the margins of such passages of the master outline form, the author's name, year of publication, the page number of the statement, and the first words of the title (if the author has more than one publication in that

particular year).

(4) Each piece of reference information should be placed on a separate page with the appropriate reference information included. These should be arranged in the order of the outline and copied. The originals should be filed and the copies bound.

(g) A card catalogue for references is recommended:

(1) It provides a convenient means by which to check material out to a project member by writing the project member's name on the back of the card along with the date. (When the material is returned and filed, the name is crossed off.)

(2) It is a helpful aid in typing the final bibliography and reference list of any writing effort. Since the cards are already in the correct form and alphabetically arranged, a typist can compile a reference list by merely typing cards in the order and form in which they appear.

(h) The copies of the cards which are attached to the copies of the reference materials are useful, in that a project member can cite his source more readily. This avoids much reference confusion.

(5) Ther should be regular staff meetings to reevaluate the established criteria or revise and make additions to the outline.

(6) The final product of search and analysis leading to some form of written

material should consist of the following:

(a) a file of the original references arranged alphabetically by author;

(b) a file box of reference cards, written in the final form, also stating the particular category under which copies of the material have been categorized and filed. These cards should be arranged alphabetically.

(c) All copies of material, filed according to particular established categories, or cut and pasted, or underlined and inserted in the outline form (these should then be bound into a series of volumes and paginated for easy reference).

2. *How to State Goals and Objectives for Training*

(1) Goals:

The goals of training should be derived from needs assessment data and to some degree, job analyses information. Goals are statements related to the area for which training activity is to be developed. The best goal statements are those which specify an observable outcome, the conditions under which this outcome is to be observed, and a standard against which the observable outcome may be compared. The following is an example of a good goal statement:

> "Given a six-month period (after training) the number of complaints about electrical service will be 50% of the number of complaints registered in the previous six-month period."

Notice that a goal statement indicates only *what* is to be accomplished and not *how* it is to be accomplished. A "six-month period" is the condition, the "number of complaints" is the observable outcome, and "50% of the number of complaints previously registered" is the standard. The area of training is electrical service. The sequence of specifying training goals, therefore, is:

(a) identify and specify an area of training;

(b) specify an observable outcome;

(c) specify the conditions under which this outcome is to be observed;

(d) specify a standard for evaluation.

Kaufman (1972) presents some alternatives to developing instructional goals. See also: Browder, L. H., Jr. *Emerging Patterns of Administrative Accountability*, Berkeley, California: McCutchan Publishing Corporation, 1971.

(2) Objectives:

There are two levels of objectives which may be stated with regard to training materials development (Gronlund, 1970): (1) An *instructional objective* is a general outcome of instruction, and (2) a *behavioral objective* is a specific behavioral outcome of training. The major difference between instructional objectives and behavioral objectives is one of order. For example, an instructional objective might be: the trainee will have an understanding of supervision principles. Behavioral objectives, then, will be specified as evidence of attaining the instructional objective. Thus, in this instance, behavioral objectives might be:

(a) Given a list of 30 statements, 80% of the trainees will be able to select correctly 80% of those statements which are basic principles of supervision;

(b) Given a list of 10 principles of supervision, 80% of the trainees will be able to write an adequate description of the supervisor's role for 8 of the principles.

Some of the sources which would be helpful in writing behavioral outcomes are:

Mager, R. F. & Beach, K. M., Jr. *Developing Vocational Instruction*. Palo Alto, California: Fearon Publishers, 1967.

Gronlund, N. E. *Stating Behavioral Objectives for Classroom Instruction*. New York: The Macmillian Company, 1970.

Gregg/McGraw-Hill & The Center for Vocational and Technical Education at The Ohio State University. *Writing Performance Goals: Strategy and Prototypes*. New York: Gregg Division/ McGraw-Hill Book Company.

3. Procedures for Securing RFP's for Training Materials Development

(1) Identify potential clients

(a) Survey colleges and universities to identify departments, agencies, service bureaus, and individuals that have expertise in your area of interest.

(b) Survey professional organizations related to the general field and identify a contact person.

(c) Survey related governmental agencies (state and federal) for names of individuals who could provide you with information.

(d) Survey *Commerce Business Daily* (U. S. Government publication) for best of grant awards to private research and development firms doing business in your area of interest.

(e) Collate and classify information gathered above for reference.

(2) Prepare a "Letter of Interest"

(a) Prepare a letter of interest for institutions listed above to ascertain their interest and availability to provide the services you are requesting.

(b) In the letter of interest provide the potential client with:

(1) brief statement of purpose of proposed project;

(2) scope and length of the proposed contract;

(3) general requirements and constraints imposed on client (e.g., likely amount of the contract; conditions that must be met).

(c) Ask client, if interested in project, to provide you with a brief prospectus of his organization including:

(1) actual work done related to contract area;

(2) list of personnel (w/qualifications) who are likely to be assigned to the project if contract is awarded.

(3) Screen Letters of Interest

(a) Individuals and organizations who have little or no experience in your area of interest should be screened out at this point.

(b) Some individuals and groups may not have proper qualifications for the work and should be screened out.

Note: The development of a response to an RFP is often a costly experience for both client and the sponsoring agency; careful screening at this stage can save all parties considerable money.

(c) Select those individuals and/or agencies who are most interested and best qualified to do your work.

(4) Prepare the RFP*

(a) Specify the training problem in one or two sentences.

(b) Provide information on the education, age and work background of the training population.

(c) State what you would like the trainee to be able to *do* at the end of training.

* Be sure that you include a statement indicating that you reserve the right to reject any or all bids.

(d) Specify the work task for the bidder.

(1) Specify the product you expect from the bidder and its characteristics (e.g., the final product will be a set of training materials and accompanying leader's guide designed to train first line supervisors in municipal government to deal with the handling of minority group grievances. The training experiences shall include provisions for role playing, problem solving, and small group discussion).

(2) Specify the delivery date for the product and the quantity of the final product.

(3) Specify the number of field test conditions and data reporting (where applicable).

(e) Specify the time schedule, budget format, and personnel qualifications:

(1) Require bidder to provide a time schedule and general plan for product development that include key check points for your monitoring purposes.

(2) Provide budget format you require of bidder.

(3) Require project staff summary with qualifications of key personnel.

(4) Specify date and time on which bids are to be received and opened.

HOW TO RATE CONTRACT PROPOSALS*

RFP re: Date:

Name of Contractor: Total Rating Points:

Items: Contractor Qualifications

1. Professional qualifications _____

   Project manager

   Technical support personnel

2. Experience in training area _____

   Prior development work

   Related work

Proposal Qualifications

1. Clarity of training objectives _____
2. Congruence of objectives with training goals _____
3. Congruence of training activities with your specifications _____
4. Diversification of training activities proposed _____
5. Acceptability of training activities to trainee population _____
6. Provisions for feedback to trainees _____

Budget and Time Schedule

1. Reasonableness of cost proposal _____
2. Acceptability of check points in the development process _____
3. Acceptability of other items _____

Total Rating _____

Rate each of the items as follows:

5 for quality that exceeds expectation
4 for highly acceptable quality
3 for acceptable quality
2 for marginally acceptable quality
1 for unacceptable quality

* Adapted from: Otto, C. P. & Glaser, R. O. *The Management of Training.* Reading, Mass.: Addison-Wesley, 1970.

Note: The rating scale is provided as a means to assist in the screening of the overall quality of proposals. In the final analysis, one should screen very carefully several times, those few proposals that are of highest quality. Final decisions for selection of a contractor, when there are several competing bids, may be such variables as personal compatibility of project officers, distance from sponsoring agency and the like.

4. How to Subcontract Evaluation Studies

(1) (a) Review the types of evaluation by mode in the DOES evaluation system chart.

(b) Examine Input Evaluation for each mode of evaluation.

(1) Have these evaluation activities been conducted?

(2) If not, decide whether you can perform these activities yourself or whether you should subcontract them.

(3) If the evaluation activities have been completed, are you satisfied with the results? Can you work with them?

(c) Make decisions about the types of evaluation studies you wish to have performed within each mode (e.g., Job Performance, Process Evaluation).

(2) Identify potential evaluation subcontractors.

(a) Survey colleges and universities to identify departments, agencies, service bureaus, and individuals that have expertise in evaluation.

(b) Survey professional organizations related to the general field and identify a contact person (e.g., American Educational Research Association, [illegible] Management Association, American Institutes for Research).

(c) Survey related governmental agencies (state and federal) for names of individuals who could provide you with potential bidders.

(d) Survey *Commerce Business Daily* (U. S. Government publica-

tion) for grant awards to private research and development firms who conduct evaluation studies.

(e) Collate and catalog information gathered above for ready reference.

(3) Prepare a "Letter of Interest" to send out.

(a) Prepare a letter of interest for institutions and individuals listed above to ascertain their interest and availability to provide the evaluation services you are requesting.

(b) In the letter of interest provide the potential client with:

(1) brief statement of purpose of the evaluation study;

(2) scope, length of the proposed contract, and expected dollars available;

(3) general requirements and constraints imposed on client (e.g., conditions that must be met).

(c) Ask client, if interested in project, to provide you with a brief prospectus of his organization including:

(1) actual samples of evaluation work done related to contract area;

(2) list of personnel (w/qualifications) who are likely to be assigned to the project if contract is awarded.

(4) Screen Letters of Interest

(a) Individuals and organizations who have little or no *experience* in your area of interest should be screened out at this point.

(b) Some individuals and groups may not have *proper qualifications* for the work and should be screened out.

Note: The development of a quality proposal response to an RFP is often a costly experience for both the client and the sponsoring agency; careful screening at this stage can save all parties considerable money.

(c) Select those individuals and/or agencies who are most interested and best qualified to do your work.

(5) Prepare the RFP

(a) Specify the evaluation problem in one or two sentences.

(b) Provide background information on the training population (e.g., age, educational background, work experience).

(c) State the type of evaluation you want conducted by mode and by type (e.g., training process and training outcome evaluation for X course).

(d) Provide evaluator with copy of the training materials to be used for instruction.

(e) Specify the work task for the bidder. (The following are samples.)

(1) Indicate the general type of evaluation items you want used.

(a) multiple choice items

(b) scalable items

(c) forced choice

(d) case problem, etc.

(see Exhibit Y for samples of evaluation items)

(2) Specify timetable for your review of items prior to use.

(3) Specify any pilot test requirements you may have.

(f) Specify time schedule, budget format, personnel qualifications.

(6) Send out RFP's.

(7) Review and rate proposals.

(8) Decide on subcontractor.

(9) Negotiate a contract based on proposal.

(10) Monitor evaluation study in process according to contract.

(11) Review final reports to determine compliance with original contract.

HOW TO RATE EVALUATION PROPOSALS*

RFP re: Date:

Name of Contractor: Total Rating Points:

Items: Contractor Qualifications

1. Professional qualifications _____

   Project manager

   Technical support personnel

2. Experience in evaluation _____

   Prior evaluation work

   Related research or development work

Proposal Qualifications

1. Clarity of evaluation procedures. _____
2. Congruence of evaluation study with training goals and objectives _____
3. Congruence of evaluation activities with your specifications _____
4. Acceptability of evaluation activities to trainee population _____
5. Provisions for evaluation feedback to trainees, instructors and sponsoring agency _____

Budget and Time Schedule

1. Reasonableness of cost proposal _____
2. Acceptability of check points in the evaluation process _____
3. Acceptability of other items _____

Total Rating _____

Rate each of the items as follows:

5 for quality that exceeds expectation
4 for highly acceptable quality
3 for acceptable quality
2 for marginally acceptable quality
1 for unacceptable quality

* Adapted from: Otto, C. P. & Glaser, R. O. *The Management of Training.* Reading, Mass.: Addison-Wesley, 1970.

Note: The rating scale is provided as a means to assist in the screening of the overall quality of proposals. In the final analysis, one should screen very carefully several times, those few proposals that are of highest quality. Final decisions for selection of a contractor, when there are several competing bids, may be such variables as personal compatibility of project officers, distance from sponsoring agency and the like.

5. A Guide for Non-Evaluators and How to Judge the Quality of an Evaluation Study

The following set of guidelines are designed for the non-evaluator who is required to judge the quality of subcontracted evaluation study. It is a belief held by the CATE project staff that a non-evaluator can indeed judge most aspects of the quality of an evaluation report. Many of the guidelines to be presented will be indirect indices of quality; nevertheless, they provide a good basis for judgment. In some cases the sponsoring agency may wish to hire another evaluator to audit the quality of an evaluation report.

JUDGMENTS TO BE MADE ABOUT AN EVALUATION REPORT

	Yes	No
(1) Is the report comprehensive; does it cover all aspects of training evaluation, job performance measurement, and community impact observation as you understand them?	____	____
(2) Is the report well written; can you understand it? (*Note*. A good evaluation report should be written in simple straightforward, non-technical language, that any reader could interpret. If the report is laden with heavy, technical language, that only a highly trained person could interpret, the study will, in all probability, be inadequate.)	____	____
(3) Are all the objectives for the study covered in the final report?	____	____

(4) Are the data credible to you? Do the results "square" with your prior experience? ___ ___

(*Note:* If not, the study may be inadequate.)

(5) Are the results of the study highly unusual? ___ ___

(*Note:* Given the state of the art in evaluation, the results should not be dramatically different from what you would expect.)

(6) Does the report make highly authoritarian statements? ___ ___

(*Note:* If very dogmatic statements are made throughout the report, be suspicious; the evaluator may be riding his own "hobby horse".)

(7) Is the report excessively negative? ___ ___

(*Note:* If the report is excessively negative, it may be that the evaluator is focusing on narrow aspects of the study and not treating it as comprehensively as it should be treated; or the evaluator's strong bias may be showing through.)

(8) To what extent are the values of the evaluator interspersed in data interpretation? ___ ___

(*Note:* To what extent does it appear that the evaluator made interpretations that go beyond the data which have been presented? Are there statements that appear to be unsupported by the information presented? If so, the study is probably inadequate.)

(9) Is the tone of the report scientific and objective in its presentation? ____ ____

(10) Are the technical, data presentation aspects of the report presented and discussed in language and a context that you can understand? ____ ____

(11) Is the discussion that follows data presentation understandable? ____ ____

(a) Does it assume that you have an extensive knowledge base or does it present that knowledge base to you so that you can understand the content of the report? ____ ____

(b) Does the evaluator *clearly label* his inferences and his recommendations? ____ ____

(12) Does the report meet the following criteria:

(a) Does it list all the objectives for the study? ____ ____

(b) Does it specify how each objective was measured? ____ ____

(c) Does it present the results for each objective? ____ ____

(d) Does it discuss the results for each objective comprehensively? ____ ____

(e) Does it summarize the findings of the study? ____ ____

(f) Are recommendations made and appropriately qualified? ____ ____

(13) Does the scope of the evaluation study appear to be consistent with the scope of the training effort, the job performance measurement or the community impact evaluation? ____ ____

Final Summary Statement

After reviewing the content of an evaluation report and checking each of the items above, tally the frequencies of "yes" and "no" responses. If you have a high percentage of "yes" responses in areas that are critical to you, then in all probability you have a high quality evaluation study. If your responses are predominantly "no", then you probably have an inadequate evaluation study. If the study is an important one, you may want to have an independent evaluator audit your findings or have a colleague do the same.

6. *How to Use the DOES Reporting System*

The vital link between evaluation and *action decisions* is a decision information or reporting system. In the parlance of communication theory, the reporting system constitutes the channel between the information system (the sender) and the decision system (the user). Information on the sending end must be partitioned, coded, transmitted, and displayed according to the *user's* requirements and constraints. Thus the user should be involved at the outset in the design of the reporting system to insure that the information transmitted and displayed is maximally compatible with his system requirements and constraints.

Through working with decision-makers and discussing their problems, the need for two distinct kinds of information has been recognized: technical information and decision information. *Technical* information is reported in the form of a technical report with an accompanying technical abstract that records procedures, data summaries and analyses, instruments and interpretations of results. *Decision* information is of quite a different kind. Decision information is the result of a translation of technical results into objective ratings of quality.

While questions of formating decision information have not yet been fully answered, tentative forms for reporting decision information have been developed as *Decision Information Summaries* (DIS). There are five formats for decision information. These are displayed in Figures 4 through 8. Evaluation in the training mode is partitioned into two formats: training materials evaluation and training process evaluation. There is one DIS

for job p[illegible]mance and one for community impact. Finally, there is a DIS for c[illegible] the results of multi-mode evaluation into a single format to provide comprehensive summary of the quality, costs, and recommendations for a specific training activity.

In filling out the DIS, the following general sequence of steps should be considered:

(1) Collect all relevant data (information).

(2) Specify evaluation standards (criteria) which are related to the DIS rating categories.

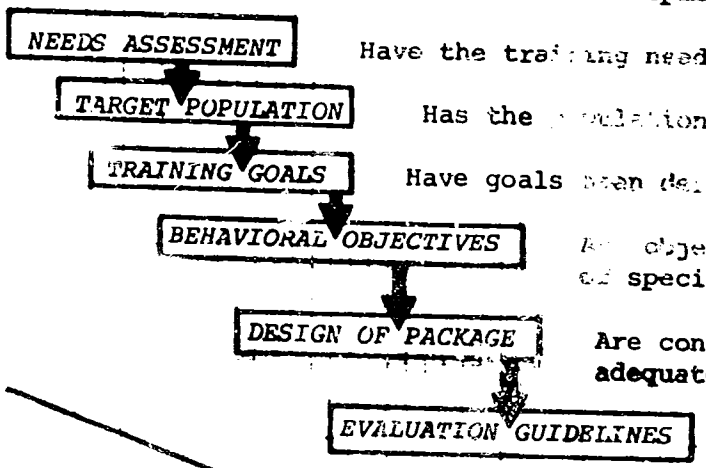
(3) Perform consistency evaluation.

(4) Relate data to evaluation standards.

(5) Enter results of evaluation into DIS.

FIGURE 4 DECISION INFORMATION SUMMARY: Training Materials Evaluation

"What do decision makers and training developers need to know about development of Training Materials?"



Have the training needs been identified and expressed?..... ____

Has the population of trainees for this program been specified? ... ____

Have goals been derived from needs assessment?..... ____

Are objectives derived from goals and stated in terms of specific behaviors?..... ____

Are content, format, organization and strategy adequate?..... ____

Application of detailed guidelines to evaluation of quality of training materials

OVERALL EVALUATION OF QUALITY OF TRAINING MATERIALS

1	2	3	4	5	6	7
Adequate			Marginal			Inadequate

Cost of training development including evaluation $____

Recommendation: Continue ____ Modify ____ Terminate ____ Program

FIGURE 5

DECISION INFORMATION SUMMARY: Training Process Evaluation

"What do decision makers and training developers need to know about the Training Process?"

TRAINING MATERIALS

Have adequate training materials been developed for the appropriate target population?..... ____

EXECUTION

Are the presentation of materials, length of training and training setting adequate?..... ____

LEARNING

Are the trainees adequately involved in the learning process? Is there adequate provision for skill practice and display of knowledge?..... ____

FEEDBACK

Are there adequate provisions for reinforcement of learning, including knowledge of results and self-evaluation?..... ____

EVALUATION GUIDELINES

Effectiveness of training process is related to trainees' competence and confidence in relation to goals and objectives of training.

OVERALL EVALUATION OF QUALITY OF TRAINING PROCESS

1	2	3	4	5	6	7
Adequate			Marginal			Inadequate

Cost of operating program (per student) $____

Cost of training process evaluation $____

Recommendation: Continue ____ Modify ____ Terminate ____ Program

FIGURE 6 **DECISION INFORMATION SUMMARY:** Job Performance Evaluation

"What decision makers and training developers need to know about the evaluation of Job Performance?"

JOB ANALYSIS — Has the trainee's job been adequately employed to derive the specific skills and knowledge required for performance on the job?..... ____

TRAINING REQUIREMENTS — Have the specific skills and knowledge required for the job been translated into training goals and behavioral objectives?..... ____

PERFORMANCE MEASURES — Are the indicators and measures for job performance congruent with the established goals and objectives of the training program?..... ____

OBSERVATION OF PERFORMANCE — Has the performance behavior referenced in training been sampled adequately on the job?..... ____

TRANSFER OF TRAINING — Did the training program result in positive transfer effects to job performance in terms of trainees' competence, confidence and attitudes? ____

EVALUATION GUIDELINES — Quality of training program is assessed in relation to its effects on improved job performance.

OVERALL EVALUATION OF QUALITY OF JOB PERFORMANCE

1	2	3	4	5	6	7
Adequate			Marginal			Inadequate

NO EVIDENCE ☐ Data limited or unavailable

Cost of job performance evaluation $____

Recommendation: Continue ____ Modify ____ Terminate ____ No recommendation possible ____

FIGURE 7

DECISION INFORMATION SUMMARY: Community Impact Evaluation

"What do decision makers need to know about the evaluation of Community Impact?"

NEEDS ASSESSMENT

Was a community needs assessment conducted? What was the origi of the community needs assessment? How was the needs assessment conducted?..... _____

COMMUNITY NEEDS

Does the training program arise out the community needs assessment? Whose needs are being met by the training program?..... _____

IMPACT INDICATORS

Are the indicators of community impact congruent with the training program and of reasonable sensitivity?..... _____

OBSERVATION OF IMPACT

Was the sampling of community impact adequate in terms of timeliness and scope?..... _____

GUIDELINES FOR EVALUATION OF COMMUNITY IMPACT

Assessment of training program in increasing the ability of local government to respond to community needs.

OVERALL EVALUATION OF QUALITY OF COMMUNITY IMPACT

1 2 3 4 5 6 7

Adequate Marginal Inadequate

NO EVIDENCE

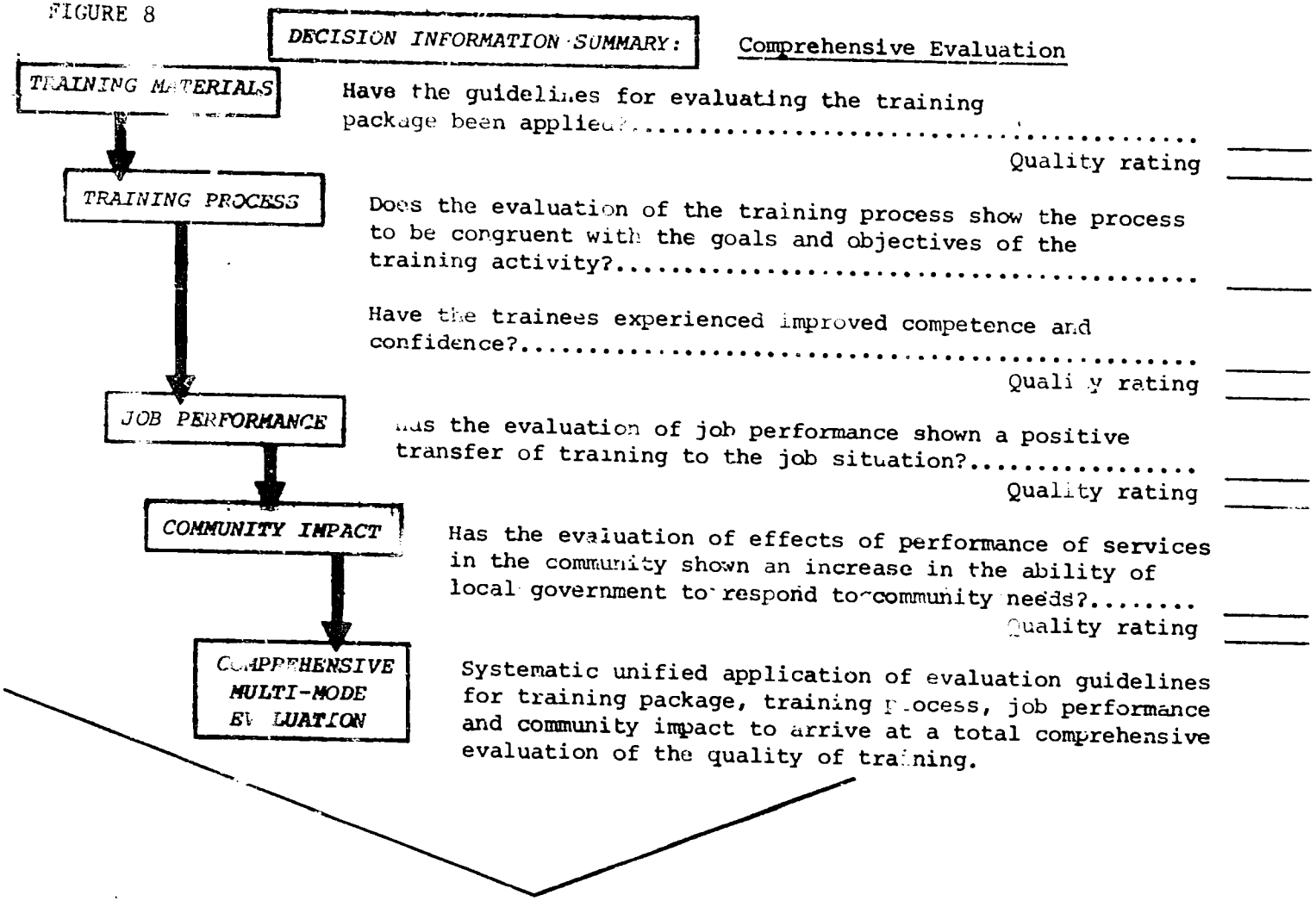
Data limited or unavailable

Cost of community impact evaluation $_____

Recommendation:

Continue _____	Modify _____	Terminate _____	No recommendation possible _____

FIGURE 8



Total cost of comprehensive evaluation $

Recommendation | Continue _____ | Modify _____ | Terminate _____ | Comment:

APPENDIX A

Alternative Procedures

(1) Alternate procedures and criteria for evaluating the quality of Training Materials

Examine the training materials for learners, instructor's manual and all supporting equipment. Then complete the following rating sheet.

Criteria for the Analysis of Training Materials

Program Goals, Learning Experiences and Evaluation	Yes	No
1. Is there an explicitly stated general goal for the training package in terms of learner behavioral outcomes?	____	____
2. Are there specific learner behavioral objectives for each sub-unit of the training package?	____	____
3. Is there a clear correspondence between the general goals of and the unit objectives?	____	____
4. Do the learning experiences appear to be consistent with the unit objectives?	____	____
5. Are there provisions to inform learners of the objectives which they are expected to acquire?	____	____
6. Are learners provided with an opportunity to practice the unit objectives they are expected to acquire?	____	____
7. Are provisions made for feedback to learners regarding their progress during the training?	____	____
8. Are provisions made for feedback to learners regarding their achievement at the end of training?	____	____
9. Are self-evaluation devices built in for learners to evaluate their progress en route?	____	____
10. Are performance evaluation measures available to determine learner achievement?	____	____
11. Are performance evaluation measures congruent with unit objectives?	____	____
Characteristics of Instructional Materials and Activities		
1. Are the roles for instructors clearly specified?	____	____

	Yes	No
2. Are the roles for learners clearly specified?	_____	_____
3. Is training provided for instructors?	_____	_____
4. Are the training materials diversified with respect to media and instructional methods?	_____	_____
5. Are the training activities diversified for learners?	_____	_____
6. Are materials likely to be perceived as corresponding to the developmental or maturity level of the learners?	_____	_____
7. Are pretests provided for learners?	_____	_____
8. Can the trainees start at an advanced level?	_____	_____
9. Can they finish at different levels?	_____	_____
Characteristics of Evaluation Materials		
1. Are evaluation items and/or devices available?	_____	_____
2. Are evaluation items related to learner performance objectives?	_____	_____
3. Are learners given the opportunity to practice during training on items similar to criterion items?	_____	_____
4. Are problem solving techniques used to measure learner behavior?	_____	_____

Summarize your ratings and decide:

1. _____ Training materials are adequate for my needs.

2. _____ Training materials are inadequate for my needs.

   _____ 2.(a) Training materials should be rejected.

   _____ 2.(b) Training materials could be modified and used with a reasonable amount of effort.

(2) An Alternate Way of Rating Training Materials

Checklists presented in other sections of the Handbook provide the decision-maker with important characteristics of training programs/materials that should be taken into account. It might be helpful to present these characteristics in the form of Good, Better, Best for classification purposes.

ood Characteristics of training programs. A good training program will have: (8–24 hours of instruction)

1. A statement of outcomes in learner behavioral terms that:
   - lend themselves to observation or measurement
   - have a direct bearing to job performance
   - are consistent with the goals of training and with the training strategies.
2. A variety of instructional materials and/or techniques which actively involve the trainee.

tter A better training program (24 to 40 hours of instruction) in addition to 1 & 2 above will have:

3. Provisions for trainees to practice (simulate or role play) the behaviors for which they are being trained.
4. Explicit provisions for self-evaluation and feedback to trainees on behaviors they are expected to acquire.
5. Built-in evaluation of training techniques which require trainees to exhibit skills, demonstrate knowledge, provide an affective response to training; where possible, evaluation instruments should use naturalistic and/or unobtrusive observation.

t The best possible training program will have, in addition to the above:

6. An explicitly stated rationale for the training program that provides statements of:
   - documented need for the training
   - assumptions, theory or evidence that supports the instructional approaches used

. evidence that "real world" job analyses have been conducted to derive training objectives.

7. A history of the development effort which includes pilot and field test data and course revision made on the basis of trainee performance behavioral data.

Given the above characteristics, how would you rate the training program reviewed?

_____ Good

_____ Better

_____ Best

_____ Less than Good

(3) Alternate Form for Evaluating Training Materials and Training in Action

Cited from: Smith, R. G. The Design of Instructional Systems. Technical Report 66-18, Washington: The George Washington University, Human Resources Research Office, November 1966.

A Check List for Evaluating Training

(Correct Answers Are Capitalized)

1. Obtaining information concerning the job for which the student is being trained.

a.	Is there a procedure for obtaining information about the job?	YES	no
b.	Is the procedure applied systematically and consistently?	YES	no
c.	Does the procedure collect performance information for meaningful units of activity?	YES	no
d.	Is performance information actively sought from sources in the work or life performance situation?	YES	no

e.	Is performance information recorded?	YES	no
f.	Is performance information used systematically and consistently to identify critical instructional needs?	YES	no
g.	Does the procedure provide complete coverage of all likely aspects or occurrences of the desired work or life performance situation?	YES	no
h.	Does the procedure identify performance actions, condition, and standards relevant to the work or life situation?	YES	no
2.	Identifying specific training objectives.		
a.	Are decisions about what to teach made on the basis of reliable and valid data?	YES	no
b.	Are detailed analyses made of tasks to be taught as a basis for identifying knowledges and skills required for task performance?	YES	no
c.	Are all skills and knowledges required for task performance identified?	YES	no
d.	Do training objectives state precisely the performance actions, conditions and standards?	YES	no
e.	Do specific training objectives use vague terms, such as know, understand, appreciate, familiarize, general knowledge, working knowledge, qualified?	yes	NO
3.	Establishing the sequence of instruction.		
a.	Is there an effective orientation of the student to the entire job to be learned?	YES	no
b.	Are there blocks of skills and knowledge taught in isolation from their use in job tasks?	yes	NO
c.	Are new skills and knowledges taught only when required in order to master a new task?	YES	no
d.	Is the learning of new knowledge followed immediately by practical exercises?	YES	no
e.	Is the relation of each new task to be learned to the overall job clearly stated to the student?	YES	no

4. Designing situations for the practice of performance.

a. Are practice situations based on an analysis of the task to be learned?	YES	no
b. Does the student practice the entire task?	YES	no
c. Has any part of the task been omitted from practice?	yes	NO
d. Do training devices simulate the task?	YES	no
e. Do instructions for effective use accompany the training device?	YES	no
f. Has the training device been evaluated in terms of developing student proficiency?	YES	no
g. Have training devices vs real equipment been subjected to cost-effectiveness analysis?	YES	no
h. Has the possibility of using obsolete equipment to teach appropriate skills been considered?	YES	no
i. Do trainees receive frequent and immediate knowledge of the effectiveness of their practice?	YES	no
j. Do trainees receive at least one minute rest between practice trials?	YES	no

5. Designing situations for the practice of knowledge.

a. Is the knowledge to be practiced clearly related to an actual job task?	YES	no
b. Has information representing the job cues provided the student, and the responses he is to make, been identified?	YES	no
c. Has a practice session been planned for?	YES	no
d. Have appropriate practice materials (workbooks, self-instructional programs, flash cards, etc.) been designed?	YES	no
e. Do trainees receive frequent and immediate knowledge of the effectiveness of their practice?	YES	no

f. Do trainees maintain a record of their progress during practice? YES no

6. Preparing presentations to the student.

a. Has the content of the presentation been tested on students to determine, by means of achievement tests, whether it communicates to the students? YES no

b. Is the content of the presentation meaningful to the student? YES no

c. Are there lengthy periods of presentation uninterrupted by practice? yes NO

d. Are films and television integrated with live instruction? YES no

e. Are lectures, demonstrations, films, television or tape recordings selected on a cost-effectiveness basis? YES no

f. Have texts been examined to be sure that they are within the reading capability of the student? YES no

7. Maintaining student learning activity.

a. Has the degree of spread in aptitude scores of the trainees been determined? YES no

b. Have adjustments been made to the training schedule to account for differences in student aptitude? YES no

c. Have the interests, educational background, and attitudes toward formal schooling been determined? YES no

d. Is this information used to make training presentations more meaningful? YES no

e. Do students receive rewards that are significant to them when they achieve course objectives? YES no

f. Do student rewards include those that are under the control of the student company commander? YES no

g.	Has coordination been achieved with the student company commander to make rewards under his control responsive to student performance in the training?	YES	no
h.	Are successful students punished?	yes	NO
i.	Are failing or borderline students rewarded?	yes	NO
j.	Has an analysis been made of the amount and reasons for excused absences from class?	YES	no
k.	Have steps been taken to reduce the amount of excused absences to a minimum?	YES	no

8. Control of the quality of the training.

a.	Are the tests direct translations of the training objectives?	YES	no
b.	Is emphasis given to performance tests?	YES	no
c.	Are grades expressed in percentage passing?	YES	no
d.	Are grades based on the bell-shaped normal curve?	yes	NO
e.	Are grades based on percentile ranks?	yes	NO
f.	Are test items changed to make them easier or harder to conform to an "ideal" distribution of grades?	yes	NO
g.	Are results of student testing provided to the instructional departments?	YES	no
h.	Do the departments make changes in training procedures suggested by the results of student testing?	YES	no

(4) Some Principles and Characteristics Related to Effective Training

There are a great many practical outcomes from psychological research and training experience that provide valuable information for training officers in local, state or federal government. These outcomes are pre-

sented below in the form of principles and characteristics to the training officer as background information. The principles and characteristics may be useful in judging the quality of a) training materials, b) training-in-action, or c) in developing RFP's for training materials.

Psychological Principles Useful in Training Materials Development*

1. Learning depends upon motivation.
2. Learning depends upon the capacity of the trainee.
3. Learning depends upon the previous experience of the trainee.
4. Learning depends upon perceiving relevant relationships.
5. Learning depends upon an active search for meaning on the part of the trainee.
6. Learning depends upon feedback provided to the trainee.
7. Learning depends upon achieving satisfactory personal and social adjustment in the training environment.
8. Learning founded upon the search for meaning will be more likely to be repeated and applied in new settings.

Characteristics of Effective Training Experiences*

EFFECTIVE TRAINING EXPERIENCES:

1. Provide the trainee with the opportunity to practice the type of behavior he is expected to exhibit on the job.
2. Provide the trainee with the opportunity to deal with the knowledge content implied in training objectives.
3. Are within the experience range and within the mental ability range of the trainee.

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* Adapted from: Tyler, Ralph W. Analysis of the Purpose, Pattern, Scope and Structure of Officer Education Program of Air University. (AFR 190-16), Officer Education Research Laboratory, Maxwell Air Force Base, Alabama, 1955.

4. Build on the past experience of the trainee.

5. Are satisfying to the trainee.

6. Are perceived as relevant by the trainee in relation to his current job and his career aspirations.

7. Demonstrate to the trainee all of the enabling objectives and tasks required to reach the training goal.

8. Provide feedback to trainees en route regarding achievement of objectives so that it can be used in guiding training activity.

9. Require good personal and social relations.

(5) Training Systems Design and Training Materials Development: A Brief Summary Background information. To make effective decisions about training and training materials, the decision-maker should know something about the basic elements of training systems development. This basic information has been prepared to assist the training officer in local, state or federal government in judging the quality of training materials and in veloping guidelines for the subcontracting of training materials.[1]

A training system is conceived of as an integrated set of resources, human and material, designed to achieve specified outcomes in learners. The

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[1] For the reader with more than casual interest in this particular area, the following readings are recommended:

Smith, Robert G., Jr. The Design of Instructional Systems. Technical Report 66-18, The George Washington University, Human Resources Research Office, November 1966.

Instructional System Development. Air Force Manual 50-2, Department of the Air Force, Washington, D.C. 20330, December 1970. (Available from U.S. Government Printing Office, Washington, D.C. 20402.)

Baker, Eva L. The Technology of Instructional Development. In Robert M. W. Travers (Ed.), Second Handbook of Research on Teaching. Chicago: Rand McNally, 1973.

Briggs, Leslie J., et al. Instructional Media. Monograph No. 2, American Institutes for Research, Pittsburgh, 1967.

outcomes of any training program should be a set of skilled behaviors related to the job performance requirements within an occupation. The development of a training program must start with a thorough analysis of the tasks required to perform a job, and proceed through a sequence of specific steps that terminate with verification of the training system as producing the results intended in trainees. The following model used by Air Training Command (1970) is illustrative of the process.

Insert Figure 9 about here

A brief description of the Air Force model components follows:

1. Analyze System Requirements: This step requires the developer to identify job tasks within the larger context of the system within which the job is to be performed. The analysis must describe the setting within which jobs are to be performed and all the interpersonal and/or man-machine relationships related to the environment of the operational system.

2. Define Education or Training Requirements: This step follows an analysis of job performance requirements and identifies the duties and tasks requiring instruction. The level of difficulty of tasks, resources available, and development time required are identified during this phase.

3. Develop Objectives and Tests: Criterion behaviors desired as end-products of training are identified and enabling objectives (prerequisite knowledge, skills and attitudes) are specified. Performance tests are developed to reflect the job behaviors that are the object of training.

4. Plan, Develop, and Validate Instruction: The sequencing of instruction, the selection of instructional materials and methods, the development

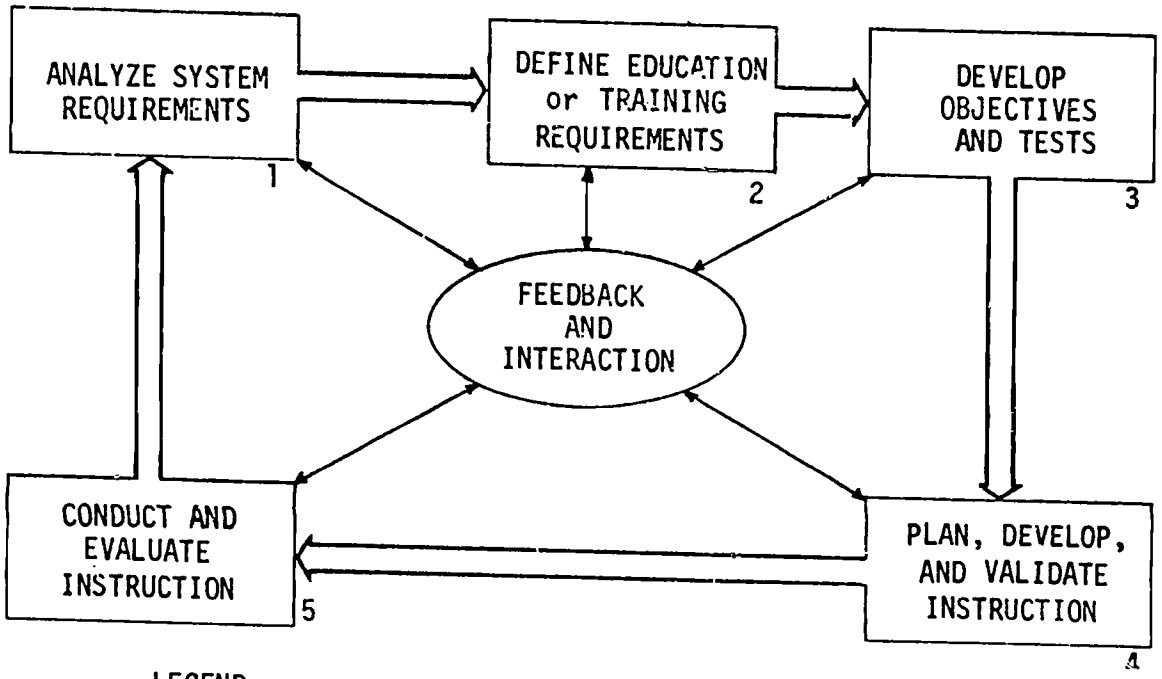

Figure 9

INSTRUCTIONAL SYSTEM DEVELOPMENT MODEL

(Department of the Air Force, 1970, p. 1-5)

and testing of program prototypes comprise this design phase of the cycle.

5. Conduct and Evaluate Instruction: The field testing of an instructional system with particular emphasis on data based revision or redesign of the instructional sequence and materials is a critical step. The developer must rework the system until it produces the intended results with learners.

The most critical element, then, in a training program is the clear specification of job requirements, training objectives related to requirements, instruction designed to produce the behavioral outcomes, and evidence that the behaviors have been produced.

Smith's (1966) model of an instructional system brings one closer to the process of conducting a training program and includes some important principles of training. A presentation of the model and a brief discussion of its elements follow: (see Fig. 10)

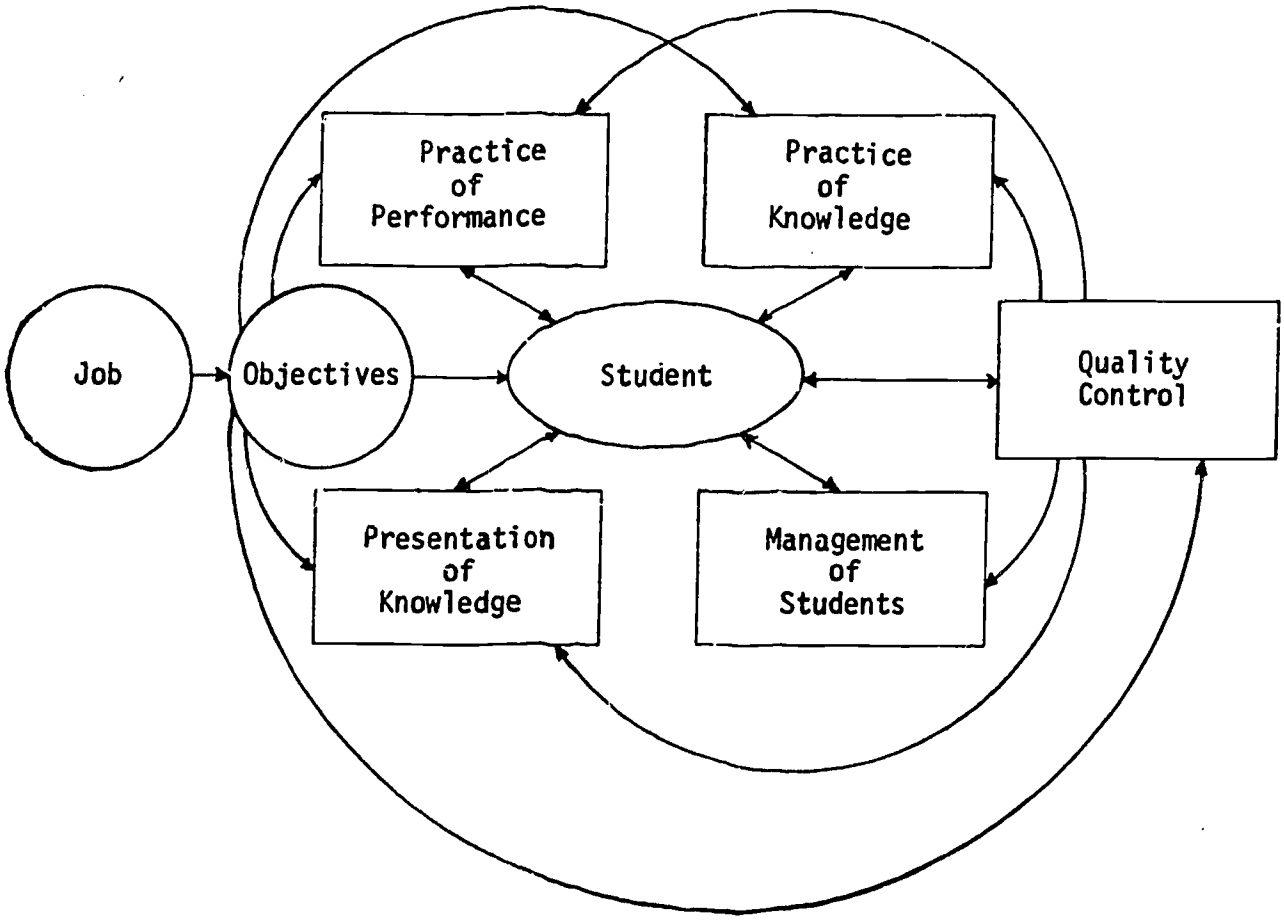

Figure 10

A Model of an Instructional System

(Smith, 1966, p. 7)

From an analysis of the job performance requirements of trainees according to Smith's design, the developer selects specific behavioral objectives for training program. Practice of performance refers to that aspect of training which engages the learner in the practice of the tasks and the skill components of training in a job simulation setting. Practice of knowledge provides for the learner to use the symbolic processes (e.g., key words, terms, concepts, diagrams) related to job performance and to receive feedback or knowledge of results throughout training. Presentation of knowledge refers to the means by which knowledge is transmitted to learners. Lectures, reading, graphic aids, and films are among the most commonly used presentation modes. Management of students refers to the techniques used to keep students participating productively in the learning experiences. Quality control refers to the processes employed to gather data on the effectiveness of the training system in accomplishing its objectives. An equally important aspect of quality control is to provide guidance regarding how the instructional system might be changed to increase its effectiveness.

One other important ingredient of a training system is the specification of standards of proficiency that trainees should attain at the end of course instruction. These standards may also reflect a developmental process by which a trainee progresses through levels of job performance (i.e., apprentice, journeyman, master). Proficiency levels at end of training depend upon the entry characteristics of the trainees and may be perceived as part of a longitudinal effort that will be combined with on-the-job training to ultimately reach desired levels of job performance.

Background information summary. The purpose of this section has been to provide the decision-maker with an orientation that will help him see the relationship of an isolated or short term training program, to the overall process of the design of an instructional system that is based on an analysis of job performance. These concepts are presumed to be helpful in assisting the decision-maker to judge the quality of training programs and prepare specifications for the development of training materials.

Guidelines for the Selection of Training Materials

Background information. The guidelines that follow will provide the decision-maker with key ideas related to the development of training materials, or to the evaluation of training packages. These guidelines have been derived from an extensive analysis of the literature on training materials development, and from the reported research. It needs to be mentioned that there are few empirical based generalizations that can be stated about the effectiveness of specific classes of media related to training instructional effectiveness: this is largely due to methodological problems in instructional research. For example Baker (1973) reports that there is little evidence to support the notion that given a media as media provides for more effective learning. Briggs (1967) does point out, however, that multi-media instruction has proved to be superior to single-media instruction.

In the absence of generalizable, empirical based guidelines to support training materials development, one must turn to the examination of specific training materials that have undergone evaluation and do produce the desired results in learners. Examination of these materials provides a basis for

development and also provide guidelines criteria that could be applied to the analysis of training materials.

In summarizing the available literature on training and in drawing extensively on the training research experience of HumRRO, Smith (1966) states some guidelines related to this instructional system design:

"The critical aspects of practice of performance are:

a. to simulate the job task, using a detailed description as a guide

b. to provide for knowledge of results

c. to arrange a suitable practice schedule

d. to maximize the transfer of training.

The critical aspects of practice of knowledge are:

a. to determine, through analysis, the relation between cues and responses required by the knowledge

b. to develop, through practice with knowledge of results, a high level of achievement

c. to devise ways of making material meaningful to trainees.

Presentation of knowledge can be done successfully by any of several methods provided:

a. the presentation communicates to the student

b. the material presented is meaningful

c. the special characteristics of media are taken into account.

Instructional devices and media should be selected in terms of cost and effectiveness."

The Air Force Manual on Instructional System Development (AFM 50-2) provides an excellent overview of the principles and practices that one ought to take into account when planning, developing and validating instruction. In presenting options to be pursued in the selection of media, the manual presents a very useful adaptation of a media selection matrix developed by Allen (AFM 50-2, pp. 5-14) (see Table 1).

The ratings of high, medium and low in the table above referred to indicate the degree of suitability of the instructional media when compared to the objectives of learning.

Given this brief overview of characteristics of training systems, the following criteria will prove to be helpful in analyzing the potential effectiveness of training materials and/or training programs.

TABLE 1

Instructional Media Stimulus Relationships to Learning Objectives

PE OF STRUCTIONAL DIA	LEARNING OBJECTIVES: Learning Factual Information	Learning Visual Identifications	Learning Principles, Concepts, and Rules	Learning Procedures	Performing Skilled Perceptual-Motor Acts	Developing Desirable Attitudes, Opinions, & Motivations
ll Pictures	Medium	HIGH	Medium	Medium	low	low
ion Pictures	Medium	HIGH	HIGH	HIGH	Medium	Medium
evision	Medium	Medium	HIGH	Medium	low	Medium
ining Aids	low	HIGH	Medium	Medium	low	low
io Recordings	Medium	low	low	Medium	low	Medium
iner mulator)	Medium	HIGH	HIGH	HIGH	HIGH	Medium
grammed truction	Medium	Medium	Medium	HIGH	low	Medium
onstration	low	Medium	low	Medium	Medium	Medium
nted Textbooks	Medium	low	Medium	Medium	low	Medium
l Presentation	Medium	low	Medium	Medium	low	Medium

.—This table is adapted from Dr. Allen's paper, "Research in Instructional Media and Art Education," which was originally publisned in August 1966 in Final Report of the Uses of Newer Media in Art Education Project by the National Art Education Association, NEA, Washington, D. C.

(6) Alternate Guidelines for Subcontracting Development of Training Materials

Given the brief overview to instructional or training system development, what should you do as a decision-maker to insure the development of quality training materials? The following list suggests some things you could do and what you should expect from your subcontractor to achieve good training materials.

Things you should do:	Things you should expect of your development subcontractor
1. Provide developer with a statement of the general goals you want developed in trainees.	1. Provide a job analysis of the trainee's occupation with specific reference to your goals.
2. Provide developer with a sample of a specific objective of training.	2. Provide list of training objectives that specify conditions, performance actions, and standards to be attained at end of training.
3. Provide developer with: a) description of training population 1) age 2) educational background 3) experience b) statement of length of training in hrs/days	3. Provide you with a tentative schedule of training activities to fit your available training time.
4. Provide developer with a list of characteristics of the training program you desire: (e.g. Training sessions must provide for: problem solving activities; small group discussion; simulation of job performance; paper and pencil work exercises).	4. Provide you with a tentative outline of the type of learning activities to be included in training for your approval.

5. Provide developer with a statement for delivery of training package.	5. Provide you with a time table with milestones (completion of key events) specified and key review points for the development work.
6. Sign contract and monitor work.	6. Provide you with periodic reports and review points to assist in monitoring the quality of work.

APPENDIX B

Specimens of Measurement Instruments for Pilot Testing

(Workshop Questionnaire)

Pre-session Survey

It is anticipated that there will be a continuing series of workshops given to aid local community leaders in administering the Revenue Sharing program. To make these workshops effective, we are asking you to respond to the following questions which will help us to evaluate our efforts. Please do not put your name on this paper.

Instructions

Please respond to each statement or question by circling the letter (a., b., c., d., or e.) that best describes your position, attitude, or feeling.

1. Please check the type of governmental unit you represent:

   ___Town, ___City, ___County, ___Council of Governments,

   ___Social Service District, or ___Other _____.
   (write in)

2. Please check the population of the unit of government you represent:

   less than ___5,000, ___5,000 to 10,000, ___10,000 to 50,000,

   ___50,000 to 100,000, ___over 100,000.

3. Please check only one item in this question.
   With respect to Revenue Sharing my job is one in which I am concerned primarily with:

   ___making decisions, ___making recommendations, ___implementing guidelines, ___keeping records or accounts, ___enforcing regulations.

4. If my co-workers were to ask me a question about whether or not Revenue Sharing funds could be spent for a specific item, I would feel ____ in answering their question.

a) very confident | b) some confidence | c) neither confident nor uneasy | d) uneasy | e) very uneasy

5. The revenue Sharing materials I received prior to this workshop helped me _____ in understanding how Revenue Sharing can be applied to my community.

a) a great deal | b) somewhat | c) very little | d) not at all

6. My understanding of the Revenue Sharing guidelines as they apply to my situation is _____.

a) highly adequate | b) somewhat adequate | c) neither adequate nor inadequate | d) somewhat inadequate | e) highly inadequate

7. When I think about deciding or recommending how to spend Revenue Sharing funds, I feel _____.

a) highly uneasy | b) uneasy | c) neither uneasy nor confident | d) confident | e) very confident

8. In comparison to other federal programs, Revenue Sharing seems to have _____"red tape", based on my experience.

a) much more | b) a little more | c) about the same amount | d) a little less | e) much less

9. My general feelings toward Revenue Sharing are _____.

a) very negative | b) somewhat negative | c) neither negative nor positive | d) somewhat positive | e) very positive

10. I feel that workshops of this kind are _____ in assisting local government officials, such as myself, to understand how Revenue Sharing applies to community needs.

a) very effective | b) somewhat effective | c) neither effective nor ineffective | d) somewhat ineffective | e) very ineffective

11. I feel that my knowledge of Revenue Sharing is _____.

a) very adequate | b) somewhat adequate | c) neither adequate nor inadequate | d) somewhat inadequate | e) very inadequate

12. What is the one thing about Revenue Sharing which concerns you most? Please write a short response.

(Workshop Questionnaire)

Post-session Survey

We are again asking you to respond to a few questions to see if the workshop has met your needs. The information you provide us by your responses will be used to improve future presentations. Please do not put your name on this paper.

Instructions

Please respond to each statement or question by circling the letter (a., b., c., d., or e.) that best describes your position, attitude or feeling.

1. In general, I feel that the Revenue Sharing workshop was _____.

   a) highly effective b) somewhat effective c) neither effective nor ineffective d) somewhat ineffective e) highly ineffective

2. In comparison with categorical funding programs I believe that Revenue Sharing programs will have _____ flexibility.

   a) much more b) a little more c) about the same amount d) a little less e) much less

3. In terms of the questions that I had, I feel that this workshop gave _____ answers to my questions.

   a) completely inadequate b) somewhat inadequate c) neither inadequate nor adequate d) somewhat adequate e) completely adequate

4. I feel that the length of this workshop was _____.

a) highly adequate	b) somewhat adequate	c) neither adequate nor inadequate	d) somewhat inadequate	e) highly inadequate

5. If I were asked to expend or recommend for expenditure of Revenue Sharing funds for some project right now, I would feel _____.

a) very uncomfortable	b) somewhat uncomfortable	c) neither uncomfortable nor comfortable	d) somewhat comfortable	e) very comfortable

6. Now that the workshop is over, I feel that my knowledge of Revenue Sharing is _____.

a) very inadequate	b) somewhat inadequate	c) neither inadequate nor adequate	d) somewhat adequate	e) very adequate

7. I feel this workshop provided _____ opportunity to ask the questions I wanted to ask.

a) more than adequate	b) somewhat adequate	c) neither adequate nor inadequate	d) somewhat inadequate	e) completely inadequate

8. Now that the workshop is over, my general feelings toward Revenue Sharing are _____.

a) more negative	b) somewhat more negative	c) neither negative nor positive	d) somewhat more positive	e) more positive

9. Right now, I feel that I have _____ knowledge to explain to my co-workers how Revenue Sharing regulations will be applied in our community.

a) completely sufficient	b) somewhat sufficient	c) neither sufficient nor insufficient	d) somewhat insufficient	e) completely insufficient

10. The discussions about Revenue Sharing helped me _____ in understanding how Revenue Sharing can be applied to my community.

a) a great deal b) somewhat c) very little d) not at all

11. Now that the workshop is over, what concerns you most about Revenue Sharing?
Please write a short response.

(Training Evaluation Pilot Test)

Background Information

Principles of Supervision

(Do not put your name on these sheets)

Age: _____

Sex: _____

How many years have you been a supervisor: _____

How many people work for you: _____

What kind of work do you supervise: _____

How many supervision courses have you had before this course: _____

Principles of Supervision

A supervisor should (check the most important sentences):

____ spend most of his time checking work done by others.

____ make sure employees understand work rules and policies.

____ correct an employee in front of others if needed.

____ try to get other employees to do his paper work.

____ give up the quality of work to get a greater amount of work done.

____ help employees to do their work when needed.

____ pass most work problems "upstairs" for action.

____ let someone else worry about how well his employees are trained.

____ pick only the best employees for overtime work.

____ pay no attention to gripes of employees.

____ explain city policy to employees.

____ cause employees to gripe about city policy.

Job Functions

In the list below, check those jobs a supervisor should do:

____ make sure work is done on time.

____ check finished work of employees often.

____ train clerk to use new office machines.

____ encourage secretaries to try to make fewer mistakes in typing letters.

____ arrange for machine repair ahead of time to lower the amount of worker down time.

____ arrange work to make sure the paper work gets done on time.

____ type finished copy of safety report to give to management.

____ explain the job of the supervisor in passing on gripes to management.

____ keep quiet about who arranges work and work plans.

____ pay no attention to employee gripes about noisy working places.

____ decide the steps to be followed in recording how money is spent.

____ decide that secretaries in his department can leave work 30 minutes early to miss rush hour traffic.

____ decide to buy a new kind of electric machine without checking with management.

____ unload trucks to help out workers.

____ decide to cut down trees along a street without asking management.

____ start new coffee break policy even though the management does not agree with it.

____ carry out regular check to find possible safety problems.

____ listen to and put to work secretaries' ideas to make work better.

____ answer questions that the public asks about changes in tax rates in a nice and careful way.

____ set work standards for his department.

____ check with new employees to make sure they have enough information to fill out personal leave requests.

____ gather facts for management about possible cost-savings by using new machines.

Situation Number One

Joe is a machine operator in a shop. His work is simple, and he is paid by the hour. He has always done his work well and has never caused any trouble. For the past two weeks you notice that his work output has been getting worse each day, while the work output of the men around him did not change. As his supervisor, you

(put a plus (+) by the two things you would be sure to do and put a minus (-) by the two things you would be sure not to do.)

1. Tell Joe to find another job.
2. Talk to Joe's co-workers to determine why his work output is down.
3. Warn Joe that if his work output doesn't improve you will fire him.
4. Check with Joe's family to find out if everything is okay at home.
5. Talk with Joe about his work output.
6. Talk with management about your problem with Joe's work output.

7. Put Joe on another job.

8. Invite Joe out for a beer to talk with him about how things are going in the shop.

9. Encourage Joe to tell you of his problems as soon as they arise.

Situation Number Two

As foreman, you are faced with a group of 14 employees who indicate they have some grievances, however, you refuse to talk to them as a group. Instead you suggest that they appoint a spokesman. Before you leave, you threaten disciplinary action unless they are back at work in two minutes. When you return and find them still gathered, you

(put a plus (+) by the two things you would be sure to do and put a minus (-) by the two things you would be sure not to do.)

1. Tell all the men to clock out and then you will discuss their grievances with them.

2. Tell all the men to clock out and go home; they are suspended for two days.

3. Talk to the men about their grievances.

4. Set up a time to meet with the men and then tell them to get back to work.

5. Tell the men to go back to work; that you will talk with each man separately.

6. Admit that the disciplinary threat was a mistake and promise to listen to their grievances first thing tomorrow morning.

7. Pick out the leader of the group and chew him out right there.

8. Pick out the leader of the group, fire him, and then threaten to fire anyone who is not back to work within two minutes.

9. Tell the men to forget their grievances because management won't listen.

10. Ask the men to choose a grievance committee of three to tell you their problem and ask the other men to go back to work.

Situation Number Three

An employee, afraid to follow your instructions about a new method of loading a fork lift, talks to another supervisor who informs him that he does not have to do the job if he feels it is unsafe. As supervisor you

(Put a plus (+) by the two things you would be sure to do and put a minus (-) by the two things you would be sure not to do.)

1. Go to the shop and chew out the employee for not following your orders.

2. Talk to the employee to try to find out why he thinks the new method is unsafe.

3. Get someone else to load the fork lift.

4. Chew out the other supervisor for undercutting your job.

5. Get an outside expert to say how safe the new method is.

6. Talk to your boss about the problem to find out what he would do.

7. Try the new method yourself to find out how safe it is.

8. Talk to both the employee and the other supervisor together to find out exactly what the problem is.

9. Threaten the employee with disciplinary action if he doesn't do the job.

10. Encourage the employee to talk directly with you rather than take his problem to some other supervisor.

Situation Number Four

Your boss calls for you to report to his office. As you walk in, you can see that he is very busy. He hands you an unfinished work order, and says,

"Take as many men as you need off what they are doing and get this job out". The phone rings, he answers the phone and says, "Yes sir", gets up and walks out leaving you standing there. This is about the fifth time in the past few weeks that he has failed to give you complete instructions. You decide that you should

(Put a plus (+) by the two things you would be sure to do and put a minus (-) by the two things you would be sure not to do.)

1. Get to work, obeying his orders to the letter.
2. Sit down and wait until he comes back so that you can get further instructions.
3. Call in one of your workers and give him the same instructions.
4. Go back to your office and hold the work order until you get the whole story.
5. Write a memo to your boss that tells him how difficult it is to do a good job without complete instructions.
6. Start the work and then try to get more complete instructions.
7. Call in a worker and have him wait to get complete instructions from your boss.
8. Send a memo to your boss's superior telling him about the poor instructions you get.
9. Call in a worker and complain to him about how bad your boss is.
10. Follow your boss and demand that he give you all the details right then and there.

Situation Number Five

As supervisor, you have just spent a lot of time planning the priorities of street repair work for your city. You are called into your boss's office at which time you are told of many complaints about unrepaired streets

called in by citizens. You notice that these complaints came from places in the city that you gave the lowest priority for work. You decide you should

(Put a plus (+) by the two things you would be sure to do and put a minus (-) by the two things you would be sure not to do.)

1. Forget your plans and begin work on the streets complained about.
2. Show your boss your earlier plans and make a strong case for following them.
3. Ignore the complaints and follow your earlier plans.
4. Ask your boss to help you replan the street repair priorities.
5. Ask your boss to give you guidelines to set priorities for street repair.
6. Do nothing until you receive direct orders about what streets should have priority for repairs.
7. Gripe at your boss for not giving you the complaints sooner so that you could use them in your planning.
8. Ask your boss to decide what streets should be repaired.

Situation Number Six

Your boss calls you into his office. He tells you that it looks like your men have not been performing their work up to standard because he has received many complaints from citizens. As a supervisor, you have carried out weekly inspections of the work and found the quality to be good. At this point you

(Put a plus (+) by the two things you would be sure to do and put a minus (-) by the two things you would be sure not to do.

1. Tell your boss that he does not have the facts.

2. Try to find out what the problem is.
3. Ask your boss to come with you and inspect the work.
4. Feel bad because your boss says that you haven't been doing a good job.
5. Decide that you will have to spend much more time inspecting work.
6. Decide that you will have to train the men to do better work.
7. Chew out your men for their poor work.
8. Decide to set higher standards for quality of work.
9. Ask to speak personally to citizens when they call in complaints.
10. Question employees about who is not doing good work.

The purpose of this rating check-list is to furnish data to evaluate the effects of training and assess training needs toward the end of assisting the San Antonio Housing Authority meet its training objectives. This check-list does not have as its purpose the evaluation of individuals for placement or advancement; because of this, all information contained on these forms is to be held in the strictest confidence.

Name of Housing Project _____ Name of Maintenance Aide or Mechanic Being Rated _____

Name of Supervisor Filling Out This Form _____

Circle one: Aide A Aide B Mechanic

Date _____

Instructions: On the following forms you will find a list of tasks that might generally be performed by a maintenance aide or mechanic in the housing authority. At the right of each task statement you are asked to check whether you have observed the performance of each task within a 30 day period or whether you have ever observed the performance by the man you are rating. Finally, you are asked to make two ratings of the man's performance of each task on the basis of the amount of supervisory help he requires and his proficiency in performing each task. Amount of Supervisory Help falls into three categories: Little, Moderate, and Much; Proficiency in Performing the Task also has three categories: Highly Skilled, Fairly Skilled, and Needs Skill Development. Each category is described below to aid the supervisor in making his ratings. Please read the descriptions for the rating categories carefully before proceeding with the task ratings. The descriptions should be referred back to in filling out the rating form.

1. Amount of Supervisory Help:

   Little: Once this man is given the task, he requires little or no further instruction.

   Moderate: Once this man is given the task, he needs some or occasional instructions to carry out steps in performing task.

   Much: This man needs almost continual, step-by-step instructions to do task.

2. Proficiency in Performing the Task:

   Highly Skilled: Once this man performs task, supervisor is confident that the task need not be redone.

   Fairly Skilled: On checking the task performed, supervisor only occasionally finds that the task needs to be redone.

   Needs Skill Development: On checking the task performed, supervisor frequently finds that the task needs to be redone.

TASK	HAVE YOU ACTUALLY OBSERVED THIS MAN PERFORMING THIS TASK WITHIN THE LAST 30 DAYS?		HAVE YOU EVER OBSERVED THIS MAN PERFORMING THIS TASK?		AMOUNT OF SUPERVISORY HELP NEEDED:			PROFICIENCY IN PERFORMING THE TASK:		
	YES	NO	YES	NO	LITTLE	MODERATE	MUCH	HIGHLY SKILLED	FAIRLY SKILLED	NEEDS SKILL DEVELOPMENT
1. Prevents development of a shortage of Safety Face shields or goggles.										
2. Repairs or replaces water heater by disconnecting and connecting supply pipe using hand tools, lighting heater and checking thermostat for operation.										
3. Repairs and replaces window shades.										
4. Makes minor repairs on water heaters.										
5. Makes minor repairs on refrigerators.										