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ABSTRACT

This functional model for managing large-scale program evaluations was developed and validated in connection with the assessment of Tennessee's Nutrition Education and Training Program. Management of such a large-scale assessment requires the development of a structure for the organization; distribution and recovery of large quantities of materials; the hiring, training, and supervision of part-time temporary assistants to administer the assessment; and scheduling and supervision in a natural setting. Three elements of the model are critical to its implementation. The first is the development of a leadership framework (to establish and clarify lines of responsibility among members of the assessment staff). The second is construction of an activity timeline (containing personnel assignments and target dates for completion). The third element is a structured procedure for the recruitment, interviewing, selection, and training of field assistants (including determining job qualifications, formulating screening instruments and interview questions, and developing a handbook for field assistants). Other important elements of the model include a representative sampling procedure, communication channels with cooperating agencies, an assessment schedule, and instrumentation and data-gathering procedures. Also important are assignment of field assistants to specific sites and solicitation of feedback. (Author/JM)

A FUNCTIONAL MODEL FOR MANAGEMENT OF LARGE SCALE ASSESSMENTS

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Introduction

The management of a large-scale evaluation presents a number of problems related to assessment procedures, such as (a) the development of a structure for the organization, distribution, and recovery of large quantities of materials; (b) the hiring, training, and supervision of part-time temporary assistants to administer the assessment; and (c) the scheduling and supervision of the actual assessment in the natural setting. The Tennessee Nutrition Education and Training (NET) Program evaluation component provides an example of such a large-scale evaluation project. On the basis of the experience gained in the first year of this evaluation a functional model for managing large-scale assessments in education and non-education settings was developed. In this paper the model and its validation during the second year of the NET project will be described.

The Tennessee NET Program is a federally funded project which has as its focus the improvement of nutrition education for school children in the state. The Program design includes evaluation of: (1) training workshops for educators, food service personnel, and residential child care workers; (2) nutrition education materials--the quality of these materials, their usability, and their usage in school settings; and (3) nutrition knowledge, attitudes, perceptions, and behaviors of students in Grades K-12, their parents and teachers, school administrators and food service personnel. This paper will focus on management procedures utilized in (3) above--the state-wide assessment of nutrition knowledge, attitudes, perceptions, and behaviors.

Initially the results of a state-wide needs assessment were used by an interdisciplinary committee composed of personnel in the College of Home Economics and the Bureau of Educational Research and Service at the University of Tennessee, Knoxville to develop a set of nutrition education goals and objectives for each grade level, K-12. A training program based on these goals and objectives was developed for teachers and food service personnel.

In order to assess the effectiveness of this training program the evaluation team, which included some of the same personnel who developed the goals and objectives, designed a series of assessment instruments. A treatment-control group evaluation design was used in which treatment consisted of the training program for teams of K-6 teachers and food service managers from participating schools. A sample of 48 schools was selected employing stratification to insure the inclusion of schools from all of the state's nine development districts as well as from rural, urban, and suburban areas. Within the stratified sample schools were assigned randomly to treatment or control conditions. Because no treatment had been developed for teachers of Grades 7-12, the testing of students in these grades served as an additional control mechanism.

Planning and implementation of the assessment component of Tennessee's NET evaluation took place over a two-year period. Pretesting of nutrition knowledge, attitudes, perceptions, and behaviors was conducted during April 1980. Teachers and food service managers were given most of a school year to utilize their training before posttesting was conducted in April 1981. Detailed analysis of the first year's experience provided valuable guidance for the second year and resulted in a functional model for the management of large scale assessments.

Management of the NET Assessment required selecting, training, and supervising 15 temporary part-time personnel to carry out the state-wide testing. These personnel, called field assistants, were required to learn a set of relatively complex tasks (coding instruments, testing children at different developmental levels, conducting food consumption observations, etc.) and to carry them out quickly and accurately in an unfamiliar setting. In addition, they were expected to develop and sustain good relationships with key personnel in the schools. Procedures had to be developed for distribution of test instruments and retrieval of large amounts of data in a relatively short period of time. Elements of the management model developed in connection with the NET assessment are displayed in Figure 1. Three elements of the model critical to its implementation are:

- .the development of a leadership framework through which effective management can take place
- .construction of an activity timeline
- .recruitment, interviewing, selection, and training of field assistants.

These three elements will be discussed in detail.

Leadership Framework

One purpose of the leadership framework (see Figure 2) is to establish and clarify lines of responsibility among members of the assessment staff. For example, the leadership framework developed for the evaluation component of Tennessee's NET program included: (1) an evaluation director responsible for overseeing the total assessment; (2) middle level supervisors with responsibility for training and scheduling; (3) a technical assistant to maintain contact with the field assistants, provide materials for testing, and act as a source of quality control for the data as it is returned; and (4) clerical personnel to arrange transportation and lodging for field assistants, complete paperwork for employment and travel, and maintain communication among the members of the project.

Another reason for developing a leadership framework is to delineate lines of communication between and among key personnel on the assessment staff. Establishing definite internal channels of communication facilitated the decision-making process affecting Tennessee's NET evaluation. Two different communication patterns were utilized. These patterns are depicted in Figures 2 and 3. Figure 2 portrays the lines of communication utilized in planning (a) the activity timeline and (b) activities associated with the recruitment, selection, and training of field assistants. During planning sessions concerning these two activities, free and open communication was encouraged among all levels of personnel; clerical personnel had input equal to that of the management team in outlining policies and procedures.

During implementation of these procedures, however, communication channels were hierarchical in nature (see Figure 3). Field assistants referred questions and problems either to the technical assistant or to clerical personnel, depending upon the nature of the question or problem. Middle level supervisors communicated closely with the technical assistant and clerical personnel to monitor initial agency contacts, factors associated with the efficiency of data collection and personnel scheduling for the actual assessment; in addition, they handled matters affecting data processing such as the development of instructions for ease of data retrieval and initial computer programming. Middle level supervisor responsibilities for the first year of Tennessee's NET evaluation project were quantitatively and qualitatively different from those outlined for the second year. Middle level supervisors for the first year of

Figure 1. Functional Model for Management of Large Scale Assessments

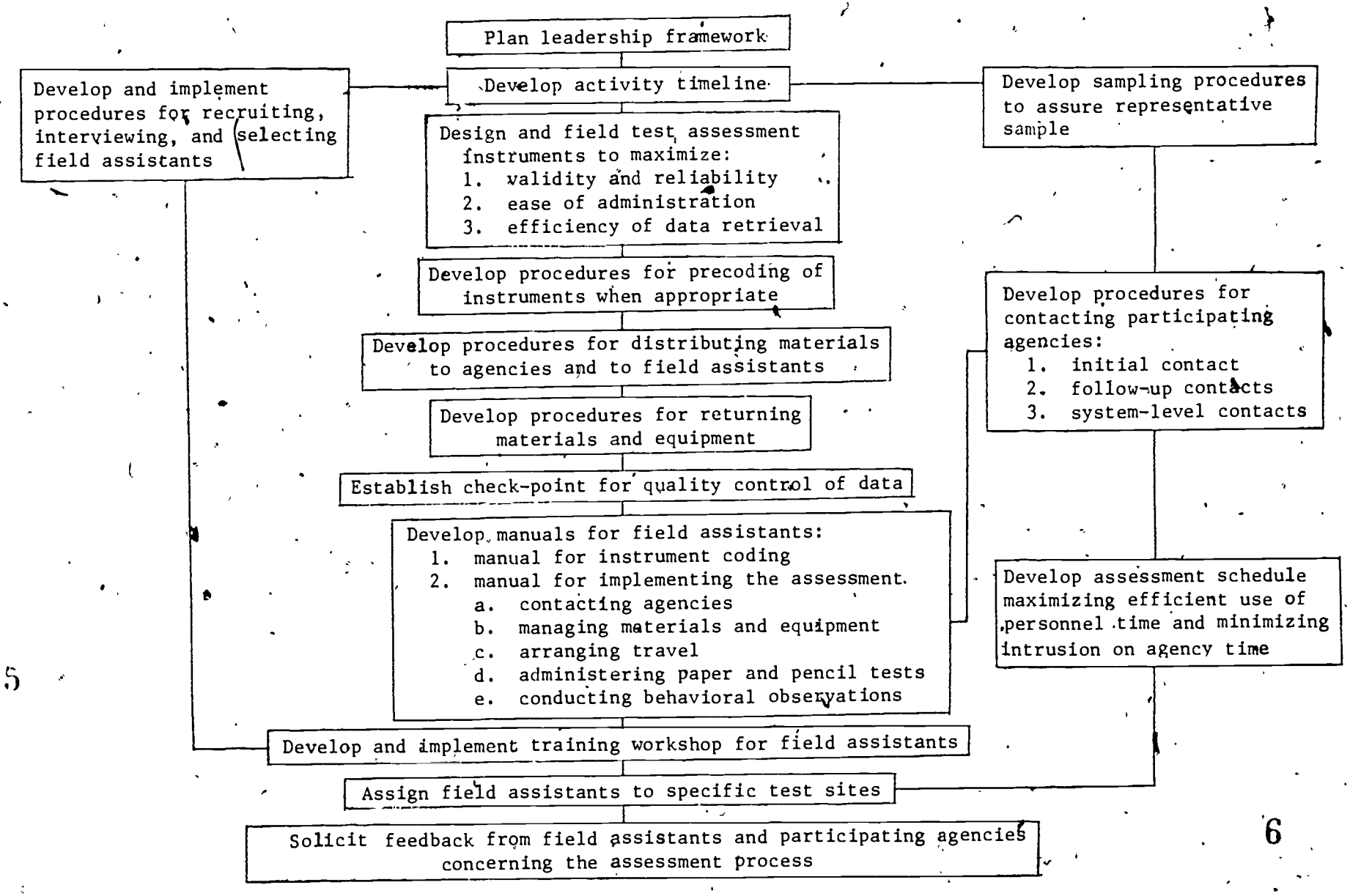


Figure 2

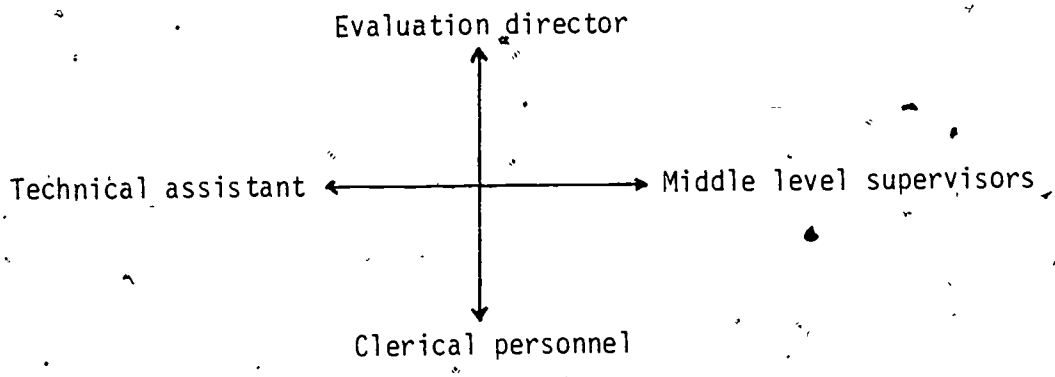
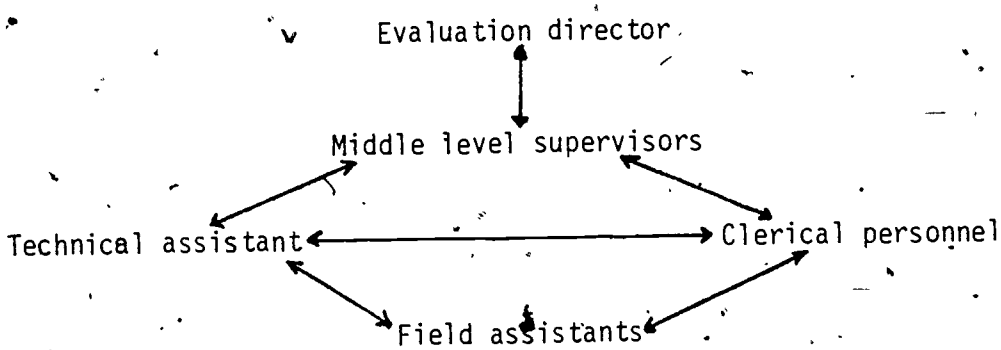


Figure 3



the project were responsible for developing instrumentation and data processing procedures, whereas in the second year of operation they were able to devote more time to quality control of the data using standards developed during the first year. During all phases of both project years, the evaluation director communicated daily with the middle level supervisors. Further, the director handled sensitive administrative issues such as convincing reluctant principals and curriculum specialists of the importance of participating in the study.

Activity Timeline

Another element crucial to the implementation of the model is the activity timeline. Development of the timeline is the responsibility of the evaluation director and the middle level supervisors. These persons function as a management team. Initial assignments for other personnel levels are made by the management team. Detailed discussions among the management team and other assessment staff members may result in changes in assignments and target dates prior to implementation. Alternative suggestions made by assessment staff members are considered carefully by the management team; these suggestions may prove to be more realistic than the initial plans made by the management team. Plans should be flexible enough to allow changes in personnel assignments when a task becomes more time-consuming than expected or when a staff person proves to be more suited to one job than another. Flexibility in activity timeline construction and in attendant assignment of responsibilities allows maximal utilization of personnel.

A more obvious reason for using an activity timeline is to provide for efficient management of the time available for the project. One of the pitfalls in many evaluation projects is failure to allow sufficient time for completion of essential preliminary tasks. Large-scale assessments usually require cooperation from outside agencies in such tasks as printing instruments and related materials, delivering materials, and processing data. A timeline is especially useful when it is considered a blueprint for coordinating assessment staff activities with agencies involved in rendering services. In fact, it is helpful to develop a simplified version of the activity timeline to send to cooperating agencies in order to facilitate communication about the schedule of assessment activities.

Recruiting, Selecting, and Training Field Assistants

Another element crucial to successful implementation of the model is a structured procedure for recruiting, interviewing, selecting, and training field assistants. Before rational recruitment and selection decisions can be made, the management team must identify desirable characteristics for a field assistant in the situation at hand. Obvious characteristics include literacy, availability during the period of assessment, and ability to do detailed work accurately. A state-wide assessment also will require the flexibility to travel for a few days at a time. The NET Assessment was conducted in elementary schools; the management team took school dress and behavior codes into consideration, as well as ability to relate to specific children and adults, such as those in inner city or rural areas.

Screening instruments based on these considerations as well as other characteristics found to be important during the first year of the project (e.g., self-confidence, assertiveness, and problem-solving skills) were developed by the management team. Specific questions designed to reveal presence or absence of these desired characteristics were asked during group and individual interviews. During each interview session, management team

members rated each applicant independently using a standard rating scale developed for that purpose. Scores were summed and averaged; applicants with the highest ratings were hired to fill field assistant positions.

In recruiting qualified persons to apply for these positions, it is advisable to tap several different sources. For example, in connection with Tennessee's NET assessment component applicant names were solicited from such disparate sources as (a) elementary school principals' substitute teacher lists; (b) The University of Tennessee Office of Personnel; and (c) a part-time, temporary employment agency. Several persons also were hired to fill field assistant positions on the recommendation of assessment staff members.

Those applicants selected to act as field assistants in a large-scale assessment must receive some level of training prior to conducting the assessment. The amount of time set aside for training depends on the complexity of the procedures and, realistically, the amount of money allotted for training. Because the reliability, and thus the validity, of the assessment depends in part on the training procedures, it is important to expend appropriate time and effort on this aspect of the assessment.

The one-day training procedure used with the NET Assessment was intended to introduce the field assistants to all aspects of their jobs. Although the management team bore major responsibility for planning this one-day training session, other assessment staff members also were consulted during the planning phase. All members of the assessment staff participated in outlining specific assessment procedures and general guidelines for handling problems which might arise. At the end of the training session, field assistants were given an opportunity to ask questions or talk about any concerns they might have. In addition, procedures for emergency assistance were discussed.

During the training session, a handbook was given to each field assistant. This handbook, which contained copies of all instruments and answer sheets, information about contacting agencies to be assessed, travel arrangements, materials pickup and return, assessment procedures, and post-assessment evaluation, was designed to provide continuing aid in the field. In addition, telephone numbers of management team personnel were included so that crisis intervention at any hour was possible.

Other important elements connected with implementing this functional model for management of large scale assessments include:

- .development of a representative sampling procedure
- .development and maintenance of communication channels with cooperating agencies
- .development of an assessment schedule
- .assignment of field assistants to specific sites
- .development of instrumentation and data-gathering procedures
- .solicitation of feedback from cooperating agencies and field assistants.

These elements will be discussed in the remainder of the paper.

Sampling Procedures

Procedures must be developed which will ensure a representative sample. Since methods of selecting a representative sample are unique to each assessment project, sampling procedures will not be discussed in detail except in connection with project management. Sampling procedures for the NET

project were developed by an interdisciplinary team of consultants. Selection of cooperating schools was a major aspect of the project's first year. Keeping this selected sample intact during the second year of assessment depended largely upon developing and maintaining effective channels of communication with cooperating agencies.

Developing and Maintaining Channels of Communication

In a large-scale assessment the development and maintenance of communication channels between assessment staff members and cooperating agencies is essential to implementation of the model. Cooperating agencies must be made aware of the crucial part they play in the success of the assessment. In many instances, participation of cooperating agencies is voluntary; even when it is not, courteous and respectful treatment of agency personnel is critical.

Initial contacts with agencies can be of utmost importance. In some situations, contacting the wrong person in the administrative hierarchy can cause insurmountable problems. A general rule is that an initial contact with the person at the top of the hierarchy is best. Subsequent contacts should be with the participating individuals. Changes in scheduling must be communicated to the cooperating agency at the earliest possible time. Field assistants should be alerted to the possibility of communication problems and encouraged to refer any complaints about the assessment to the management team, who must in turn follow up on the complaints.

Developing An Assessment Schedule

One of the most challenging aspects of working with cooperating agencies in a large-scale assessment project is the development of an assessment schedule. During this phase of the evaluation close communication between assessment staff members and agency personnel must be maintained. Assessment dates and arrangements (such as assuring the collection of parental permission forms and insuring space available for testing) must be communicated clearly and consistently to cooperating agencies. Further, agencies must be allowed to provide feedback concerning the desirability of scheduled assessment dates.

In connection with this scheduling phase of the Tennessee NET Assessment a structured communication process between assessment staff members and agency personnel was established. The need for such a procedure during the second year of the project was evident from the first year's experience. This structured communication process involved contacts at several points during the assessment. Contacts included:

- a letter informing food service supervisors and curriculum specialists of the purpose of the project and outlining the proposed assessment activities
- an initial letter to principals of sample schools enlisting their participation in the assessment
- a second written communication to participating school principals requesting that they provide (on a standardized form) information concerning school size, possible testing sites within the school, the names of teachers willing to participate in the assessment, and convenient dates for test administration
- a third written communication to participating school principals requesting confirmation of an assessment date.

Participating school personnel were encouraged to write on each form any questions they had. Assessment staff personnel contacted by telephone those schools whose responses were missing or unclear. Clerical personnel were instructed to answer routine questions; other questions were referred to middle level supervisors and in some cases to the evaluation director.

Assigning Field Assistants

Personnel in each participating school also were contacted by the field assistant assigned to that school. Field assistants introduced themselves, confirmed the proposed testing date once again, inquired about motel accommodations near the assessment site, and asked for specific directions to the school. Assignment of field assistants to their respective schools is an important task. Field assistants should be assigned to schools where they will be able to establish rapport and a good working relationship with school personnel. For example, some persons seem to work best in rural settings, whereas others are able to interact more effectively in urban areas.

Developing Instrumentation and Data-Gathering Procedures

Development of instrumentation and data-gathering procedures is another element crucial to successful implementation of the model. Important considerations in the development of assessment instruments are ease of administration and efficiency of data retrieval. Careful, early planning can circumvent many problems in these areas.

As noted previously, large-scale assessments usually must be conducted with the help of temporary, part-time employees. Training for these individuals by necessity cannot be extensive. The more straightforward are the procedures reflected in instrument design, the more likely it is that administration will be consistent. When multiple forms of an instrument will be used, care should be taken to make the methods of administration for each as similar as possible. Instructions to the respondents which appear on the forms should be simple and clear so that the field assistant is not put in the position of having to make interpretations which may affect reliability.

Instrument design also is critical in determining the efficiency with which data can be retrieved. Retrieval is facilitated if respondents mark their answers on optical scan forms which can be read by computer and the data entered directly into computer storage. When some characteristics of the respondent or the subject matter being assessed prevent the use of optical scan forms, instruments can be designed to facilitate data entry for computer analysis by the arrangement of blanks for responses, the use of numbered responses corresponding to the card columns in which they will be entered, and the labeling of response blanks with card column numbers.

Duplication of instruments can prove to be a major hurdle in a large-scale assessment. Determination of the number of pages in each instrument form and the number of each form required must be made as early as possible so that definite arrangements can be made for duplication, collation, and stapling. Very large duplication jobs often must be scheduled days or weeks in advance with commercial concerns. If duplication is to be an in-house operation, it is essential to determine the time required for all portions of the job to avoid disruption of usual job responsibilities as deadlines near and to make arrangements for part-time assistance if it appears to be desirable. Even the duplication facilities of a large university can be badly strained by very large orders, as was discovered during the NET Assessment. Wherever the duplication is to be accomplished, careful oversight and quality control are essential to assure that copies are clear and readable and that instrument assembly is correct.

When duplication of instruments had been completed, consideration should be given to precoding of instruments with as much information as possible. Adult and student instruments for the NET Assessment were precoded with school, grade, and form codes. Precoding reduces time demands on the test administrators and reduces the likelihood of errors in coding. If precoding is used, care must be taken to assure that answer sheets and instruments do not become separated. Optical scan forms can be identified further by writing the grade and/or adult group for which they are intended in felt tip pen along a margin.

Having developed, duplicated, assembled, and precoded the instruments, the evaluator must determine procedures for their distribution and recovery. A few hours at this point spent planning and organizing materials and developing a record-keeping system can prevent lost hours and unusable data later. If possible, one person should be assigned solely to the job of distributing instruments and other materials and equipment. That person should develop an estimate of the numbers of forms of instruments and other materials that will be needed on each day of the assessment period by each field assistant. A checklist, signed by the field assistant after an inspection of the contents of the assessment package, will not only help assure that all materials and equipment will be in place when the field assistant needs them, but will prevent the disappearance of equipment for which no one seems to be responsible. As instruments are checked back in, a simple control procedure can be used to determine that the correct groups were assessed, answer sheets were completed as instructed, and no raw data were left behind in the setting, the rented car, or the hotel room.

Soliciting Feedback

Another element essential to implementation of the model is solicitation of feedback from field assistants and cooperating agencies concerning instrumentation and data gathering procedures as well as other aspects of the assessment. Feedback received from participating agencies and field assistants can be of great value not only in a formative sense by clearing up problems as they emerge, but also in a summative sense by providing the foundation for improvement of instruments and procedures for future assessments. Informal types of feedback already have been mentioned. Equally important are formal feedback procedures planned as part of the assessment.

Prior to the beginning of the actual assessment process, participating agencies should be allowed to give feedback about scheduling and other relevant issues. In the NET Assessment, participating agencies first were asked to provide a list of dates within a specific time frame that would not be convenient for assessment. In a second communication agencies were provided with a specific assessment date and asked to respond if that date would not be convenient. After the assessment, agencies were asked to complete a brief questionnaire about the assessment process. Field assistants also were asked to complete such a questionnaire for each setting in which they worked. Review of these feedback contacts at the end of the first year's assessment formed the basis for changes in procedure for the second year.

Summary and Conclusions

In summary, elements essential to implementation of the model for management of large-scale assessments which has been described include:

- development of a leadership framework through which effective management can take place
- construction of an activity timeline
- recruitment, interviewing, selection, and training of field assistants.

Other important elements of the model are the following:

.development of a representative sampling procedure
.development and maintenance of communication channels with cooperating agencies
.development of an assessment schedule
.assignment of field assistants to specific sites
.development of a representative sampling procedure
.development of instrumentation and data-gathering procedures
.solicitation of feedback from cooperating agencies and field assistants.

Certain aspects of the development of this model which served to strengthen it include:

.testing and validation of management techniques over a two-year period
.communication and decision-making strategies designed to facilitate the flow of information and execution of actions
.assignment of each member of the assessment staff to definite areas of responsibility with opportunities for decision-making and information input
.development of specific procedures for contacting agency personnel to insure open communication between assessment staff members and agency personnel
.development of specific strategies for recruitment, interviewing, selection, and training of temporary part-time personnel
.utilization of both formal and informal methods for receiving feedback from field assistants and agency personnel.

This model has important implications for evaluation research. It is designed to be used as a guide for evaluation of projects of all types--not just those dealing with educational programs. Industry uses evaluation techniques in assessing training programs for personnel as well as job performance. Educators have benefitted from the use of management techniques to facilitate large-scale evaluation projects. This model has incorporated such management concepts as outlining communication and decision-making strategies; establishing a definite plan of action and enforcing deadlines (e.g., activity timeline); placing emphasis on maximum utilization of personnel; and providing a carefully designed program for on-the-job training. With ever-decreasing funds for education and social services comes the need for more effective techniques for evaluating existing and proposed programs. The development of validated models such as this one can help increase the efficiency of evaluation projects involving large-scale assessments.