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THE DIET HISTORY--A TOOL AND A PROCESS: A SELF-INSTRUCTIONAL MODULE TO FACILITATE STUDENT DIETITIANS' LEARNING TO ELICIT A CLIENT'S DIET HISTORY

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Joanne Marie Jasmund

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Burniss L Wenberg
Major professor

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THE DIET HISTORY--A TOOL AND A PROCESS: A SELF-INSTRUCTIONAL MODULE TO FACILITATE STUDENT DIETITIANS' LEARNING TO ELICIT A CLIENT'S DIET HISTORY

By

Joanne Marie Jasmund

A THESIS

Submitted to
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1980

ABSTRACT

THE DIET HISTORY--A TOOL AND A PROCESS: A SELF-INSTRUCTIONAL MODULE TO FACILITATE STUDENT DIETITIANS' LEARNING TO ELICIT A CLIENT'S DIET HISTORY

By

Joanne Marie Jasmund

One component of nutritional assessment, the diet history, is used to describe a client's dietary status. A survey of the Coordinated Undergraduate Programs (CUP) in the United States failed to locate an instructional unit to facilitate student dietitians' learning to elicit a client's diet history, in accordance with the definition developed by the investigator. The purpose of the study was to compare the effectiveness of a self-instructional module and a lecture presentation with the same content, designed according to the Hiob Model.

Summative evaluation was completed with twenty student dietitians enrolled in Michigan State University's (MSU) General Dietetics Coordinated Study Plan (GDCSP). Student dietitians were randomly assigned to two treatment groups: ten to receive the lecture presentation and ten to complete the self-instructional module. The pre-test and the post-test were identical: the student dietitian, provided with a simulated client and his/her medical record, was asked to obtain the client's diet history. An evaluation instrument was constructed to measure student dietitians' achievement on the tests.

An Analysis of Covariance was used to determine whether there was a significant difference in achievement between the effectiveness of treatment groups in facilitating student dietitians' learning to elicit a client's diet history. Both lecture and self-instruction were effective in facilitating student dietitians' learning as determined by gain in achievement between the pre-test and post-test. The findings failed to demonstrate a significant difference in achievement between the treatment groups.

The findings of the study suggest that self-instructional modules could be used in place of lecture for presenting material that is relatively stable.

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CHAPTER I

INTRODUCTION

"The clinical dietitian translates nutritional and behavioral sciences, and the study of foods, into the skills of nutritional care of people. . ." (Mason et al., 1977). According to Mason et al., the "facilitation of client independence through nutritional counseling" is the clinical dietitian's primary responsibility. The essentials of nutritional counseling include assessment, planning, implementation, and evaluation. Assessment consists of the collection and analysis of information obtained from the client. The collection of pertinent dietary, physical, biochemical, and clinical data are included in the assessment component. The diet history is one of the assessment tools clinical dietitians use to acquire data for assessing a client's dietary status.

Definition of Terms

The following terms are presented to facilitate reading the thesis.

Dietary status: A statement of "what an individual has been eating. It gives no direct implication of nutritional status--only presumptive evidence if his nutritional requirements are average and there are no conditioning factors present" (Young, 1965).

Nutritional status: "Refers to the actual nutritional condition of the patient as measured by physical examination, laboratory

determinations, pathologic morphology and therapeutic response under controlled conditions. Nutritional status is influenced not only by dietary intake but also conditioning factors, such as increases in nutrient requirements, excretions, or destruction and interferences with nutrient intake, absorption or utilization which may be operating either currently or in the past" (Young, 1965).

Patient/client: The individual receiving the dietitian's services. These terms are used interchangeably.

Tool: Something used in performing an operation or necessary in the practice of the dietetic profession.

Self-instructional module: "A self-contained learning unit with well-defined objectives. Usually it consists of learning materials, a sequence of activities, and provisions for evaluation. Students may move independently at own rate and at times of their own choosing" (Cross, 1976).

Learning outcome: A clear indication of the outcome of the instruction; what the learner should be able to do after instruction.

Entry test: A test to determine whether learners possess the critical knowledge, skills, and attitudes prerequisite to success in the instruction.

Pre-test: A test to determine whether learners already possess the knowledge, skills, and attitudes taught in the instruction.

Embedded test: A test or practice exercise interspersed throughout the instruction to provide learners practice and feedback in applying each new concept or skill taught.

Post-test: A test to measure learners' achievement of the learning outcome following instruction.

Attitudinal test: A test to solicit learners' attitudes regarding the instruction.

Criterion referenced test: A test designed to elicit a measurement that can be interpreted according to a given performance standard.

Formative evaluation: The process of testing the instruction during its development in order to obtain information for modification and improvement purposes.

Summative (field) evaluation: The process of testing the instruction with learners of the target population after formative evaluation.

Working Definition of the Diet History

Throughout the development and formative evaluation of the instructional units, the working definition was modified and the following definition evolved.

The *diet history* represents both a tool and a process used by clinical dietitians to assess clients' dietary status.

As a tool, the diet history is a retrospective account of a client's past food intake and eating behavior. The description of the food intake should provide an estimation of the typical food intake of an individual (what the client eats). The information obtained should be both qualitative (nutrient density) and quantitative (amount consumed), if the diet history is to be representative of the client's food intake. A client's eating behavior is characterized by the individual's usual pattern of eating, variations of food habits, and the impact of variables (physiological, psychological, and environmental) which influence the food chosen for consumption.

As a process, the diet history represents a procedure for collecting past food intake and eating behavior data. The interview is a mode by which the collection of meaningful information about the client is obtained.

The proposed definition of the diet history was agreed to by the clinical faculty as a working definition and was used for the present study.

Statement of the Problem

The presentation of the diet history concept to student dietitians enrolled in Michigan State University's (MSU) General Dietetics Coordinated Study Plan (GDCSP) does not conform to the preceding definition. The challenge to the investigator was to identify an instructional method to facilitate student dietitians' learning to elicit a client's diet history according to the definition. The investigator approached the problem with the question, "Do any instructional units applicable to MSU's GDCSP on facilitating student dietitians' learning the diet history exist according to the definition?" If the survey identified an instructional unit applicable to MSU's GDCSP in accordance with the definition, the investigator would pursue its availability for testing purposes; if none were located, the investigator would develop one. A survey of the Coordinated Undergraduate Programs (CUP) in the United States failed to identify an instructional unit on the diet history in accordance with the definition. The investigator proceeded to develop an instructional unit on facilitating student dietitians' learning the diet history.

Assumptions

The following assumptions were made in conducting the study.

1. An instructional unit on the diet history according to the definition does not exist.
2. An instructional unit on facilitating student dietitians' learning the diet history is likely to be incorporated in a CUP where didactic and field experience interface, if one exists.

3. The student dietitians have received general exposure to the concept of the diet history but not as specified according to the given definition.
4. The simple random sampling technique used to assign the student dietitians to one of two treatment groups is an appropriate sampling technique for the proposed study.
5. The instructor for the lecture presentation possesses at least average teaching abilities.
6. Effectiveness of the lesson can be determined by examining the treatment method (self-instruction and lecture) as the only independent variable.

Hypotheses

The following hypotheses were addressed in the study to determine the effectiveness of each treatment method for both the process and tool components, separately.

1. MSU student dietitians given a *self-instructional module* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history from pre-test to post-test for the *process* component.
2. MSU student dietitians given a *self-instructional module* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history from pre-test to post-test for the *tool* component.
3. MSU student dietitians given a *lecture presentation* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history from pre-test to post-test for the *process* component.
4. MSU student dietitians given a *lecture presentation* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history from pre-test to post-test for the *tool* component.

Hypotheses 5 and 6 compared the effectiveness between the lecture and the self-instruction groups, for both the process and the tool components, separately.

5. MSU student dietitians given a *self-instructional module* and MSU student dietitians given a *lecture presentation* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history, as measured by the identical post-test for the *process* component.

6. MSU student dietitians given a *self-instructional module* and MSU student dietitians given a *lecture presentation* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history, as measured by the identical post-test for the *tool* component.

CHAPTER II

REVIEW OF THE LITERATURE

The Diet History

The Diet History in Nutritional Care

Dietitians participate in nutritional assessment in population surveys and in health care programs (Shapiro, 1979).

The investigator could not locate any reports in the literature about the diet history in the context of practicing dietitians in a health care setting with regard to internal or external validity and reliability.

The Diet History and Research Methodology

Considerations in collecting food intake data. Obtaining complete and accurate food intake data about a client is a complicated task (Beal, 1967). Lack of agreement regarding "what" and "how" data should be gathered contributes to the problem of identifying which clients data should be collected and whose responsibility is the collection.

The intended use of the food intake data is a major consideration in collecting the data. Assessment of food intake data is prerequisite to nutritional care planning and nutritional counseling for practicing dietitians. In research, the collection of food intake data

often focuses on large groups of individuals (i.e., epidemiologic or clinical studies) where the mean intake of the group is of value.

Thus, the degree of accuracy required is contingent on the purpose for collecting the data. Gross distinction in food intake among a large number of individuals may be permissible. Accuracy is of greater importance when the information pertains to an individual client. Estimates of food intakes are more likely to be representative for groups of people than for individuals (Young et al., 1952; Trulson, 1954).

Characteristics of the individual from whom food intake data are solicited are important in deciding which procedure for obtaining food intake data is appropriate. The quality of data obtained depends on the ability of the client as well as motivation to cooperate (Reed and Burke, 1954; Adelson, 1960; Beal, 1967). Faltering memories impede the collection of accurate information based on past consumption. One explanation for the lack of precision obtained by an individual's estimation of past food intake is that s/he does not know exactly what or how much food is eaten daily (Huenemann and Turner, 1942). Most individuals are not accustomed to take notice of their food intake.

What information is considered critical for assessing a client's dietary status? Huenemann and Turner (1942) cite the need to gather qualitative and quantitative food intake information. Qualitative food intake data identifies the nutritive quality of foods consumed with respect to nutrient density. Quantitative food intake data are measures of the amount of foods consumed. A description of a client's

dietary status is valid only when both qualitative and quantitative food intake data are considered in the assessment.

Considerations in determining eating behavior. In addition to food intake data, factors which influence the foods chosen for consumption are essential in assessing the client's dietary status. A client's food intake is affected by fixed and flexible variables.

Fixed variables influencing the client's food intake are those which the client has little control over or which are not easily manipulated. The client's age, sex, marital status, number of people in the family, address, birthplace, level of education, occupation, income, and religion, may have a bearing on what the client eats (Blecha, 1951; Wilson and Wilson, 1966; Niehoff, 1969; Bartholomew and Poston, 1970; Huenemann, 1973; Hirsch et al., 1977). Physical and biological factors also contribute to the client's food consumption.

Flexible variables are those which the client has some control over which relate specifically to existing health beliefs and attitudes, eating patterns, and environmental factors (Gifft, 1972). The client's perceptions of nutrition and health may have a positive or negative influence on his/her food selection. Eating patterns established by the client which affect the kinds and amounts of food consumed include: time, place, frequency of eating, conditions under which food is consumed, and relationship of food intake to physical activity.

A recognition of these variables and an appreciation of their significance provides the dietitian a basis for planning a client's nutritional care or counseling a client.

Collection of food intake data. How does the dietitian collect the pertinent data described in the preceding paragraphs? Although much of the literature describing the collection of food intake data has focused on dietary methodologies for research, a description of these methods provides implications for the practicing dietitian in eliciting meaningful information from clients in a health care setting.

Methods described in the literature examine food intake from either a historical or from a "here and now" perspective. Becker et al. (1960) have conveniently classified the collection of food intake data into two distinct methods: food record and the dietary history.

A dietary record is a written diary of all foods and beverages consumed by an individual in a given time period (Trulson and McCann, 1959). Procedures for collecting food intake data by a food record include weighed, measured, and estimated amounts of food consumed. Dietary records are used to examine the current food intake of a client: what the client is eating.

The diet history provides food intake data representing an individual's past food intake: what the client ate in the immediate past for a fixed period and what the client's usual food intake was over a longer period of time (Huenemann and Turner, 1942; Young and Trulson, 1960; Burke, 1947). The food intake data obtained by a diet history are based on estimated amounts of food consumed and frequency of use. Estimates of food intake are subject to errors of observation and memory as well as to a conscious or an unconscious exaggeration or minimizing of food intake (Beal, 1967). The food frequency serves to

verify the data gathered (Burke, 1947; Blecha, 1951; Reed and Burke, 1954).

Methodology studies. Through a review of the literature, the investigator identified numerous reports on the *dietary record.* Many studies have been conducted using the dietary record as the method employed to assess the food intake of individuals and groups (Sims, 1978; Harper et al., 1978; Grotkowski and Sims, 1978; Kohrs et al., 1978; Bray et al., 1978).

The comparison of the dietary record with other methods of dietary investigation (recall or dietary history) is a subject of active interest (Huenemann and Turner, 1942; Bransby et al., 1947; Eads and Meredith, 1948; Ohlson et al., 1950; Young et al., 1952; Trulson, 1954; van den Berg and Mayer, 1954; Adelson, 1960; Stefanik and Trulson, 1962; Bray et al., 1978).

Several investigators have studied the dietary record attempting to eliminate much of the ambiguity associated with the dietary record method. Studies have focused on: the minimum length of time required to be representative of an individual's food intake (Koehne, 1935, Eads and Meredith, 1948; Chalmers et al., 1952; Trulson and McCann, 1959); the determination of day, week, or seasonal effect for study (Chalmers et al., 1952; Trulson, 1955; Leverton and Marsh, 1937); and weighed versus measured food record (Turner, 1940; Huenemann and Turner, 1942; Bransby et al., 1947).

The *diet history*, its attributes, and its shortcomings in collecting food intake data, have received much study. The diet history

yields information about the variables affecting an individual's food intake in addition to food intake data, increasing its value for the practicing dietitian.

In the 1940's, Burke developed the dietary history as a research tool. Burke's detailed dietary history is appropriate for research but has no use to the practicing dietitian. Several investigators have studied the internal validation and reliability of Burke's dietary history or some modification of it (Turner, 1940; Young et al., 1952; Huenemann and Turner, 1942; Blecha, 1951; Beal, 1967; Bray et al., 1978). Comparison studies conducted by several investigators have attempted to establish external validity and reliability (Beaudoin and Mayer, 1953). From the number of investigators, no one clear determination of the diet history has been derived.

Implications of the Diet History and the Practice of Dietetics

Gathering food intake and eating behavior data from a client is the forerunner to planning and implementing the nutritional care of clients (Blecha, 1951; Johnson, 1975; Galbraith, 1975; Diet Therapy Section Committee, 1975). Over thirty years ago Burke (1947) reported that an "individual's nutritional status can be no better than his past and present food habits permit." The estimation of a client's dietary status has long been recognized as a primary function of the dietitian (Blecha, 1951; Young, 1965; Johnson, 1975). The investigator concurs with Young and Trulson (1960) who adeptly wrote, "If dietary history or dietary instruction is worth doing at all, it is worth doing well." At best, the information obtained is of subjective value (Turner, 1940).

In 1976, the Joint Commission on Accreditation for Hospitals (JCAH) defined standards for dietetic services as follows:

> the administration of the nutritional aspects of patient care shall be under the direction of a qualified dietitian [whose] duties shall include: recording dietary histories of patients such as those with food allergies and those unable to accept a limiting diet regimen. . . .

Compliance with the JCAH standard is impeded by the various interpretations regarding implementation of the standard and definition of the diet history. Is the dietitian solely responsible for obtaining and recording the diet history? Can the function of taking a client's diet history be delegated to dietetic support personnel such as a dietetic technician under the direction of a qualified dietitian? The feasibility of delegating simplified procedures and tasks to dietetic support personnel has been studied by several investigators (Becker et al., 1960; Lumsden et al., 1976; Shapiro, 1979). Lumsden et al. (1976) reported that 85 percent of the dietitians surveyed were willing to delegate the task "take accurate and informative dietary history records" to dietetic technicians.

A survey initiated by a Committee on Nutrition established by the Medical Society of New Jersey, showed that a minority (20 percent) of the respondents (dietitians) indicated that the recording of a diet history was part of their therapeutic consultations (Jacobson, 1975). Since the survey question addressed the recording of the diet history, conclusions cannot be drawn regarding the taking of the diet history or the recording of the assessment of a diet history.

Weed and Molleson (1977) investigated the prevalence of diet history documentation and reported that 30 percent of the dietitians studied recorded the diet history on the dietary card; 5 percent of these diet histories also appeared in the medical record, while another 3 percent of the diet histories were recorded in the medical record but were not on the dietary card.

Tobias and Van Itallie (1977) reported an evaluation of the nutritional practices in two teaching hospitals which showed that for approximately 90 percent of the patients studied, the data in the medical record were suggestive of the need for a diet history. Yet a diet history obtained by a dietitian was elicited from only 10 percent of these patients.

These studies illustrate the lack of communication between dietitians and the medical staff and among dietitians.

Implications of the Diet History and Students in Dietetics

There is a growing demand for appreciation of specialized knowledge and expertise in human nutrition in the clinical setting (Study Comm., 1972). Forcier et al. (1977) reported the findings of a study on practicing dietitians' perceived limitations to their participation in nutritional assessment. Frequently cited limitations included lack of time, lack of supportive personnel, lack of educational preparation in general and insufficient opportunities to become skilled at assessment procedures and too few available tools to facilitate them in their professional role (Forcier et al., 1977). If dietitians' roles

include nutritional care planning and nutritional counseling, then dietitians must become competent in their perceived and ideal roles (Schiller and Vivian, 1974).

The Study Commission's Report (1972) regarding the quality of education recognized the need for dietitians to delegate some of their activities to dietetic support personnel which would provide more time for dietitians to function at a higher professional level. In addition, the Study Commission reported the existence of great and unacceptable variation in the quality of instruction and learning opportunities. Future student dietitians will benefit as the Study Commission's findings are reacted to by dietetic educators. Student dietitians who are adequately trained in the knowledge and skill of the diet history will be prepared to function at a truly professional level.

Summary

A review of the literature failed to identify any studies which described any aspect of student dietitians' learning the diet history.

Students' Learning

Though a needs assessment (p. 19) failed to identify any instructional units facilitating student dietitians' learning to elicit a client's diet history in accordance with the investigator's definition, several instructional methods in current use were listed according to the respondents' perception of the diet history. These instructional methods include: lecture, simulation, role-playing, supervised field

experience, workshops, observation, discussion, assigned readings, audiotape, and videotape. Many of these methods were used in combination; none exclusively by self-instruction.

Self-Instruction as a Means of Learning

Self-instruction has increased in popularity as an effective instructional method.

Self-instructional materials have been used with success at Syracuse University in the Department of Nutrition and Food Science (Short, 1971). The revision of their dietetic curriculum was directed towards reducing problems associated with teaching nutrition, as well as making the classes more interesting, exciting, and relevant to the students. Short reported that an evaluation of the self-instructional curriculum indicated that students liked being able to self-pace and preferred having the responsibility of scheduling. A study of their curriculum (1969-1970) to determine whether self-instruction was an effective teaching method for nutrition courses produced favorable results. The study illustrated a trend towards higher achievement scores for the self-instructional group. In addition to the cognitive results, positive affective changes were noted with a decrease in student anxiety and fatigue and an increase in social affection and happiness.

Self-instruction facilitates students' educational development by placing the responsibility for learning on the students. Self-instruction also increases the efficiency of the instructor. Once developed, the instructor can assist students who require additional

help, as well as enrich the learning of students who desire additional information. Furthermore, self-instruction can be as easily implemented for 100 students as 10 students. For material which the content is stable, self-instruction is appropriate.

The Study Commission on Dietetics recommended that various instructional strategies be explored to improve the quality of the education of future dietitians (1972). Self-instruction was identified in the Essentials for Coordinated Program in Dietetics as one strategy to prepare dietitians (1976).

Many different instructional models exist to design educational materials. Several have evolved from a basic systematic approach, characterized by an input-output-feedback-revision cycle (Andrews and Goodson, 1980). The systems approach is a problem-solving process; it relates all relevant factors in a given problem systematically. Hiob's Model is one instructional model which was developed and tested at Michigan State University (Hiob, 1978) to effectively design self-instructional modules for the dietetic curriculum (Morrissey, 1976; Gines, 1978).

Summary

The need for instructional materials to facilitate student dietitians' learning to elicit a client's diet history is well documented. A lack of reported research on the diet history in clinical practice or on students' learning the concept of the diet history exists. Self-instruction as a teaching strategy seems to be an

appropriate method. Through the remainder of the thesis, a study is described which purports to clarify the concept of the diet history in clinical practice and to examine the effectiveness of self-instruction on facilitating students' learning to elicit a client's diet history.

CHAPTER III

METHODOLOGY

Methodology is described under the headings of Needs Assessment, Design of the Study, Development of the Self-Instructional Module, Development of the Lecture, and Testing of the Comparison.

Needs Assessment

Defining the Diet History

The clinical faculty of MSU's GDCSP reached consensus on the working definition of the diet history written by the investigator. Additional support of the definition was secured from the Coordinated Undergraduate Program (CUP) Directors in Michigan (Appendix A).

Survey of U.S. CUP

A one-page questionnaire was developed to identify existing instructional units on the Diet History (Appendix B). A glossary of terms was enclosed with the questionnaire to clarify any ambiguity associated with the terminology. The questionnaire was pilot tested by the CUP directors in Michigan. Suggestions for improvement were incorporated. The questionnaires were mailed 24 September 1979 to the sixty-seven CUP directors or program representatives identified in the 1979 Directory of Dietetic Programs. The survey population was given a one-month response period to complete and return the

questionnaire. Time constraints precluded a follow-up mailing to gain additional responses.

Survey responses were accepted through 19 November 1979, at which time fifty-one (66 percent) of the questionnaires had been returned. Seven of the respondents indicated that their institution possessed an instructional unit on the diet history suited to their curriculum. Of those seven respondents, four indicated an interest in having their instructional unit reviewed for testing purposes. None of the instructional modules reviewed were designed according to the definition. A report of the findings was mailed to the respondents 21 November 1979 (Appendix C).

Summary

In view of the lack of an existing self-instructional module on facilitating student dietitians' learning to elicit a client's diet history, the value of self-instruction as a teaching alternative, the recommendations of the Study Commission on Dietetics and Essentials for CUPs, the investigator proceeded to develop and evaluate a self-instructional module on the diet history.

Design of the Study

The design of the study is described under the headings Research Model, Development of the Self-Instructional Module, Development of the Lecture, Selection of Subjects, Variables, and Testing for Comparison.

Research Model

The Hiob Model (1978) was selected for designing the study. The model consists of six components. Each component describes a set of procedures which the instructional designer works through to design, produce, evaluate, and revise an instructional unit (Figure 1).

Development of the Self-Instructional Module

A self-instructional module to facilitate student dietitians' learning to elicit a client's diet history was developed in print format according to the Hiob Model. The process of media selection was made based on criteria presented in the Hiob Model (1978).

Development of the Lecture

A lecture was subsequently developed as an oral presentation to facilitate student dietitians' learning to elicit a client's diet history using the Hiob Model as the research design. The instructor for the course in which the testing was conducted, was responsible for presenting the lecture.

Selection of Subjects

The student dietitians enrolled in the first professional year of MSU's GDCSP were selected to participate in the study. Admission of students in the GDCSP was by a random number procedure in which one of the eligibility criteria for selection is a Grade Point Average of 2.75 (GDCSP Admissions Committee, 1978). The twenty student dietitians were enrolled in HNF 302-Dynamics in Dietetics II. A table of random numbers

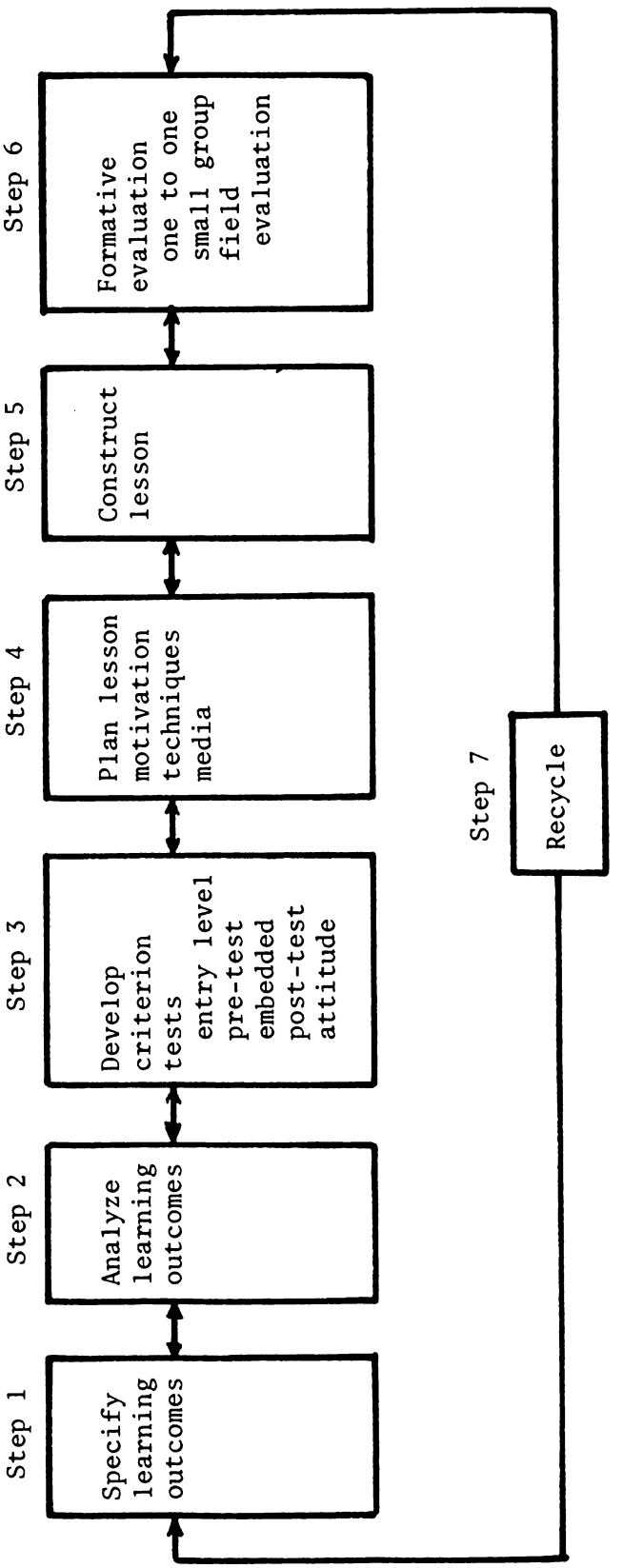

Figure 1. A Systematic Approach for Module Design: The Hiob Model.

was used to place the student dietitians in the treatment groups: ten to receive the lecture treatment, and ten to receive the self-instruction treatment.

Variables

The treatment method (lecture and self-instruction) was the independent variable for the study. The dependent variables for the study included the selection of subjects, their educational status, implementation time of the study, and the pre-test and the post-test for the study.

Testing for Comparison

The study was conducted Winter term 1980 to coincide with the time at which student dietitians would be studying the diet history.

The student dietitians in both treatment groups received written and verbal instructions given by the investigator. The pre-test was administered to the subjects in both treatment groups prior to instruction, by the investigator. Following the implementation of the treatment, the investigator administered the post-test to all of the subjects.

Development of the Self-Instructional Module

The self-instructional module was developed following the six steps of the Hiob Model. A discussion of each step of the Hiob Model is detailed in two ways. First, the characteristics of a step in the Model is described. Second, the particulars in applying the step to the module being developed is illustrated.

Step 1

Step 1, specify learning outcomes, requires the instructional designer to identify what the students will be able to do after completing the lesson. The learning outcome is a concise statement which includes the performance required by the learner, the conditions under which the learner is to perform, and the minimum performance level acceptable. The learning outcome for the self-instructional module was:

> Given a simulated client and his/her medical record, the student dietitian will be able to elicit the client's diet history with 86 percent accuracy, according to the performance criteria.

Eighty-six percent was selected as the competency level. This level represents performance which the author considers initially satisfactory for student dietitians. After practice, a higher level of performance may be expected. Setting the performance level extremely high initially may discourage students who are unable to achieve the performance standard. Students' self-confidence may be developed if they are able to experience success and to receive positive feedback on some aspect of their first attempts. A performance level below 86 percent does not ensure that basic concepts and principles were learned.

Step 2

Step 2, analyze the learning outcome, is the instructional analysis which identifies subordinate knowledge, skills, and attitudes which are required for the student to successfully meet the learning outcome. Step 2 is important in identifying all critical content which

needs to be included in the lesson. There are several techniques that can be applied to the instructional analysis. The hierarchial analysis technique was used to design the self-instructional module in the present study.

Subordinate skills used in taking a client's diet history were identified using the hierarchial analysis (Figure 2). The analysis was initiated by asking "What does the learner have to know or be able to do so that simply given instruction s/he could perform the learning outcome?" The question was considered at each subordinate skill of the hierarchy to ensure that an appropriate and valid hierarchial analysis of the learning outcome was achieved. The investigator examined the hierarchy to determine which knowledge and skills the student should possess prior to the instruction (entry behavior). The entry knowledge and skills identified are listed in Figure 2.

Step 3

Step 3, develop criterion referenced tests, follows the instructional analysis. Criterion referenced tests serve two functions: (1) to evaluate the learners' progress, and (2) to provide the instructional designer feedback regarding the effectiveness of the lesson. Criterion referenced tests are developed for each step identified through the instructional analysis; performance on these test items is used to assess whether students have achieved the objective of each subordinate skill in the lesson.

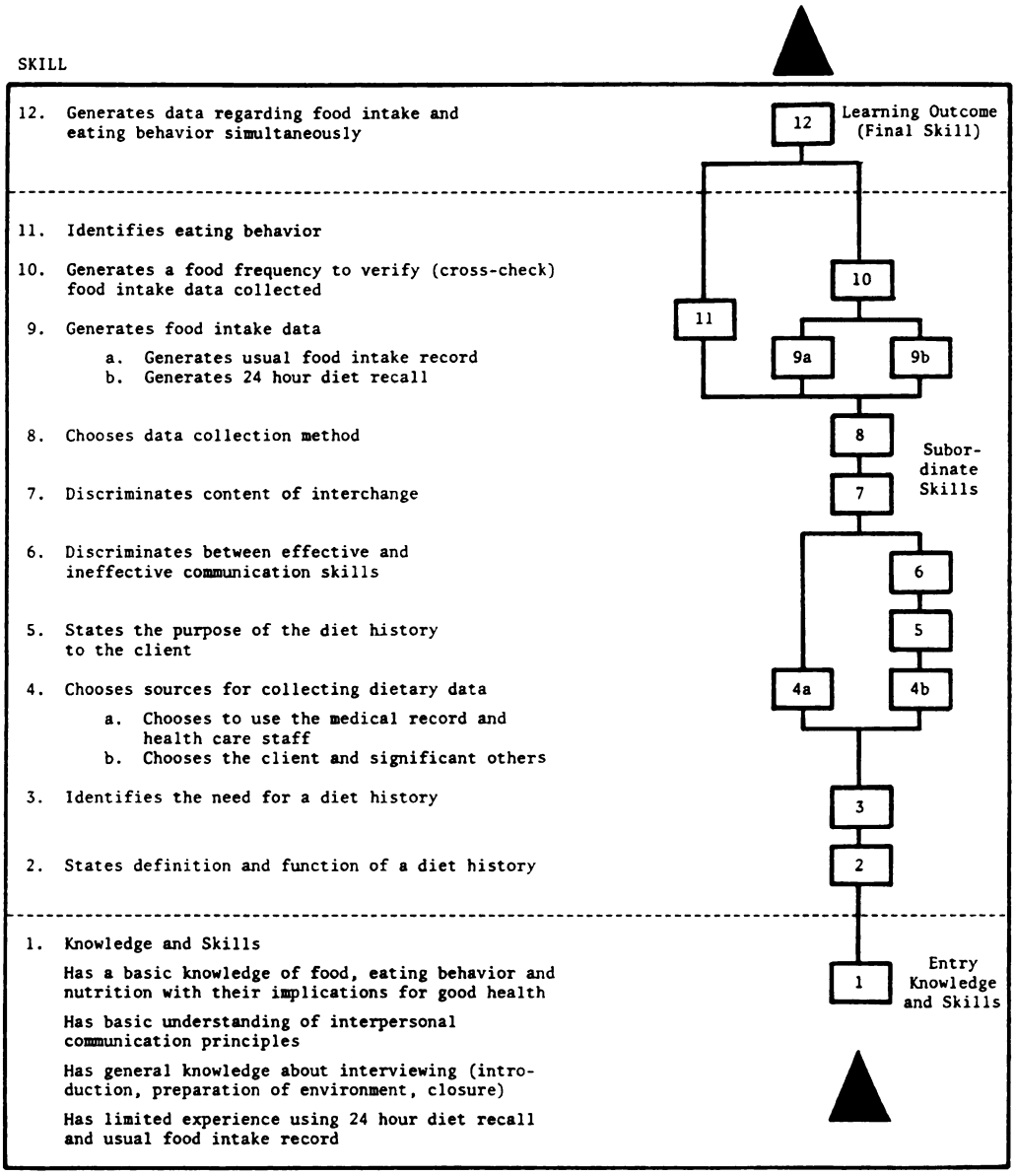

Figure 2. Hierarchial Analysis of Learning Outcome for Diet History Instructional Unit.

There are four types of criterion referenced tests described in the Hiob Model. These include:

Entry test:	determines whether learners already possess the knowledge, skills, and attitudes pre-requisite to success in the instruction.
Pre-test:	measures learners' ability to perform the learning outcome prior to instruction.
Embedded test:	provides learners practice in applying each new concept or skill taught.
Post-test:	measures learners' achievement of the learning outcome following instruction.

Each of these tests are described below in relation to the development of the diet history module.

Entry test. The present study did not incorporate an entry test. Prerequisites of the student dietitians were assessed according to their status in the GDCSP since student dietitians are not permitted to progress to the next course in the program until competency of the material prior to the course has been demonstrated.

The remaining three types of tests (pre-test, embedded test, and post-test) were incorporated in the self-instructional module. The embedded test is described next, followed by the pre-test and the post-test which are described together.

Embedded test. Throughout the self-instructional module embedded tests provided the student dietitians practice in applying each new concept or skill taught. Embedded tests allowed the student dietitians to self-evaluate using the feedback provided for each exercise. The feedback informed the student dietitians about their progress. Student dietitians were instructed not to proceed until a

subordinate skill had been mastered. Embedded tests were included in every section of the self-instructional module for the reasons listed. An example follows of an embedded test question illustrated in the module, after a piece of material had been presented.

Concept: Discriminating between effective and ineffective communication.

Embedded test: Rank the following questions from best to poorest stated. Write your reason for the rank given.

	Rank
1. "You don't drink alcohol do you?"	____
2. "How much alcohol do you drink?"	____
3. "Is alcohol a beverage you drink?"	____

Reason: _____
_____
_____

The type of questions developed for the self-instructional module attempted to give student dietitians practice in applying the material taught and not have them parrot how a particular item is done. In designing the self-instructional module, three or four test items were developed for each subordinate skill in the hierarchy.

Pre-test. In the test setting, the pre-test was used to establish baseline data for measuring differences in learning achievement between the lecture and the self-instruction treatment groups (Appendix D). In application, learners who achieve competency on the pre-test may not be required to complete the module, or the pre-test may be used to determine which subordinate skills of the module a learner, having mastered, may omit.

Post-test. The post-test is similar in design to the pre-test; it may in fact be the same. Although different circumstances were used, the post-test was identical to the pre-test in the present study since the learning outcome of the instruction was to "elicit a client's diet history." Instructions for the post-test parallel those of the pre-test (Appendix D). The case studies were designed according to the same format. Two dietetic problems were selected: one for the pre-test and one for the post-test (Appendix D). Both were equivalent in terms of complexity. Using the identical format and a comparable dietetic problem for the case studies served to standardize the testing situation for comparison purposes.

Simulation was used to measure the student dietitians' performance on the pre-test and post-test. Since the learning outcome implies that the student dietitian will be able to elicit a client's diet history, the investigator designed the pre-test and the post-test such that their performance of taking a client's diet history could be measured. Simulation was appropriate for assessing the student dietitians' performance. With simulation, variability of the client's behavior was eliminated. Simulation also provided a standard against which the student dietitians' performance could be judged.

At the same time, simulation produced a close approximation to "real life" thereby minimizing risks to real clients yet adding relevancy. The desirability and value of simulation has been reported in the literature (Davis et al., 1974; Hutter et al., 1977; Hoban, 1978; Gines, 1978).

Ms. Holly Holdman, specialist in clinical simulation, assisted the investigator in planning the simulated testing procedures. In addition, Ms. Holdman recommended several individuals who had previously been employed as simulated clients in physician training in MSU's Colleges of Osteopathic and Human Medicine. The individuals were contacted, hired, and trained in the role of the simulated client for the tests (Appendix E). More than one individual was trained in a given role to prevent client fatigue since the testing was completed for all of the student dietitians within a two-day period, for both the pre-test and the post-test. Alternating between clients provided the simulated client a break between interviews. Scenarios of the simulation and "instructions for responding" were written to train the individuals in the role of the client and to maintain standardization of the test. Two male actors impersonated the client for the pre-test while four female actresses assumed the character for the post-test (Appendix D).

The simulated clients were given instructions to elicit information completely, consistently, and accurately. The student dietitians were instructed to react to the situation as they would in real life. Time was provided at the conclusion of each interview so that the simulated client could give feedback to each student dietitian on her interviewing skills (Appendix F).

Development of the evaluation instrument. Evaluation of students' performance is a critical component in the learning process. A poorly constructed instrument is vulnerable to ambiguity. An

evaluation checklist designed as a rating scale was developed for assessing performance of behaviors selected as essential to obtaining an accurate and complete diet history (Appendix G). A performance rating scale is effective in measuring learning in the cognitive, affective, and psychomotor domain (Roth, 1978). The checklist was designed to measure both the method (process component) of eliciting a client's diet history and the information (tool component) obtained. The University of Colorado Medical School designed a similar checklist to teach and evaluate the interviewing skills of students in a pediatric clerkship (Hutter et al., 1977). A weight of importance was assigned to each item on the checklist according to its importance in taking an accurate and complete diet history; the most important behaviors were assigned greater weight than the less essential behaviors. This design has been used with medical students to evaluate their performance on clinical skills (Stillman et al., 1980). The student dietitians received a separate score for each component (tool and process). Competency must be demonstrated for each component for the final evaluation. Thus, 86 percent achieved for each component implies competency for the instructional unit, whereas a score of 76 percent for one component and a score of 96 percent for the other component cannot be averaged to give an overall score of 86 percent.

The rating procedure considers the four criteria of evaluation cited by Tower and Vosburgh (1976): objectivity, reliability, validity, and practicality. The observer who rates a learner's performance poses a dilemma in the evaluation process. The difficulty concerns the

objectivity of the checklist: the degree to which there is a high level of agreement in scores for a given performance when evaluated by two different persons.

Initially, a list of critical items was generated by a review of the literature. The list was examined to determine the observability of each item. Characteristics which represented a principle were broken down into observable behaviors which comprise the principle. For example, Section A--Establishes a trusting relationship was analyzed to yield a list of nine behaviors which contribute to the principle of "Establishes a trusting relationship" (Appendix G). Once all of the essential behaviors were identified, a method of discriminating among the levels of performance was determined to increase objectivity. For practicality, three levels of performance were selected for each behavior as follows:

Scale	
"2" Satisfactory	Consistently attempts to demonstrate knowledge and skill with moderate or good success. Requires additional practice to improve performance beyond expected competency.
"1" Fair	Usually attempts to demonstrate knowledge and skill with some success. Experiences difficulty. Requires practice to meet expected competency.
"0" Inadequate	Unable to demonstrate knowledge and skill. Displays no attempt or minimal attempt without success, or exhibits inappropriate behavior.
"NA" Not Applicable	Opportunity to exhibit behavior is absent in the situation.

A method for determining what constitutes each level was further delineated for each behavior resulting in a set of criteria (Appendix G). The criteria served to standardize the process of rating for accurately assessing student dietitians' performance, and avoiding rater judgment and prejudice. An example of the criteria for the behavior "uses open-ended questions" is listed below:

> uses open-ended questions to generate discussion in at least *four* instances [Can question be answered with (1) one word, (2) yes or no, or (3) does question encourage verbalization?]
>
> Scale
>
> "2" Attempts at least *four* times to use open-ended questions;
>
> "1" Attempts between *one* and *four* times to use open-ended questions;
>
> "0" Does *not* attempt to use open-ended questions.

The elaborate description of the criteria is also useful to the student in self-evaluation.

An additional response option of "not applicable" was included as a means of eliminating from the score a behavior for which the student had no opportunity to perform. For example, if the behavior "probes areas where client's responses are incongruent" is not observed due to lack of opportunity for the student dietitian to practice the behavior, then the number of points possible for the behavior would be subtracted from the total possible points so that the student dietitian would not be penalized. On the back of the checklist, space was provided for anecdotal comments. These comments provided documentation of the

rationale used to make changes on the checklist for improving the checklist's objectivity.

During the formative testing of the module an attempt was made to measure the reliability and validity of the checklist. Reliability measures the consistency of obtaining the same results each time under identical conditions. The checklist requires a minimum of hesitation in rating the behaviors when used with the criteria which has been cited as one indicator of an instrument's reliability (Tower and Vosburgh, 1976). During the formative evaluation the same simulated client was used, providing consistency in the data to be elicited. Comparison among the raters verified the effectiveness of the checklist to yield the same results in a given situation.

Validity, the concept of whether the checklist measures what it was intended to measure, was partially determined by evaluating the audiotapes from the formative evaluation. Higher scores were obtained by students who completed an accurate and complete diet history. Student dietitians receiving lower scores did not elicit as qualitative or as quantitative data as student dietitians achieving higher scores.

Practicality was considered in the design of the checklist. Evaluation of the student dietitians' performance during the formative testing verified the practicality of the checklist. The checklist was short enough to complete in the time allowed for evaluation. As a basis for evaluation, the checklist served to provide reinforcement on the student dietitians' performance and a basis for indicating degrees of change from one interview to another (pre-test to post-test). These

characteristics comprise practicality as reported by Tower and Vosburgh (1976).

Reliability of evaluators. One disadvantage of a rating scale is that it is subject to low inter-rater reliability due to biases of the evaluators (Roth, 1978). Inter-rater reliability was established among three evaluators (raters) prior to the evaluation of the pre-tests and post-tests using the evaluation checklist. The coefficient of inter-rater reliability reflects the amount of agreement among the raters per student dietitian and the discrimination among student dietitians by the raters. If all of the student dietitians were given an identical score by all of the raters, this would result in a low coefficient while their agreement per student dietitian would be perfect. The criteria developed to correspond to each item on the checklist facilitated the discrimination by the raters of the levels of performance. Four trials were completed in establishing inter-rater reliability on the checklist.

Trial 1. Initially, the raters evaluated three of the diet history audiotapes from the formative evaluation of the module prior to training to determine the extent of training required. Reliability using the inter-rater reliability coefficient (Ebel, 1951) of the average value of the three student dietitians was $r = .520$. The investigator compared the results of all of the raters and planned the training accordingly (Figure 3).

Training was expedited, since each rater had previous experience in taking diet histories as well as in evaluating student dietitians' performance in taking a client's diet history, with different methods.

1. Selection of audiotapes.
2. Distribution of audiotapes among raters.
3. Audiotapes are listened to by raters and comments are noted on checklist.
4. Student's worksheet is checked for written response to question/response on tape.
5. Criteria are reviewed to ensure accurate selection of performance level for given item.
6. Scores are recorded for items completed.
7. Raters listen to audiotape a second time to complete remaining items on the checklist.
8. Steps 4 through 6 are repeated.
9. Rater computes score for each item by multiplying level of performance by the weight of importance to determine score for each item.
10. Scores are tallied for each component: tool and process.
11. Score possible for non-applicable items is subtracted from total possible points.
12. Percentage is figured for points achieved out of total possible points for each component: tool and process.
13. Rater exchanges audiotapes with another rater for a second tape.
14. Step 3 through 12 are repeated.
15. Steps 13 and 14 are repeated until each audiotape has been rated.
16. Ratings of each rater for each audiotape are analyzed to determine reliability coefficient.

Figure 3. Rating Procedure for Evaluation of Diet History Audiotape Interviews.

The raters included a clinical instructor, a graduate assistant, and the investigator. Training began with a discussion of every item on the checklist with reference to the criteria identified for that item. The rules for special cases were discussed as could be determined.

Trial 2. After the training session, each rater re-evaluated the same three audiotapes of diet histories according to the guidelines discussed. For authenticity in scoring, each tape was rated independently by the raters. The tapes were listened to in their entirety, twice. After completing the first evaluation on one tape, the raters discussed the evaluation to verify the acceptability of the criteria. In addition, the criteria were refined as necessary to accommodate marginal cases. The raters recorded all other comments for later discussion for improving the evaluation process. The inter-rater reliability coefficient of the average value of the three raters by the three students achieved was $r = .872$. The reliability coefficient obtained for each part of the checklist was examined. Greater reliability was achieved for the tool component than for the process component.

Trial 3. Before the third trial, the raters discussed the results, clarified the misunderstandings, and provided input to improve the rating criteria to reach better agreement on the ratings with emphasis on the process component. The third trial following the same procedure consisted of four diet history audiotapes. The reliability on these tapes for each of the possible combination of three and all four was computed as follows:

Tapes	r
1, 2, 3, and 4	.384
1, 2, and 3	-.096
2, 3, and 4	.419
1, 3, and 4	.566

The decrease in rater reliability was difficult to interpret. The raters reviewed their scores with each other and discussed the discrepancies. The loss of rater reliability was attributed to the raters' inattention to every response, since consensus was reached once the discrepancies were reviewed. The task of listening to several tapes is tedious. In addition, the checklist is comprehensive requiring concentration to all responses spoken by the student dietitian and the client. The raters strongly agreed it was essential to listen to every tape twice in its entirety so the procedure was not changed. The researcher recommended that the raters stop the tape at intervals for making written comments.

Trial 4. The rating procedure was repeated with two more diet history audiotapes. The raters evaluated the first tape together. After the tape had been listened to and the scores tallied, the raters discussed the score given and obtained unanimous judgment for each item in detail. Then, each rater listened to the second tape, independently. The correlation of the second tape was computed for each of the possible pairs using the Pearson Product Moment Correlation and the average of these coefficients was used to describe the inter-rater reliability of the scores (Lindquist, 1953). The Pearson Correlation gave an average

reliability of r = .999. Further training at this time was not necessary. The raters proceeded to evaluate the student dietitians' diet history tapes.

Step 4

In Step 4, plan lesson, the instructional strategy of an instructional unit is developed. Planning the lesson includes:

1. what you will do prior to presenting information;
2. what students will do with the information; and
3. how will the information be tested.

One component of the instructional strategy is selecting *motivational activities* to obtain and maintain the learners' interest throughout the instruction. In designing the module, cartoons and examples were interspersed throughout the lesson to break up the information presented into smaller segments.

Presenting information is another component of planning the lesson which begins with determining the sequence to follow in presenting the information to the students. Subordinate skills identified in the hierarchial analysis were useful in sequencing the material in the module since mastery of the knowledge and/or skill listed in one subordinate skill was necessary before proceeding. The subordinate skills were also useful in determining the size of each fragment of material taught. Dividing the material into workable fragments led to the designation of ten sections of the self-instructional module listed below:

Section A Defining the diet history
Section B Identifying the need for a diet history
Section C Identifying sources for collecting dietary data

Section D	Stating the purpose of the diet history interview
Section E	Discriminating between effective and ineffective communication
Section F	Discriminating content of interchange
Section G	Choosing the data collection method
Section H	Generating a food frequency
Section I	Identifying eating behavior
Section J	Generating food intake and eating behavior data simultaneously.

Presenting information includes making decisions about what specific information, concepts, rules, and principles should be included in an instructional unit. Determining what specific information to include in the diet history lesson was facilitated by relating each concept, rule, and principle to the hierarchy leading to the learning outcome. If the information was not critical to achieving the learning outcome, it was omitted. For example:

Concept:	identify landmarks
	Is the ability to identify landmarks essential to eliciting a client's diet history?
Decision:	Yes, identifying landmarks is essential in eliciting a *complete* Diet History.

Student participation is another component to an instructional strategy. The embedded test exercises represented one method of involving the students in the facilitation of their learning to elicit a client's diet history. Feedback given in response to student dietitians' replies reinforced the information tested by enabling them to self-assess their comprehension of the material presented in each section of the module. The student dietitians were instructed to continue if they answered the test question correctly. Those students having difficulty were given another practice exercise or instructions to review material just presented.

Step 5

After planning the lesson, Step 5, construct lesson, involves the procedure for developing the instructional package. The materials for the diet history lesson were assembled in rough form. Once written, the investigator reviewed the lesson to check the sequence and flow of ideas, accuracy of material, and completeness.

At this phase of the development process, review of the self-instructional module was solicited by members of the investigator's Graduate Committee and faculty from two other institutions. An instructional development expert, familiar with the Hiob Model also critiqued the instructional design. Their comments and recommendations were incorporated prior to testing the module with student dietitians.

Step 6

The actual effectiveness and efficiency of the self-instructional module was assessed in Step 6, formative evaluation. Initially, a one-to-one evaluation was completed individually with three students testing the self-instructional module. The students selected were typical of the target population. Each student was a Junior dietetic major with a similar academic background. The students possessed limited knowledge of the concept of the diet history. According to the Hiob Model, one of the students should be slightly above average in general ability, and another student should be slightly below average. The students selected for the one-to-one evaluation in the present study were not hand-picked according to general ability; rather, volunteers were solicited to ensure an adequate number of students for participation. The formative evaluation was conducted at the end of the term, during finals week, a time which students were either

busy studying or were finished with exams and had left town during break. The students' role was explained as one of an evaluator; they were asked to react to the materials. The module designer recorded comments elicited by each student during the time spent working through the module. The pre-test and post-test were not administered to the students in the one-to-one formative evaluation, since the purpose was to determine whether a student could work through the module unassisted.

After the one-to-one evaluation, the module was tested with a small group. Though approximately ten students are recommended for the small group (Hiob, 1978), more than five students representative of the target population could not be obtained for the present study. The students for the small group evaluation were given an explanation about the purpose of formative testing. They were encouraged to give feedback to be used for improving the module. The materials were administered in the way their use was intended. Each student finished the module without assistance. The students took the post-test following completion of the module. None of the students achieved competency on both the process and the tool components, but two out of five achieved competency on the tool component. Areas in which the students had the most difficulty were critically examined by the investigator.

Attitude Survey

An attitude survey was completed by the students participating in the one-to-one and small group formative evaluation to provide the instructional designer feedback for revising the lesson prior to the

field evaluation (Appendix F). In general, the feedback given by the students was favorable. None of the students thought that the length of the lesson was too long. One student indicated that "if more than one sitting" was allowed for working through the lesson, then the length was appropriate. The time spent completing the unit ranged from two hours and fifteen minutes to three hours and thirty minutes. The sections which the students had the most difficulty with were: Section A--Defining the Diet History and Section H--Generating a Food Frequency. One explanation for the difficulty associated with Section A is that the students were unaccustomed to self-instruction, as one student wrote, "till I got used to the format." Section H was critically examined and changes were incorporated to clarify the information presented in the section. The sections most enjoyed by the students were: Section E--Discriminating between Effective and Ineffective Communication and Section F--Discriminating Content of Interchange." Generally, the examples and practice exercises interspersed throughout the lesson and the content were liked the most by students. In response to "what did you like least about the lesson?" the "fill-in (the blank)" exercises appeared to distract the students in reading the lesson for content. Changes solicited from the students to improve the lesson included, "[add] a practice interview" and "[add] a summary listing." Adjustments in the lesson were made based on the responses obtained (Appendix Figure F.1).

The field evaluation (summative testing) succeeds the one-to-one and small group evaluation. The summative testing approximates the situation in which the finished product will be implemented.

The investigator met with the participants following completion of the study to provide feedback regarding their progress as well as to share with them the results of the study.

Step 7

Step 7 of the Hiob Model, recycle, enables the module designer to refine the instructional module after evaluation. The system allows for a re-evaluation of the changes made. Thus, a module can be continually revised until the desired outcome is achieved. The present study stops short of this step; however, the recycling issue is discussed in Chapter VI, Limitations and Recommendations.

Development of the Lecture

After the self-instructional module on facilitating student dietitians' learning to elicit a client's diet history had been developed, the investigator repeated the procedure, using the Hiob Model, to develop an instructional unit with the same content in a lecture discussion format. Since the topic and the research design were identical, the methodology will focus on aspects of the development of the lecture which differed from the development of the self-instructional module.

The same learning outcome *(Step 1)* was used to develop the lecture.

> Given a simulated client and his/her medical record the student dietitian will be able to elicit the client's diet history with 86 percent accuracy, according to the performance criteria.

The analysis of the learning outcome *(Step 2)* did not differ from that identified in developing the self-instructional module (Figure 2).

Steps 1 and 2 are not dependent on the mode selected for delivery. The remaining steps were influenced by the presentation method. In *Step 3*, criterion referenced tests were developed. Like the self-instructional module, the entry test was omitted. The same pre-test, post-test, and evaluation instrument were borrowed from the self-instructional module since the field evaluation required a dependent variable for comparing the effectiveness of the treatments (lecture and self-instructional module). Embedded tests were written to correspond with the concepts and principles taught and were designed for encouraging class discussion.

The lesson was planned *(Step 4)* according to the time constraints of a two-hour period. Motivational activities included the use of overhead transparencies of comics which illustrated points being discussed. From the hierarchical analysis of the learning outcome, the investigator sequenced the material to be presented, which evolved into an outline. The pieces of material paralleled those identified in the self-instructional module. Student participation was facilitated with lecture discussion format. The lesson was devised so that the instructor could ask questions to stimulate class discussion. Group dynamics inherent in a lecture discussion format provided alternative perspectives for approaching the topic which is not feasible with self-instructional materials.

The lesson was constructed in *Step 5*. Outline format was used to compile the content. Handouts for the student dietitians and transparencies were included in the instructional package. The lecture was

reviewed with the instructor of HNF 302. The entire lecture was examined to ensure that the instructor could present the material as designed.

One-to-one and small group formative evaluation *(Step 6)* were not conducted since it was not possible to arrange a lecture with students and the instructor. Furthermore, the content had been tested previously with the self-instructional module. Areas in which the students had difficulty were examined in the lecture to insure consistency in the content delivered.

Testing of the Comparison

The purpose of significance testing is to distinguish between real differences and chance variation. The null hypothesis states that an observed difference reflects chance variation. A significance level of $p \leq .05$ was selected for the present study. The significance level represents the chance (probability) of getting a test statistic as extreme as or more extreme than the observed one: chance being computed on the basis that the null hypothesis is correct (Freedman et al., 1978).

The paired t-test was used to determine whether there was a significant difference in achievement from pre-test to post-test for a given treatment, attributable to instruction (Hypotheses 1, 2, 3, and 4). The paired t-test is appropriate when two tests are completed on the same group to determine difference in achievement from pre-test to post-test, and when there is no independence between groups since each group served as its own control. The significance level ($p \leq .05$)

was divided by the number of tests (two) run on the data to yield an overall alpha value of $p \leq .025$ for determining the significance.

The paired t-test was not used to compare the effectiveness between the treatment groups. The difference score analysis that would be required assumes that without treatment the gain in achievement from pre-test to post-test in both treatments would increase equally, thus assuming that any difference between treatment groups is attributable to the treatment. The assumption is inappropriate.

An Analysis of Covariance (ANCOVA) was used to compare the effectiveness between the lecture and the self-instruction groups (Hypotheses 5 and 6) ANCOVA is appropriate for testing the hypotheses comparing treatment groups. The ANCOVA compares the variance between the population groups with the variance within the population groups after equating the groups on the appropriate pre-test as the covariate. Thus, differences between treatment groups on the post-test are appropriately attributable to treatment. The ratio of their variance provides the F-value. The F-test obtained was used to determine whether the variance of the two post-tests was equal. The significance level ($p \leq .05$) was divided by the number of tests (two) to yield an overall alpha value of $p \leq .025$ for assessing the significance of the test.

CHAPTER IV

RESULTS AND DISCUSSION

In Chapter IV, the scores of the pre-tests and the post-tests are discussed for the ten student dietitians in the self-instruction group and the ten student dietitians having the lecture treatment. Table 1 illustrates the scores of the pre-tests and the post-tests for both treatment groups.

Two statistical applications were used to analyze the data. A difference score analysis using the paired t-test was completed on both the self-instructional and lecture groups. ANCOVA was used to compare the self-instruction treatment with the lecture treatment. All scores for the pre-test and post-test of the study are reported in Table 1.

Results of t-Test

Four tests were run using the paired t-test to analyze the following hypotheses:

1. MSU student dietitians given a *self-instructional module* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history from pre-test to post-test for the *process* component.

2. MSU student dietitians given a *self-instructional module* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history from pre-test to post-test for the *tool* component.

Table 1. Results of Pre-Tests and Post-Tests for Process and Tool Components for Student Dietitians in Self-Instruction and Lecture Treatment Groups

Treatment	Pre-Test		Post-Test	
	$\bar{x}$[a]	S.D.[b]	$\bar{x}$[a]	S.D.[b]
Self-Instruction (N = 10):				
Process	38.0	9.90	50.5	7.01
Tool	36.6	7.85	43.3	3.65
Lecture (N = 10):				
Process	36.5	8.61	50.8	6.68
Tool	32.7	6.83	39.9	3.11

[a] $\bar{x}$ = Mean.

[b] S.D. = Standard Deviation.

3. MSU student dietitians given a *lecture presentation* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history from pre-test to post-test for the *process* component.

4. MSU student dietitians given a *lecture presentation* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history from pre-test to post-test for the *tool* component.

Self-Instruction Treatment Group

The mean score of the process component for the pre-test was 38.0 compared with a mean score of 50.5 for the post-test. Gain in achievement was significant ($p = .011$) from the pre-test to the post-test (difference = 12.5).

For the tool component, a significant gain ($p = .007$) in achievement from the mean score of the pre-test (36.6) to the mean score of the post-test (43.3) was observed (difference = 6.7).

Student dietitians in the self-instruction group demonstrated a significant gain in achievement for the process and tool components. Therefore, hypotheses 1 and 2 were rejected.

Lecture Treatment Group

The mean score of the pre-test for the process component was 36.5 compared with the post-test mean score, 50.8. The difference in achievement was 14.3, giving a significant p value of .001 (Table 2).

Table 2. t-Test Summary Statistics of Pre-Test and Post-Test Scores for Process and Tool Components for Student Dietitians in Self-Instruction and Lecture Treatment Groups

	t-Test Summary Statistics	
Treatment	t-Value	P-Value
Process:		
Self-Instruction (N = 10)	-3.17	.011[a]
Lecture (N = 10)	-4.93	.001[a]
Tool:		
Self-Instruction (N = 10)	-3.44	.007[a]
Lecture (N = 10)	-3.99	.003[a]

[a]Significant at $\alpha \leq .025$.

The mean score of the pre-test for the tool component was 32.7 compared with the post-test mean score, 39.9. Gain from pre-test to post-test was 7.2, with p = .003 (Table 2).

Hypotheses 3 and 4 were rejected; student dietitians in the lecture treatment group demonstrated a significant gain in achievement for the process and the tool components (Table 2).

Results of ANCOVA

The score for the process pre-test was used as the covariate for the process post-test score to test for the equality of means regarding the differences between the self-instruction group and the lecture group in the following hypothesis:

5. MSU student dietitians given a *self-instructional module* and MSU student dietitians given a *lecture presentation* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history, as measured by the identical post-test for the *process* component.

The tool pre-test score was used as the covariate for the tool post-test score to test for the equality of means regarding the differences between the self-instruction group and the lecture group in the following hypothesis:

6. MSU student dietitians given a *self-instructional module* and MSU student dietitians given a *lecture presentation* on eliciting a client's diet history, will show no difference in achievement on performance of eliciting a client's diet history, as measured by the identical post-test for the *tool* component.

For the process component, the significance of F as determined from the main effects was .091. The ANCOVA showed that when the scores

on the pre-tests are taken into account, the difference between the self-instruction group and the lecture group is not significant, based on $\alpha = .025$ (Table 3).

For the tool component, the significance of F as determined from the main effects was .897, failing to show a significant difference in achievement between the self-instruction and lecture groups (Table 4).

On the basis of these data, hypotheses 5 and 6 were accepted for both the process and tool components. There is no significant difference between the self-instruction and lecture treatment groups in student dietitians' performance on eliciting a client's diet history. Although there was no significant difference in achievement, it is important to recognize that the lecture was systematically developed for this study and for that reason may have been atypical. A lecture carefully planned is likely to be more effective than one planned by an instructor without using a systematic approach. The effectiveness of a lecture is dependent on the experience of the instructor and the time available for its preparation. Self-instruction guarantees that the material is presented consistently the same each time, whereas the element of human error and variation may affect the delivery of the same material with lecture.

Table 3. ANCOVA Summary Statistics of Pre-Test and Post-Test Scores for Process Component for Student Dietitians in Self-Instruction and Lecture Treatment Groups

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F[a]
Covariate	109.520	1	109.520	14.259	.002
	109.520	1	109.520	14.259	.002
Main effects	24.703	1	24.703	3.216	.091
	24.703	1	24.703	3.216	.091
Explained	134.223	2	67.112	8.737	.002
Residual	130.577	17	7.681		
Total	264.800	19	13.937		

[a]Significant at $\alpha \leq .025$.

Table 4. ANCOVA Summary Statistics of Pre-Test and Post-Test Scores for Tool Component for Student Dietitians in Self-Instruction and Lecture Treatment Groups

Source of Variation	Sum of Squares	DF	Mean Square	F	Significance of F[a]
Covariate	8.296	1	8.296	.169	.686
	8.296	1	8.296	.169	.686
Main effects	.844	1	.844	.017	.897
	.844	1	.844	.017	.897
Explained	9.140	2	4.570	.093	.912
Residual	835.410	17	49.142		
Total	844.550	19	44.450		

[a]Significant at $\alpha \leq .025$.

Competency Comparison

Table 5 illustrates the achievement of the student dietitians in both treatment groups by percentage range of post-test scores. None of the student dietitians receiving either treatment achieved competency (86 percent and above) on the pre-test for the tool component, while only one student dietitian achieved competency on the pre-test for the process component. These data were anticipated since the pre-test was administered prior to instruction.

Following the administration of the treatment, the trend reversed. None of the scores for either self-instruction or lecture was below 50 percent for either the process or the tool component. Five of the student dietitians in the lecture group and six of the student dietitians in the self-instruction group met competency for the tool component while only one of the student dietitians in the lecture group and two of the student dietitians in the self-instruction group met competency for the process component.

One explanation for the apparent difference in achievement between the process and tool components is attributed to the type of learning required for each. The content of the tool component requires mastery of knowledge while the process component measures skill attainment. The lack of practice in skill application may account for the lower scores achieved on the process component (Danish, 1975).

Table 5. Number of Student Dietitians in Self-Instruction and Lecture Treatment Groups by Range of Percentage Achievement on Pre-Test and Post-Test Scores for Process and Tool Components

Achievement (Percentage)	Lecture		Self-Instruction	
	Pre-Test	Post-Test	Pre-Test	Post-Test
	---------- Number of Student Dietitians ----------			
Process:				
86 and over[a]	1	1	1	2
50-85	6	9	7	8
Less than 50	3	0	2	0
Total	10	10	10	10
Tool:				
86 and over[a]	0	5	0	6
50-85	8	5	8	4
Less than 50	2	0	2	0
Total	10	10	10	10

[a]Competency.

Curriculum Feedback

After the field evaluation, the student dietitians completed a curriculum feedback form to determine acceptability of the lesson (Appendix F). Their comments about the instructional design of the diet history lesson and the tests were tabulated and are presented in Figures F.2 and F.3, Appendix F. The overall input from the student dietitians was favorable for the instruction both in self-instruction and lecture formats.

Self-Instruction

In contrast to the comments received from the formative evaluation, most of the student dietitians receiving self-instruction felt that the length of the module was too long. The student dietitians had asked how long it would take for them to complete the module. The reply given to the inquiry was two and one-half hours to three and one-quarter hours (based on the formative testing). It is likely that the student dietitians were more anxious about the assignment than the students participating in the formative evaluation, since the student dietitians were to receive a grade on their performance. Subsequently, the student dietitians may have studied the materials more critically and devoted additional time to the instruction. Furthermore, in comparison to the time anticipated by the student dietitians, the module was perceived as "too long."

The section the student dietitians reported having the most difficulty with was Section H--Generating a Food Frequency. This response was least anticipated since the section had been revised for the purpose of clarifying the material presented. The sections enjoyed the most by the student dietitians were Section I--Identifying Eating Behavior and Section J--Generating Food Intake and Eating Behavior Data Simultaneously.

One explanation for the difference in responses from the formative evaluation is that the student dietitians in the GDCSP may have a different orientation than the students in the Conventional Dietetic Program who participated in the formative evaluation.

One recommendation from the formative evaluation was to include a summary at the end of the module. Prior to the field evaluation, a summary was incorporated. The response of the student dietitians to this revision was favorable. Half of the student dietitians commented favorably on the format of the self-instructional module. As with the formative evaluation, the examples were well liked by several student dietitians. The length of the module was cited as "least liked."

Lecture

In comparison, a majority of the student dietitians receiving the lecture treatment reported the length of the lecture as appropriate, while only two out of ten indicated that the length of the lecture was too long. One reason the length of the lecture (one hour and fifty minutes) may have been well received is that prior to class, the student dietitians were aware that the entire class had been designated for the diet history lesson. As with the self-instruction group, the food frequency was the most difficult part of the lesson, listed by four out of ten student dietitians. The most frequent response to "what was most enjoyed about the lecture?" was the examples. However, "more examples" was also given frequently in response to "how would you revise the lecture?" Clearly, examples served to illustrate the concepts and to add relevancy to the learning experience.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

Both self-instruction and lecture were effective in facilitating student dietitians' learning to elicit a client's diet history as determined by gain in achievement between the pre-test and post-test scores for the process and the tool components. An ANCOVA was used to compare the effectiveness of the two treatment groups. The findings supported hypotheses 5 and 6, thus failing to demonstrate a significant difference in achievement on the process or the tool components between self-instruction and lecture methods in facilitating student dietitians' learning to elicit a client's diet history.

Conclusions

The primary conclusion of the study is that self-instruction is as effective as lecture in facilitating student dietitians' learning to elicit a client's diet history. Furthermore, the findings illustrate that the instructional unit as designed enabled the majority of the student dietitians to achieve competency for the tool component as measured by the post-test scores, while less than one-fourth of the student dietitians achieved competency on the post-test for the process component. Statements regarding the superiority of the instructional

unit cannot be made since the investigator could not identify any instructional units in existence with which to compare it.

Attitudes of the student dietitians, ascertained from their responses on the curriculum feedback towards the instructional unit, were favorable in both self-instruction and lecture groups.

The findings of this study suggest that self-instructional modules for content that is stable could be developed and used in place of lectures for other topics of dietetic education, thus saving time in classroom instruction and freeing time for the instructor to function in other capacities. A distinct advantage is that the use of self-instructional materials eliminates the chance of variation in the material presented due to human error in a lecture. The standardization of material ensures that all students receive the same instruction. In addition, self-instruction can be made easily accessible so that student dietitians can review the materials at their convenience.

CHAPTER VI

LIMITATIONS AND RECOMMENDATIONS

Limitations

The following limitations of the study are acknowledged.

First, lecture was selected for comparison with self-instruction, although lecture is not necessarily the traditional method used to teach the concept of the diet history. Rather, direct observation or the apprenticeship model has been commonly employed to train student dietitians.

Second, the design of the study did not include practice. In a "real-world" application, practice would be incorporated prior to evaluating student dietitians' performance. To accurately measure the effect of the treatment methods separately, the investigator chose to omit practice since constraints prevented isolated practice by treatment group. For the present study, difference in achievement was attributed to the variable treatment.

Third, internal validity was not assured in the study. The student dietitians were required to participate in the study as partial fulfillment of completing the course requirements. Student dietitians who would rather not have participated in the study and those who may have preferred being assigned to one treatment group over another, may have introduced a negative attitude or bias which could not be controlled.

Fourth, external validity was not assured in the study. Results of the study are applicable to student dietitians in the GDCSP at MSU. It is the investigator's intent that faculty from other institutions (random population) can compare their student dietitians with the same characteristics (i.e., academic background, dietetic program, and module) with the student dietitians at MSU and draw conclusions regarding the efficacy of the diet history module in facilitating student dietitians' learning to elicit a client's diet history (Cornfield and Tukey, 1959).

Fifth, the size of the population studied posed another limitation. Since there are only twenty student dietitians enrolled in MSU's GDCSP, the sample size could not be manipulated.

Sixth, the type of media selected for evaluation of the student dietitians' performance was a limitation of the study. Videotape would have permitted an evaluation of both verbal and non-verbal interaction between the student dietitian and the client. However, the purpose of the study focused on verbal communication. The cost of videotape outweighed its benefit for the present study. Thus, audiotape was the media selected. Client feedback on the post-test was used to evaluate the student dietitians' performance on items that could not be assessed with audio. Client feedback has been used effectively with medical students to evaluate their performance on completing physical examinations on clients (Stillman et al., 1980).

Recommendations

The present study paves the way for much needed research. The following recommendations were generated as a result of the study.

Instructor's Manual

The investigator views the development of a manual to facilitate instructors' utilization of the self-instructional module as a necessary adjunct to the instructional unit. The Instructor's Manual would serve to orient faculty in employing the module in the absence of the investigator. It is recommended that a procedure for training evaluators in the use of the checklist be incorporated in the manual, as well as instructions for the determination of an overall performance rating.

Replication of the Study

Following the original research, a retest of the study on a larger group of student dietitians is recommended to substantiate the results obtained and lend credibility to the findings. The proposed study may serve to establish generalizability of the results, providing the target population is randomly selected. Although the investigator did not directly study generalizability, the present study was described with sufficient detail enabling faculty of other institutions to compare their student dietitians with MSU student dietitians and assess the applicability of the findings.

Validity and Reliability

Knowledge of the validity and reliability of the instructional unit developed for the present study is a critical topic for study. The design of the present study compared the effectiveness of two methods of delivery for the instructional unit. Limited evidence was obtained from which an inference of the validity and reliability can be made. The investigator proposes that a direct approach be undertaken to study whether the instructional unit measures what it was intended

to measure (validity) and whether the results obtained via the instructional unit are replicable in identical situations (reliability).

A corollary to the proposed study is research on the validity and reliability of the evaluation instrument for measuring student dietitians' performance. Is the evaluation checklist valid and reliable in assessing student dietitians' performance? The investigator recommends a further examination of the inter-rater reliability of the checklist to support the evidence obtained in the present study.

The performance criteria on the evaluation checklist are described clearly, enabling a student dietitian to assess for himself/herself whether the learning outcome was met. Studies are needed to look at the inter-rater reliability between the student dietitians' self-evaluation and the educators' rating. A student dietitian's perception of his/her performance is essential in career development (Unklesbay and Spears, 1975; Cochran and Spears, 1980). The Essentials for Coordinated Programs in Dietetics specify the inclusion of a plan for student dietitians' self-evaluation in accredited programs (1976).

Design of the Instructional Unit

An examination of the post-test scores and curriculum feedback from the student dietitians participating in both treatment groups identified sections with which the subjects had the most difficulty. In step 7 of Hiob's Model, recycle, the ongoing evaluation of materials developed is described. The investigator recommends that the self-instructional module be revised based on the student dietitians' comments. Following revision, the refined version needs to be

recycled through the formative and summative testing steps to determine whether the desired effects were achieved by the change.

Videotape Accompaniment

The development of a videotape to accompany the self-instructional module is recommended. The purpose of the videotape is perceived by the investigator and supported by the student dietitians' feedback about the self-instructional module as follows:

1. to visually and audibly present critical content which cannot be directly addressed in print;
2. to reinforce essential concepts and principles taught in the unit;
3. to present an alternative presentation of areas identified as difficult to grasp;
4. to provide an alternative style of learning to serve a greater number of student dietitians with varied learning requirements;
5. to motivate student dietitians and promote transfer by illustrating a "good example" of the various components in a diet history approximating the "real-world."

Design of the Study

The investigator recommends a redesign of the present study to incorporate practice as a variable. Practice and feedback are essential for learning skills (Danish, 1975). Skill acquisition is facilitated by the incorporation of practice in an instructional

strategy where skill acquisition is identified as the learning outcome (Bell, 1976). In an effort to avoid a confounded error, practice was excluded so that the conclusions of the study would be solely attributable to the independent variable of treatment method (lecture versus self-instruction). The conditions of the test situation could not guarantee isolated practice within each treatment method, therefore practice was withheld until the study had been completed. The effect of practice can be studied in two ways. The student dietitians participating in the present study could be retested to determine the effect of practice: (1) on their improvement, and (2) attributable to the presentation of the initial treatment method.

Other research is needed to study the effect of practice having been incorporated into the design of a study to determine the initial effect of practice on the effectiveness of treatment method.

Validation of the Effectiveness of the Instructional Unit

The present study examined the effectiveness of the method of delivery of the instructional unit. A final recommendation recognized by the investigator is the need for testing the design of the instructional unit developed (lecture or self-instruction) with the design of another instructional unit to further ascertain the effectiveness of the instructional unit in facilitating student dietitians' learning to elicit a client's diet history.

APPENDIX A

WORKING DEFINITION OF THE DIET HISTORY

APPENDIX A

WORKING DEFINITION OF THE DIET HISTORY

I have chosen to work with the definition offered by Mason et al. in The Dynamics of Clinical Dietetics. A diet history ". . . is the special tool that describes the food intake and food behaviors of a client. It includes information about food purchasing practices, food preparation facilities, special dietary supplement intake (e.g., vitamin preparations), and meal patterns."

The diet history serves two functions. It describes (1) what an individual has been and is eating, and (2) what variables influence the food eaten. Information obtained should be both qualitative and quantitative in nature, if it is to represent an individual's past and present food intake.

From this data base, the diet history can be used to describe an individual's dietary status (statement of what an individual has been eating). The dietary status is then considered in light with other findings (clinical, biochemical, and anthropometric) to make statements about an individual's nutritional status (actual nutritional condition of the individual).

Please respond to the questions below. I encourage you to make additional comments.

1. What other data are or should be included in a definition of a diet history?

2. Is the definition clearly written?

3. Does the definition convey the meaning of a diet history to you?

4. Is the definition too broad?

APPENDIX B

DIET HISTORY QUESTIONNAIRE

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION
HUMAN ECOLOGY BUILDING

EAST LANSING · MICHIGAN · 48824

September 24, 1979

TO: Directors of Coordinated Undergraduate Programs in Dietetics

As a Master's Candidate in Human Nutrition at Michigan State University, I am about to begin my research study. Shapiro stated in the September 1979 issue of the Journal of the American Dietetic Association that one of the challenges that faces the Profession of Dietetics today is, "How can we obtain accurate information about what people eat?"

I have accepted the challenge described above. Initially, I plan to conduct a survey to identify existing instructional modules designed to facilitate student dietitians' learning how to procure a diet history from a client. The enclosed questionnaire will facilitate my search.

If an instructional module can be located, I will pursue it's availability for testing in the MSU Program to establish greater validity and reliability. In the event I am unable to locate an existing instructional module, I will proceed to develop one and test it for validity (content) and reliability (generalizable to student dietitians from another institution).

I would greatly appreciate your assistance in this proposed study. Refer to the "definition of terms" provided to clarify any ambiguity in terminology used. Please return the completed questionnaire by October 22. A self-addressed envelope has been enclosed for returning your response. If you decide you would prefer not to participate in this survey, return the unanswered questionnaire in the enclosed envelope.

Thank you for your assistance. I am appreciative of your time and consideration for this study.

Sincerely,

Joanne Jasmund

Joanne Jasmund, R.D.
Assistant Clinical Instructor

cc: Burness G. Wenberg
Major Advisor/Directing Research

smb

DIET HISTORY QUESTIONNAIRE

The following questionnaire is designed to ascertain the existence of instructional modules used in a Coordinated Undergraduate Program to facilitate student dietitians' learning the process of procuring a diet history.

The following definitions were adopted for this survey:

1) DIET HISTORY - represents both a tool and a process.[1]

As a tool, the diet history is a descriptor of the food intake and behaviors of a client. The description of the food intake should provide an estimation of the average intake of an individual (what he/she has been and is eating). Food behaviors include the individual's usual pattern of eating, variations in his/her food habits, and variables (occupation, lifestyle, cultural practices, etc.) which influence the food chosen for consumption. Dietary data obtained should be both qualitative (with regard to nutrient density) and quantitative (amount and frequency of consumption) if it is to represent an individual's past and present intake.

As a process, the diet history represents the method of collecting dietary data. Both retrospective (past intake) and inspective (current intake) data are included in the data collection phase.

The diet history serves two functions. First, it is essential in determining an individual's dietary status, which is then considered together with clinical, biochemical, and anthropometric data to make statements about an individual's nutritional status. Second, the diet history serves as a basis for nutritional care planning and counseling.

2) TOOL - a means to an end, as a form or method, used in performing an operation or necessary in the practice of a profession.

3) PROCESS - a series of actions or steps followed in a sequential order.

4) PATIENT/CLIENT - the individual receiving nutritional services. These terms are used interchangeably.

5) DIETARY STATUS - a statement of the assessment of an individual's diet history compared to a pre-determined standard.

6) NUTRITIONAL STATUS - the health condition of an individual as influenced by his intake and utilization of nutrients, determined from the correlation of information obtained from physical, biochemical, clinical, and dietary studies.[2]

7) INSTRUCTIONAL MODULE - a self-contained unit of instruction which provides students with information to acquire specific knowledge and skills.

---

[1] Mason, M., Wenberg, B.G., and Welsch, P.K. The Dynamics of Clinical Dietetics. New York: John Wiley and Sons, 1977.

[2] Christakis, G., Ed.: Nutritional Assessment in Health Programs, Washington, D.C.: Am. Public Health Assoc., 1973.

Please answer each question below.

1) Do student dietitians in your program use the diet history as a tool to describe the dietary status of an individual?

_____ Yes _____ No

If your answer was yes, go on to question two.

If your answer was no, please indicate on the reverse side of this page, what tool(s) the student dietitians do use.

2) Do the student dietitians learn the process of procuring a diet history from a client by way of an instructional module?

_____ Yes _____ No

If your answer was yes, go on to question three.

If your answer was no, please describe on the reverse side of this page, how the student dietitians learn how to procure a diet history, e.g., lecture presentation, simulation, field experience, etc.

3) Would you be willing to indicate how this module could be obtained or purchased for our consideration? If so, please complete the form below.

Name to contact _____

Address _____

_____

Description _____

_____ Cost _____

4) Would you be interested in receiving information on the availability or development of the instructional module described above?

_____ Yes _____ No

If your answer was yes, please include your name and address below, if you have not already provided it in question 3.

Name _____

Address _____

_____

Additional Comments are welcome.

Thank you for your cooperation. Please return the questionnaire in the enclosed envelope.

APPENDIX C

REPORT OF SURVEY FINDINGS

APPENDIX C

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION
HUMAN ECOLOGY BUILDING

EAST LANSING · MICHIGAN · 48824

November 21, 1979

TO: Directors of Coordinated Undergraduate Programs in Dietetics

I am pleased to share the findings of the survey conducted on identifying instructional modules related to the teaching of the diet history, as a tool and a process.

To date, forty-seven of the seventy-one (66 percent) questionnaires have been returned. The survey identified the existence of several modules suited to the curriculum in which they have been implemented. Two of the respondents indicated that they would be willing to share at this time knowledge of their instructional module with Directors affiliated with other Coordinated Undergraduate Programs in Dietetics.

1) Counseling a Newly Diagnosed Diabetic Part I Dietary History (33 minute videotape, available for purchase in the near future). Address letter of interest to:

Leila P. Hopkins, R.D.
Department of Food Administration
Rochester Institute of Technology
One Lomb Memorial Drive
Rochester, New York 14623

2) Interviewing Skills for the Dietitian in Patient Care (25 page booklet, available for purchase). Address letter of interest to:

Ernestine Jackson, R.D.
Assistant Professor
The University of Alabama
Box 1488
University, Alabama 35486

I have decided to proceed in developing an instructional module related to the teaching of the diet history as a tool and a process for MSU. In this way, I can develop one that is applicable to our General Dietetic Coordinated Study Plan with regard to prerequisite knowledge and skills the student dietitians' possess. The field testing of the module will be completed by Spring of 1980.

I extend my sincere thanks to each of you for your cooperation in conducting the survey.

Very truly yours,

Joanne Jasmund

Joanne Jasmund, R.D.
Assistant Clinical Instructor

cc: Burness G. Wenberg
Major Advisor/Directing Research

APPENDIX D

TESTING PROCEDURES

1. Pre-Test Instructions (Student Dietitian)
2. Post-Test Instructions (Student Dietitian)
3. Pre-Test Client Instructions
4. Post-Test Client Instructions

APPENDIX D

PRE-TEST INSTRUCTIONS

You have been assigned the task of eliciting a diet history from a simulated client. You may refer to the client's medical record if desired. Do not use any other reference during the interview.

This simulation closely resembles a situation you are likely to encounter in clinical practice. Take as much time as you need. Conduct the interview as you perceive appropriate. Dietitian/client interactions are confidential. You should not discuss the interview with anyone, until you and your classmates have completed the entire instructional unit. At that time the instructor will hold a debriefing conference to discuss the results.

For the purpose of evaluation, please take time to record on the form provided, *all* data that you think is pertinent to the client's diet history, whether it is elicited in response to a question or volunteered. You will be given credit for identifying data only if you indicate your awareness of it, by noting it on the form. If you think that something that you have listed is really not important after all, then put a line through the data to indicate that the information is of less relevance to this particular client's diet history.

The interview will be audiotaped to provide you with complete and accurate feedback. Good Luck! Remember, this is your first attempt.

After you have completed the pre-test, you will be ready to begin the lesson on the diet history. The pre-test measures your ability to take a client's diet history prior to instruction. Therefore, you should not expect to do as well as you will following instruction. The pre-test score will be compared with the score achieved on the post-test which you will do following the instructional unit. The difference between the pre- and post-test scores represents the amount of learning that takes place which is attributed to the instruction.

POST-TEST INSTRUCTIONS

You have been asked to elicit a diet history from a client. You may refer to the client's medical record if desired. Do not use any other reference during the interview. Everything necessary for taking a client's diet history has been provided (Diet History Worksheet, paper, writing utensils, food models, etc.).

Remember, for the purpose of evaluation, please take time to record on the Diet History Worksheet or a blank sheet of paper *all* data that you think are pertinent to the client's diet history. Include information that is elicited in response to any of your questions as well as information that is volunteered. You will be given credit for identifying the information only if you indicate your awareness of it by noting the information in writing. If you think that something that you have listed is really not relevant after all, then place a line through the statement to indicate that it is of less relevance than other data elicited from the client. Excessive note taking during the interview is distracting, therefore keep note taking brief while you are with the client. After the interview, spend a few minutes to "fill in the gaps" as appropriate before handing in your notes. (The Diet History Worksheet is optional; you may write your notes on a blank sheet of paper if desired.)

As before, the interview will be audiotaped. You may take as much time as you need. With practice you will gain proficiency. Right now concentrate on applying the knowledge and skills learned from the instructional lesson.

Arrangements will be made to discuss the learning experience. You will be given an opportunity to comment on any part.

SIMULATED CLIENT INSTRUCTIONS

You will be interviewed by a student dietitian who has been assigned to take your diet history. The student dietitian will be evaluated on his/her ability to obtain the desired information. The accompanying scenario is a description of the character which you are to portray. Read the description carefully. Familiarize yourself with the details so that you will be able to respond as if you are the person described. The instructions on the last page of the scenario explain how you should interact with the student dietitian.

OBESE MALE COLLEGE STUDENT

NAME:	John P. Lewis
ADDRESS:	Dormitory
SEX:	Male
AGE:	24
BIRTHDATE:	6/20/55
HEIGHT:	5'9"
WEIGHT:	233 lbs.
ETHNIC ORIGIN:	German descent
RELIGION:	Protestant
MARITAL STATUS:	Single
CHILDREN:	None
PRIMARY SPOKEN LANGUAGE:	English
EDUCATION:	B.S. Math
ADMISSION:	24 hours before consultation
ADMITTING DIAGNOSIS:	Low back pain (treated with traction)

SIMULATED CLIENT INSTRUCTIONS

John--An obese male college student

PRESENT HISTORY

You are admitted to the hospital for treatment of chronic low back pain. Last week you went to the health center for persistent back pain. The physician advised that you enter the hospital for treatment with traction.

BACKGROUND (Past History)

You have suffered with back pain for several years. You have been obese for as long as you can remember. You have been a student for one year. You want to have a successful career. Your parents provide emotional, but not financial support.

LIVING CONDITIONS

You live in the dormitory for graduate students. The dorm has a dining room in which you eat the majority of your meals. You have a small refrigerator in your room to keep snacks.

ECONOMIC HISTORY

Your finances are limited. You have a student loan to cover living expenses. You received a scholarship which pays tuition and book expenses.

SOCIAL HISTORY

Your grade point average is 3.5. You have several friends from the dorm and from classes. Most of your friends are male. You don't usually date. Most of your leisure time is spent reading books or watching TV. You do not actively participate in sport or recreational activities.

FOOD INTAKE

You enjoy eating. You usually eat at least three times per day, plus between meal snacks. A typical intake follows:

Breakfast (8:00 a.m.)	Lunch (12:00 p.m.)	Dinner (6:00 p.m.)
Large glass fruit juice	2 cheeseburger	3 pork chops
1-2 c. cereal w/sugar	1 large serving French fries	1 cup potatoes or;
2 eggs	1 serving vegetable	2 servings casserole
3 slices toast w/jelly	pie w/ ice-cream	3 slices bread w/butter
3 c. whole milk	2 c. whole milk	5 cookies
		2 c. whole milk

Between meals you are likely to snack frequently on typical "snack foods". These include: potato chips, colas, cookies, and occasionally fruit. On weekends you usually go out drinking with the "guys" and have at least four (4) beers.

FACTORS IN IMMEDIATE ENVIRONMENT:

Since you eat most of your meals in the dorm, the only food you purchase is snack food.

MEAL PATTERNS:

Most meals are eaten in the dining room in the dorm with friends. You might eat out two or three times a week.

FOODS OMITTED:

Coffee, tea, etc.
Many fruits and vegetables

FOOD PREFERENCES:

You love meat and potatoes (often eat second servings of each)
You prefer additional bread and milk with meals
You love snack foods

FOOD ALLERGIES:
None

FOOD INTAKE IN RELATION TO PHYSICAL ACTIVITY:

Main exercise is walking to and from the bus stop. You ride the bus whenever you need to go places. You take the elevator in the dormitory.

PREVIOUS DIET MODIFICATIONS:

You have tried to lose weight by fasting with no success. You have gone on every diet that comes out in the press. You have difficulty adhering to any diet for longer than two weeks. Your doctor has told you to lose weight, but never told you how to accomplish it.

SOURCE OF NUTRITION INFORMATION

Popular magazines and TV advertisements

ATTITUDES ON FOOD:

1. realize its importance for health
2. understand it aggravates your weight problem
3. love to eat, but hate to diet

SPECIAL INSTRUCTIONS

The instructions for conveying the information are as follows:

1. Answer questions with answers provided.

2. If a question is asked that you don't know how to answer, ad lib the best you can. (Note ad lib comments on sheet, after interview.)

3. Be somewhat guarded with information. Do not talk freely unless interviewer encourages you to do so.

4. If question requires a "yes" or "no" answer, give only that reply until encouraged to continue.

5. If interviewer asks you a question in which an answer is implied, give the intended answer even if it contradicts your "story."

6. If the interviewer gives you an opportunity to elaborate on a topic, do so. Occasionally, use this situation to stray from the topic to an unimportant one.

Try to put yourself in the client's situation. React as you feel is appropriate.

SIMULATED CLIENT INSTRUCTIONS

You will be interviewed by a student dietitian who has been assigned to take your diet history. The student dietitian will be evaluated on his/her ability to obtain the desired information. The accompanying scenario is a description of the character which you are to portray. Read the description carefully. Familiarize yourself with the details so that you will be able to respond as if you are the person described. The instructions on the last page of the scenario explain how you should interact with the student dietitian.

MALNOURISHED YOUNG WOMAN

NAME:	Sarah Moore
ADDRESS:	Low Income Housing Project (lives alone)
SEX:	Female
AGE	37
BIRTHDATE:	4/15/42
HEIGHT:	5'7½"
WEIGHT:	108 lbs. (previous weight = 145 lbs. presently losing 3 lb. per week without trying
ETHNIC ORIGIN:	German descent
RELIGION:	Protestant
OCCUPATION:	Works at gift and craft shop (sales and clerical work)
MARITAL STATUS:	Divorced (had been married 18 years)
CHILDREN:	None
PRIMARY SPOKEN LANGUAGE:	English
EDUCATION:	High School Diploma
ADMISSION:	24 hours prior to consultation
ADMITTING DIAGNOSIS:	Weight loss, malnutrition

SIMULATED CLIENT INSTRUCTIONS

Sarah--A malnourished young woman

PRESENT HISTORY

You are admitted to the community hospital for "tests." You went to the Red Cross last week after work to donate blood and were not accepted. When you asked what was the reason for refusal, you were told that you are ten pounds below the lower limits of an acceptable weight. The following morning, while discussing the situation at work, your employer stated that he thought you should go see a doctor to make sure nothing was wrong. He indicated that you have been very lethargic and pale for some time.

You took your employer's advice and made an appointment with your physician. Your physician said she would like to run a few "tests" on you at the hospital. She indicated that you would probably be in the hospital a few days.

BACKGROUND (Past History)

You have been employed since high school at the Craft Shop. Your parents are deceased. After high school, you married a fellow you had dated for one year. Last year you filed for divorce. You have no children. Recently, a cousin your age passed away suddenly from a heart attack. Your friend at the Nutrition Center is convinced that your cousin's diet must have been deficient in Vitamin C and contained excessive quantities of food preservatives and additives.

LIVING CONDITIONS

You live in a small one bedroom apartment. It is a low income housing complex. You have adequate kitchen facilities which include common home appliances.

ECONOMIC HISTORY

You are making minimum wage. You are just making ends meet. You have no outstanding debts.

SOCIAL HISTORY

You have several friends from work with whom you socialize. Your best friend works down the street at the health food Nutrition Center. She is an adamant follower of the health food movement. She has convinced you that natural organically grown foods are more nutritious than store bought processed foods. You have purchased several paperback books from the Nutrition Center. You are not familiar with the authors.

FOOD INTAKE

Your appetite is fair. You are accustomed to eating only two meals per day. You have been on a vegetarian diet for approximately 1½ years. You omit meat, yet you will eat some dairy products. A typical intake follows:

Breakfast (8:00 a.m.)	Lunch (11:30 a.m.)	Dinner (6:00 p.m.)
Once a week you may eat approximately ¼ cup bran flakes with about ½ cup skim milk	½ cup orange juice 3-5 stalks of celery w/2 Tbs. peanut butter 3-4 crackers ½ cup sunflower seeds	Large fresh vegetable salad; or 1-2 oz. cheese 1 slice whole wheat bread 1 small apple

Since your cousin's death you have taken additional measures to avoid foods containing additives and preservatives, choosing a "natural" diet.

FACTORS IN IMMEDIATE ENVIRONMENT

You buy many of your foods at the Nutrition Center. It is more expensive, but you want organically grown foods. You always take a vitamin and mineral supplement that your friend recommended.

MEAL PATTERNS

Usually eat meals at home in the kitchen alone
You rarely snack, except occasionally (yogurt or fruit)
Eat out once in a while with your friend
Eat only in response to hunger rather than at regular intervals

FOODS OMITTED

All meat and meat analogs (substitutes)
Milk, except use skim milk on cereal
Eggs, unless cooked in foods
Fatty or greasy foods
Alcohol--usually (maybe 1-2 glasses of wine per month)

FOOD PREFERENCES

All fruits and vegetables
Cereal
Bread, whole wheat or other whole grain
Peanut butter
Cheese
Yogurt

FOOD ALLERGIES

None

INTAKE IN RELATION TO PHYSICAL ACTIVITY

Activity suppresses appetite; usually eat before activity
Activity consists of: jogging 2 miles daily; walking and bicycling daily--since don't own car.

PREVIOUS DIET MODIFICATION

Not following a modified or restricted diet at present. Two years ago your doctor placed you on a "no salt" diet for about three months since you seemed to be "retaining water." You have not experienced water retention recently.

SOURCE OF NUTRITION INFORMATION

Paperback books and magazines describing the natural health food movement from the Nutrition Center. Subscribe to Prevention magazine. Peers, self-made nutritionists.

ATTITUDES ON FOOD AND NUTRITION

1. considers it important--the secret of maintaining youth
2. enjoys eating
3. convinced that meat is bad for you
4. thinks food additives cause more problems than they solve
5. never viewed self as overweight

SPECIAL INSTRUCTIONS

The instructions for conveying the information are as follows:

1. Respond to questions with answers provided
2. If a question is asked that you don't know how to respond to, ad lib the best you can. (Note ad lib comments on sheet, after interview.)
3. Be somewhat guarded with information. Do not talk freely unless interviewer encourages you to do so.
4. If question requires a "yes" or "no" answer, give only that reply until encouraged to continue.
5. If interviewer asks you a question in which an answer is implied, give the intended answer even if it contradicts your "story."
6. If the interviewer gives you an opportunity to elaborate on a topic, do so. Occasionally use this situation to stray from the topic to an unimportant one.

Try to put yourself in the client's situation. React as you feel is appropriate.

APPENDIX E

SIMULATED CLIENT CONSENT FORM

APPENDIX E

MICHIGAN STATE UNIVERSITY

General Dietetic Coordinated Study Plan (GDCSP)

State of _____

County of _____

I, _____, hereby agree to participate in an educational program for Michigan State University Dietetic students. I will act in the capacity of Simulated Patient in order that Dietetic students may _____

_____.

I understand that my participation is for the express purpose of Dietetic education through the GDCSP Michigan State University. I recognize the sum of $_____ per _____ to represent fair and complete remuneration for this service.

This consent has been fully explained to me. I am in agreement with its intent and purposes.

_____
Signature of Simulated Patient

_____ _____
Witness Date

APPENDIX F

FEEDBACK

1. SIMULATED CLIENT FEEDBACK
2. ATTITUDE SURVEY
3. CURRICULUM FEEDBACK--LECTURE
4. CURRICULUM FEEDBACK--WORKBOOK

_____
(student's name)

APPENDIX F

SIMULATED CLIENT FEEDBACK

1. Please comment on each of the following non-verbal behaviors demonstrated by the student dietitian.

	Poor	Fair	Satisfactory
established eye contact	____	____	____
smiled spontaneously	____	____	____
maintained comfortable physical distance .	____	____	____
displayed natural postures and gestures .	____	____	____
avoided nervous gestures	____	____	____

2. Did the student dietitian make you feel at ease during the interview (convey genuine concern for you)? (Please describe.)

3. Did the student dietitian encourage you to completely tell your story? (Please explain.)

4. Did you feel "cut off" or interrupted while responding to a particular question? (Please comment.)

5. Did the student dietitian guide the interview smoothly from one comment or topic to another? (Please describe.)

6. List any of the student dietitian's strengths as you perceived them.

7. What suggestions can you give the student dietitian to improve her skill of taking a client's diet history?

8. Additional comments:

ATTITUDE SURVEY

Please respond to the following survey. Your input will assist the author in revising the workbook. Your comments are appreciated. You may select more than one statement where it is appropriate.

1) The length of the workbook is:

___ a. too short
___ b. satisfactory
___ c. too long

2) The degree of difficulty of the workbook is:

___ a. too easy
___ b. appropriate
___ c. too difficult

3) The process of completing the workbook is:

___ a. boring
___ b. interesting
___ c. fun

4) The cartoons are:

___ a. distracting
___ b. interesting

5) Color-coding the workbook:

___ a. makes it interesting
___ b. makes it easier to read
___ c. makes no difference
___ d. is distracting

6) The section I had the most trouble with is:

_____

_____

7) The section I enjoyed the most is:

_____

_____

8) The practice exercises are:

___ a. a waste of time
___ b. fun to do
___ c. very helpful

9) The tests _____ measure the content of the material:

___ a. did
___ b. did not

10) What did you like most about the workbook?

_____

_____

_____

11) What did you like least?

_____

_____

_____

12) If given an opportunity to revise the workbook, how would you change it?

_____

_____

_____

Please respond to the following survey. Your input will assist the author in revising the workbook. Your comments are appreciated. You may select more than one statement where it is appropriate.

1. The length of the workbook is:

___ a. too short
___ b. satisfactory (~~1111~~ 111*)--*If completed in more than one sitting.
___ c. too long

2. The degree of difficulty of the workbook is:

___ a. too easy
___ b. appropriate (~~1111~~ 111)
___ c. too difficult

3. The process of completing the workbook is:

___ a. boring
___ b. interesting (~~1111~~ 111)
___ c. fun

4. The cartoons are:

___ a. distracting
___ b. interesting (~~1111~~ 111*)--*Great!

5. Color-coding the workbook:

___ a. makes it interesting
___ b. makes it easier to read (~~1111~~ 111*)--*and easier to find answers.
___ c. makes no difference
___ d. is distracting

6. The section I had the most trouble with is:

A (11*)--*Till I got used to the format.

D (1) E (1) H (11)

7. The section I enjoyed the most is:

E (111) F (111)

H (1) J (1) Any with examples (1)

Figure F.1 Tabulation of Responses on Attitude Survey.

8. The practice exercises are:

___ a. A waste of time
___ b. fun to do
___ c. very helpful (~~1111~~ 11)

9. The tests *did* measure the content of the material:

___ a. did (~~1111~~ 1)
___ b. did not

10. What did you like most about the workbook?

Content (11) *Topic (1)*

Examples (11) *Spacing of sections (1)*

Practice exercises (1) *Completeness (1)*

11. What did you like least?

Length (--if I'm hard pressed to answer) (1)

Green color (1)

Fill-in questions (11)

12. If given an opportunity to revise the workbook, how would you change it?

Improve spacing and mechanical errors (1)

[Add] *a 'practice' interview (1)*

[Add] *summary listing (11)*

Take out fill-in questions (1)

[Add] *more examples; less fill-in (1)*

Figure F.1--Continued

CURRICULUM FEEDBACK - LECTURE PRESENTATION

Please respond to the following questions. Your input will assist the instructor in improving the lecture presentation. Your comments are appreciated.

1) The length of the lecture presentation was:

a)_____ too short b)_____ satisfactory c)_____ too long

2) The pace that the material was presented was:

a)_____ too slow b)_____ appropriate c)_____ too rapid

3) The degree of difficulty of the material presented was:

a)_____ too easy b)_____ appropriate c)_____ too difficult

4) The lecture presentation was:

a)_____ boring b)_____ interesting

5) The visual aids were:

a)_____ distracting b)_____ contributory

6) The practice exercises were:

a)_____ unnecessary b)_____ helpful

7) The part of the presentation I had the most trouble understanding was:

_____

_____

8) The part of the presentation I enjoyed the most was:

_____

_____

9) If given an opportunity to revise the lecture presentation, how would you change it?

_____

_____

_____

_____

_____

Please respond to the following questions. Your input will assist the instructor in improving the lecture presentation. Your comments are appreciated.

1. The length of the lecture presentation was:

___ a. too short
___ b. satisfactory (~~1111~~ 111)
___ c. too long (11)

2. The pace of the material presented was:

___ a. too slow
___ b. appropriate (~~1111~~ 1111)
___ c. too rapid (1)

3. The degree of difficulty of the material presented was:

___ a. too easy
___ b. appropriate (~~1111~~ 1111)
___ c. too difficult (1)

4. The lecture presentation was:

___ a. boring (1)
___ b. interesting (~~1111~~ 1111)

5. The visual aids were:

___ a. distracting
___ b. contributory (~~1111~~ 1111)

6. The practice exercises were:

___ a. unnecessary
___ b. helpful (~~1111~~ ~~1111~~)

7. The part of the presentation I had the most trouble understanding was:

I understood all portions fairly well (1)

Crosscheck (1111)

Part about eating behaviors . . . is less straightforward (1)

Examples of good/bad methods of asking questions (1)

How to piece the whole diet history together (1)

How to handle the client's fallacies. . . . I understand how to identify them but not what to do next (1)

Figure F.2 Tabulation of Responses on Curriculum Feedback--Lecture.

8. The part of the presentation I enjoyed the most was:

Use of examples to help clarify some of the points made (1)

Going over the two methods of data collection . . . very helpful in explaining purpose of diet history (1)

Variables influencing clients food intake (1)

Examples and practice exercises (1)

Communication. . . . (1)

Presentation was clear and concise for most part (1)

Going through actual 24 hour recall (1)

9. If given an opportunity to revise the lecture presentation, how would you change it?

Presentation was well organized and straightforward . . . part I found difficult was the length (1)

More examples (1)

Less detail. . . . (1)

Slow down, using more examples and having us actually do the responses (1)

More examples of right and wrong approaches (1)

See a short film on an actual diet history, one which presents various situations that may arise. . . . (1)

Figure F.2--Continued

Please respond to the following questions. Your input will assist the author in revising the workbook. Your comments are appreciated.

1) The length of the workbook is:

a)_____ too short b)_____ satisfactory c)_____ too long

2) The degree of difficulty of the workbook is:

a)_____ too easy b)_____ appropriate c)_____ too difficult

3) The process of completing the workbook is:

a)_____ boring b)_____ interesting

4) The cartoons are:

a)_____ distracting b)_____ contributory

5) Color-coding the workbook:

a)_____ makes it easier to follow b)_____ makes no difference

6) The practice exercises are:

a)_____ unnecessary b)_____ helpful

7) The section I had the most difficulty with is Section _____.

8) The section I enjoyed the most is Section _____.

9) In general, what do you like most about the workbook? (i.e. content, format, practice exercises, examples, etc.)

_____

_____

10) In general what do you like least about the workbook?

_____

_____

11) Additional Comments:

_____

_____

_____

Please respond to the following questions. Your input will assist the author in revising the workbook. Your comments are appreciated.

1. The length of the workbook is:

   ___ a. too short
   ___ b. satisfactory (11)
   ___ c. too long (~~1111~~)

2. The degree of difficulty of the workbook is:

   ___ a. too easy
   ___ b. appropriate (~~1111~~ 111)
   ___ c. too difficult

3. The process of completing the workbook is:

   ___ a. boring
   ___ b. interesting (~~1111~~ 11)

4. The cartoons are:

   ___ a. distracting
   ___ b. contributory (~~1111~~ 111)

5. Color-coding the workbook:

   ___ a. makes it easier to follow (~~1111~~ 111)
   ___ b. makes no difference

6. The practice exercises are:

   ___ a. unnecessary
   ___ b. helpful (~~1111~~ 111*)--*the directions of some are a little uncertain.

7. The section I had the most difficulty with is Section _____.

   Identifying landmarks (1); None (11); H (11); I (1); E (1).

8. The section I enjoyed the most is Section _____.

   Identifying landmarks (1); J (11*)--*Seemed to put information together; G (1); The ones on areas to cover (1); I (11); E (1).

Figure F.3 Tabulation of Responses on Curriculum Feedback--Workbook.

9. In general, what do you like most about the workbook? (i.e., content, format, practice exercises, examples, etc.)

Summary at back of module. (1)

Format, practice exercises, and general content. Section H was weak. (1)

I liked how it was divided into a step-by-step section; also practice exercises. (1)

Examples were very helpful and creative . . . more would be useful; evaluation sheet was extremely useful, it allowed me to practice by myself, clarified information. (1)

Too long, but information is complete. (1)

Examples, format, good cartoons. (1)

Practice exercises and examples. (1)

Format and examples. (1)

Format, examples, self-testing section with supplemental answers. (1)

Modules, independent study, have trouble finding time. (1)

10. In general, what do you like least about the workbook?

Have a few questions that cannot be answered [by self]. (1)

Length. (111)

Length and repetition of information. (1)

11. Additional comments:

Supplied a lot of theory but was limited in practical information.

Good job!

Very good workbook.

The hardest section was H (Food Frequency). I have no previous exposure to this. . . .

If we get to keep this booklet, I think it will come in handy. I like the appendices.

More helpful if more examples in Section I.

Figure F.3--Continued

APPENDIX G

DIET HISTORY EVALUATION

1. PERFORMANCE CHECKLIST
2. PERFORMANCE CRITERIA

APPENDIX G

DIET HISTORY EVALUATION

EXPLANATION OF USE OF FORM

The Diet History Evaluation is designed to assess students' performance of taking a client's diet history following instruction. The purpose of the checklist is to reinforce strengths observed as well as identify areas in which performance needs improvement to meet expected competency. The checklist is organized into two components. The first component includes an identification of the behaviors which relate to *collecting* dietary data (process). The second component identifies behaviors which relate to the dietary data *obtained* (tool). Performance on each component should be assessed separately, yielding two final scores rather than an overall score.

WEIGHT OF IMPORTANCE/LEVEL OF PERFORMANCE

The observable behaviors represent the performance criteria, evidence characterizing the skill being appraised. Each behavior has been weighted according to its importance in relation to eliciting accurate and complete data. Behaviors most critical to the diet history carry greater weight than behaviors less crucial.

The level of performance measures how successful each behavior is completed. The scale is devised for initial expectations of performance. After additional practice a higher level of performance will be required and will be reflected in the scale.

SCALE

2 - Satisfactory: Consistently attempts to demonstrate knowledge and skill with moderate or good success. Requires additional practice to improve performance beyond expected competency.

1 - Fair: Usually attempts to demonstrate knowledge and skill with some success. Experiences difficulty. Requires practice to meet expected competency.

0 - Inadequate: Unable to demonstrate knowledge and skill. Displays no attempt or minimal attempt without success, or exhibits inappropriate behavior.

NA - Not Applicable: Opportunity to exhibit behavior is absent in the situation.

EXPLANATION OF DETERMINATION OF SCORE

TOTAL POSSIBLE SCORE

The total possible score for each component (Tool and Process) is computed as follows:

Multiply the maximum level of performance times the maximum weight of importance for each behavior exhibited. The sum total is the total possible score. For example, note the first behavior listed under A. Establishes a trusting relationship;

... introduces self to client stating own name and position

If the student succeeds in introducing him/herself by stating both their name and position, the student should receive a "2" for the level of performance. On the other hand, should the student state only his/her name and not their position, then the student would receive a "1" for the level of performance. The student who fails to state his/her name and position is given a "0". On the score sheet the weight of importance for this particular behavior is "1". For the student who performs at the upper level of performance the total score for the behavior would be "2" ("2" x "1"). The same method would be used to determine the score for the other levels of performance. Continue to compute the score for each behavior as illustrated. The sum of these scores represents the total score possible.

When all behaviors are observed at the maximum level of performance, the total score possible is 62 points for each component (process and tool). This score varies if certain behaviors are "not applicable" in a given interview. For behaviors scored "not applicable", subtract the maximum possible score (level of performance x weight of importance) for each behavior that is "not applicable" from the total number of points possible. This score represents the total possible points for that particular interview. The percent is figured by dividing the total score achieved by the total possible score.

SCORE ANALYSIS

The diet history as a PROCESS	SCORE* (total points)
A. Establishes a trusting relationship	16
B. Demonstrates interpersonal communication skills	26
C. Guides the interview	20
TOTAL	62 † 53 points = 86%)

The diet history as a TOOL	SCORE* (total points)
D. Uses the medical record	4
E. Gathers complete and accurate data	58
TOTAL	62 † 53 points = 86%)

* Maximum number of points possible

† Minimum passing score: 86% in each category

Key:
2 = Satisfactory
1 = Fair
0 = Inadequate
NA = Not applicable

PERFORMANCE CRITERIA

Score	Weight of Importance / Level of Performance	The Diet History as a PROCESS (A, B, C)
16 points possible		A. ESTABLISHES A TRUSTING RELATIONSHIP
	1	• Introduces self to client stating own name ( ) and position ( ).
	1	• Uses client's name initially ( ) and at least one other time ( ).
	1	• Includes family members if appropriate.
	1	• Prepares the environment (seating, lighting, ventilation, distractions).
	1	• Smiles/maintains eye contact / physical position facing client.
	1	• Speaks in pleasant voice.
	1	• Uses common language (explains technical or unfamiliar terms).
	1	• Explains purpose for obtaining diet history.
Sub-Total		
26 points possible		B. DEMONSTRATES INTERPERSONAL COMMUNICATION SKILLS
	4	• Uses open-ended questions to generate discussion in at least four instances (__, __, __, __).
	2	• Uses closed-questions for obtaining specific detail ( ) and for clarification ( ). [__, __, __, __, __, __, __, __, __, __, __, __, __, __]
	1	• States questions clearly and concisely.
	3	• Uses at least three of the following: Key: level of performance: 2 = 3+ applied level of performance: 1 = 2 applied level of performance: 0 = 1 applied ___ encouragement ___ empathy ___ exploratory ___ self-disclosure ___ restatement ___ confrontation ___ interpretation ___ silences/pauses
	3	• Displays no more than two of the following: Key: level of performance: 2 = 0-2 exhibited level of performance: 1 = 3-5 exhibited level of performance: 0 = 5+ exhibited ___, ___, ___ interrupting client while s/he is speaking ___, ___, ___ wording question with answer implied ___, ___, ___ combining two questions into one ___, ___, ___ monopolizing discussion ___, ___, ___ expressing own attitudes, values, bias ___, ___, ___ depends on verbal crutches
Sub-Total		
20 points possible		C. GUIDES INTERVIEW
	1	• Provides client an opportunity in the beginning to state his/her problem.
	1	• Encourages client to tell story fully.
	1	• Resists client's discussing irrelevant topics.
	1	• Generates questions to lead client to another area systematically.
	1	• Probes areas where client's responses are incongruent.
	1	• Identifies landmarks.
	1	• Directs interview at a comfortable pace.
	1	• Responds with appropriate feedback to verbal and non-verbal cues.
	1	• Summarizes interview at appropriate intervals (___, ___, ___).
	1	• Closes interview [prepares client for closure ( ), plans next contact ( ).]
Sub-Total		
_____ points ___%		TOTAL SCORE--PROCESS performance criteria (sum of sub-total A, B, and C).

Key:
2 = Satisfactory
1 = Fair
0 = Inadequate
NA = Not applicable

PERFORMANCE CRITERIA

Score	Weight of Importance / Level of Performance	The Diet History as a TOOL (D, E)
4 points possible		D. USES THE MEDICAL RECORD AS DATA BASE SOURCE PRIOR TO INTERVIEW
	2	• Uses pre-interview data from the medical record in at least two instances (__, __).
Sub-Total		
58 points possible		E. COLLECTS ACCURATE AND COMPLETE DATA
		• Uses the 24 hour diet recall or usual food intake record to identify:
	3	• What the client eats and drinks, probing until the client states that nothing else was eaten.
	2	• How much the client eats and drinks (uses food models to estimate portion: cups, pounds, etc.), for at least half of the food items generated.
	2	• Food preparation methods for at least one-half of the food items generated.
	6	• Classifies food intake data with food frequency and verifies it against the 24 hour diet recall or usual food intake record in at least three instances (___, ___, ___).
		• Determines eating behavior by identifying information for at least five of the following variables.
		Check (✓) variables identified.
		Do not tally score for more than five variables. For 5+, tally score for the five variables receiving highest rating.
	3	___ food purchasing (who procures food/food and money available/ family income/community sources).
	3	___ food preparation and storage (facilities, who prepares meals).
	3	___ living conditions (number in family, lifestyle, variations in daily routine).
	3	___ eating setting (home/away from home; kitchen/while watching TV, etc.).
	3	___ eating patterns (time food is eaten, frequency of eating, food eaten alone or with others).
	3	___ physical activity (recreational/work-related).
	3	___ physiological factors (appetite, food allergy/intolerance, chewing/swallowing difficulty, etc.).
	3	___ psychosocio factors (attitudes and values, motivation, personal and emotional influences; food eaten for hunger, pleasure, status, reward, etc.).
	3	___ cultural influences (food symbolism, preferences, avoidances in relation to ethnic and religious practices; language barriers; etc.).
	3	___ nutrition knowledge (source of information/misinformation).
	3	___ vitamin/food supplement usage (type, amount, duration).
	3	___ drug intake (alcohol, laxatives, antacids, medications).
	3	___ previous diet modifications (type, duration, reaction, history of compliance, effectiveness).
	1	• States questions that relate to the purpose of the diet history the majority of the time.
Sub-Total		
_____ points ___%		TOTAL SCORE--TOOL performance criteria (sum of D and E).

Name _____ Date _____

Comments:

_____ _____

Evaluator's signature/date Student's signature/date

CRITERIA FOR DISCRIMINATING LEVEL OF PERFORMANCE

A ESTABLISHES A TRUSTING RELATIONSHIP

... introduces self to client stating own name and position

2 - states both *name* and *position*
1 - states either *name* or *position*
0 - does not state *name* or *position*

... uses client's name *initially* and at least *one* other time

2 - states client's name at least twice during interview
1 - states client's name only once
0 - does not state client's name during interview

... includes family members if appropriate

(not applicable - for simulation)

... prepares the environment

(not applicable - for simulation)

... smiles/maintains eye contact / physical position facing client

(provided by simulated client)

... speaks in pleasant voice

2 - speaks in appropriate volume *and* suitable (cordial) tone
1 - speaks in appropriate volume *or* suitable (cordial) tone
0 - speaks in an inappropriate volume *and* unsuitable tone (expressionless)

... uses common language

2 - *initially* explains technical terms when used
1 - explains terms *when asked* for clarification by client
0 - does not use common language or uses technical terms with no explanation

B DEMONSTRATES INTERPERSONAL COMMUNICATION SKILLS

... uses open-ended questions to generate discussion in at least 4 instances (Can question be answered with 1) yes or no, 2) one word; Does question 3) encourage verbalization?)

2 - attempts at least 4 times to use open-ended questions
1 - attempts between 1 and 4 times to use open-ended questions
0 - does not attempt to use open-ended questions

... uses closed questions for obtaining specific detail and for clarification

2 - uses closed questions for obtaining specific detail *and* for clarification when necessary (follow-up for detail, etc.)
1 - uses closed questions in at least 3 instances that open-ended questions would best elicit data
0 - uses closed questions more frequently than open-ended questions and inappropriately at that.

... states questions clearly and concisely

2 - states questions easily understood *and* to the point as evidenced by the client's ability to respond without further clarification
1 - states questions that are either clear *or* concise
0 - states questions that lack clarity *and* conciseness as evidenced by client's inability to respond appropriately or asking for clarification (more than 3 times)

... uses at least 3 of the following responses...

2 - uses 3 or more of the various responses
1 - uses 2 of the various responses
0 - uses only 1 of the various responses

... displays no more than 2 of the following behaviors...

2 - displays 2 or less of any one or more of the various behaviors
1 - displays between 3 and 5 times any one or more of the various behaviors
0 - displays 5 or more of any one or more of the various behaviors

C. GUIDES INTERVIEW

... provides client an opportunity in the beginning to state his/her problem

2 - *initially* encourages client to begin discussion regarding his/her problem/concern
1 - initially ecourages client to start talking in *general*, or encourages client to discuss her/her problem/concern *at some point* during the interview
0 - does not seek to elicit client's perception of his/her problem/concern at all

... encourages client to tell story fully

2 - encourages client to generate the majority of the interaction
1 - responses are similarly distributed between client and dietitian
0 - dietitian dominates interaction

... resists client's discussing irrelevant topics (if applicable)

2 - successfully redirects client's responses as appropriate
1 - makes little attempt to redirect client with some success
0 - does not redirect client in responding; or consistently interjects own irrelevant comments

... generates questions to lead client to another topic systematically

2 - successfully leads client from one topic to an unrelated one
1 - leads client from one topic to an unrelated one with some diffuculty
0 - leads client from one topic to another one without completing discussion of former one

... probes areas where client's responses are incongruent (if applicable)

2 - confronts or questions client about discrepancies to clarify data obtained
1 - occasionally attempts to ascertain accuracy of client's responses with difficulty
0 - acknowledges all of client's responses without discriminating accuracy from inaccuracy

... identifies landmarks

2 - investigates client's responses which may be important to his/her food intake to obtain additional information
1 - acknowledges awareness of information elicited by noting comments, but does not pursue topic for additional detail
0 - does not acknowledge awareness of client's response or investigate topic at all

... directs interview at a comfortable pace

2 - directs interview at a pace which is apprpriate for client as evidenced by lack of interruptions and lack of excessive pauses
1 - directs interview which is either too fast or too slow but attempts to adjust pace appropriate for client
0 - unable to direct interview at a comfortable pace

... responds with appropriate feedback to verbal and nonverbal cues

2 - acknowledges client's responses and gives information as appropriate
1 - *inconsistently* acknowledges client's responses appropriately, or gives either too much or too little information for the situation; or occasionally gives untimely or inaccurate information
0 - *rarely* acknowledges client's responses or frequently gives untimely or inaccurate information

... summarizes interview at appropriate intervals

2 - *consistently* summarizes interview to some extent in at least 3 instances at appropriate intervals (ie. after each meal description, etc.)
1 - *occasionally* summarizes data obtained about various topics (once or twice)
0 - does not summarize client's responses at all

... closes interview

2 - prepares client for closure *and* makes arrangements for next contact.
1 - either prepares client for closure *or* makes arrangments for next contact
0 - neglects to prepare client for closure *and* make arrangements for next contact

D. USES THE MEDICAL RECORD AS A DATA BASE SOURCE PRIOR TO THE INTERVIEW

... uses pre-interview data from the medical record

2 - makes reference to the medical record at least twice and notes comments
1 - makes reference to the medical record at least once
0 - does not demonstrate knowledge of any information obtained from the medical record

E. GATHERS ACCURATE AND COMPLETE FOOD INTAKE DATA

... identifies what the client eats and drinks

2 - determines client's food intake probing until the client states that nothing else was eaten, and notes comments
1 - determines client's food intake through questioning, but does not probe for additional information
0 - obtains sketchy discription about client's food intake

... identifies how much the client eats and drinks

2 - uses food models, hands, etc. to gain description of portion size for at least ½ of the food items generated, and notes comments
1 - determines portion size for some of the food items consumed by the client
0 - rarely if ever attempts to assess amount of food and beverages consumed

... identifies food preparation methods

2 - determines how food is prepared for ½ of the food items consumed, and notes comments
1 - determines food preparation methods for some of the food items consumed
0 - rarely attempts if at all to identify food preparation methods of foods eaten

... classifies food intake data with food frequency, verifying data obtained

2 - uses the food frequency as a crosscheck at least twice, verifies data, and notes comments
1 - uses the food frequency as a crosscheck at least twice, but does not verify data and/or note comments
0 - attempts to use food frequency no more than once, or does not verify or note comments

... determines eating behavior by identifying information for the following variables

2 - investigates topic and notes comments
1 - inquires minimally about topic and notes comments,
investigates topic but fails to note comments, or
notes comments freely elicited about topic.
0 - does not seek information about variable,
inquires minimally but fails to note comments, or
does not acknowledge in notes comments freely elicited.

... states questions that relate to the purpose of the diet history

2 - states questions that relate to the purpose of the diet history more often than not
1 - states questions that are irrelevant to the diet history in several instances
0 - states at least 5 questions that are totally irrelevant to the purpose of the diet history.

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