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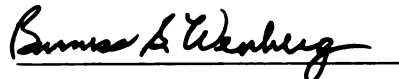
THE NUTRITIONAL CARE PLANNING PROCESS: A COMPARISON
OF THE EFFECTS OF TRADITIONAL AND MODULAR METHODS
OF INSTRUCTION ON STUDENT DIETITIANS' LEARNING

presented by

Paula Anne Junkermier

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Paula Anne Junkermier

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The effects of a self-instructional module and a traditional lecture presentation of the nutritional care planning process on student dietitians' learning were compared. The investigator developed a self-instructional module and a lecture on the process using the Hiob model.

Participants were the twenty junior year student dietitians enrolled in Michigan State University's General Dietetics Coordinated Study Plan. They were randomly assigned and evenly divided into the traditional lecture and self-instructional module treatment groups.

Summative evaluation included a pretest and post test which were identical: administered to the entire group prior to and after the instructional treatment. Two trained Registered Dietitians evaluated tests using a validated checklist developed by the investigator.

Findings documented a gain in achievement for both groups. The self-instructional module was as effective as the traditional lecture for student dietitians' learning of the nutritional care planning process.

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CHAPTER I

INTRODUCTION

The unique contribution of the dietitian as addressed by Young (1965) is "interpreting the nutritional needs of human beings individually or in groups, sick or well, in terms of food." This concept of the dietitian as translator of nutritional science theories into suggested food practices is currently held in the profession. The translation process evolves from the different skills inherent in the roles of the dietitian (Mason et al., 1977). These role-skills include: Communicator, Facilitator, and Manager. All are essential to the provision of optimal nutritional care for the client. Mason et al. (1977) set forth a model for the systematic provision of nutritional care for individuals and/or groups. The model includes the components of Assessment, Planning, Implementation, and Evaluation (Appendix A).

Planning for nutritional care of clients involves synthesizing assessment data from a variety of sources: dietary, biological, environmental, and behavioral. The resultant nutritional care plan is a tool utilized for client-centered counseling (Mason et al., 1977) as well as for communicating recommendations for nutritional care of the client. The plan represents the contribution of the dietitian to the multidisciplinary approach to client care and the total health care plan of the client (Mason et al., 1977).

The concept of nutritional care planning in client-centered care is discussed in the literature (Kocher, 1975; Pennisi, 1976; Shapiro, 1979; Winborn et al., 1981). In contrast, the process of generating a nutritional care plan for a client has not been clearly delineated, either for the practicing clinical dietitian or the student dietitian.

Definition of Terms

The following definitions are accepted for this research study and included to facilitate the reading of this thesis.

Nutritional care: The application of the science and art of human nutrition in helping people select and obtain food for the primary purpose of nourishing their bodies in health or disease throughout the life cycle. This participation may be in single or combined functions: in feeding groups involving food selection and management; in extending knowledge of food and nutrition principles; in teaching these principles for application according to particular situations; and in dietary counseling (Committee on Goals of Education for Dietetics, Dietetic Internship Council, 1969).

Planning: A tool used to manage and control future activities (Robinette, 1970). Planning involves a logical thought process of considering relationships among goals, actions, and outcomes prior to taking action (Little and Carnevali, 1976).

Care: Concerned service (Little and Carnevali, 1976).

Tool: Something used in performing an operation or necessary in the practice of the dietetic profession (Jasmund, 1980); in this case, the NUTRITIONAL CARE PLAN.

Process: A sequence of activities or events designed to produce a determined outcome or goal (Jasmund, 1980).

Client: One who purchases professional services (Little and Carnevali, 1976); here, specifically a consumer of nutrition/dietary services.

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 use modules independently at their own rate and at times of

their own choosing to replace or supplement the more traditional lectures, laboratories, and discussions" (Cross, 1976).

Hiob (1978) identified the following definitions in reference to a systematic approach to module construction. They were used in the development and testing of the self-instructional module "Nutritional Care Planning--A Process" (Junkermier, 1980).

Learning outcome: The specific, intended abilities, attitudes, and skills the learner will possess as a result of instruction.

Entry test: A test to determine whether the learner possesses the critical skills, knowledge, and attitudes prerequisite to beginning the instruction.

Pretest: A test to indicate whether learners possess the knowledge, attitudes, or skills taught in the instruction.

Embedded test: Tests designed to provide practice and feedback to the learner throughout the unit for each new concept taught.

Post test: A test parallel or identical to the pretest to measure learner achievement of the intended learning outcome following instruction.

Attitudinal test: A test to survey learners' attitudes following instruction.

Criterion-referenced evaluation: A comparison of a learner's performance with a desired standard and judging whether the learner did or did not meet the standard.

Formative evaluation: The process of testing the instruction during its development to collect information for purposes of revision and improvement.

Summative evaluation: The process of cognitively and affectively testing the instruction with learners in the target population.

Operational Definition of the NUTRITIONAL CARE PLAN

The following operational definitions of NUTRITIONAL CARE PLAN and NUTRITIONAL CARE PLANNING were developed for and used throughout this study.

NUTRITIONAL CARE PLAN:

As a *process*, the plan follows Assessment and is a series of dynamic management strategies which are designed to:

- initiate controlled change on the part of the client to realize optimal nutritional status and/or
- support maintenance of nutritional status on the part of the client.

As a *tool*, the NUTRITIONAL CARE PLAN is a documentation communicating the management strategies for achieving and/or maintaining optimal nutritional status of the client.

During implementation, goals will be mutually agreed upon by the self-determining client and the dietitian.

NUTRITIONAL CARE PLANNING: The logical thought process employed in generating the NUTRITIONAL CARE PLAN.

These definitions were agreed to by the faculty in the General Dietetics Coordinated Study Plan as operational definitions and were used for the present study.

Statement of the Problem

The process of generating a NUTRITIONAL CARE PLAN for a client is not clearly delineated in a systematic method in the current literature. *The Dynamics of Clinical Dietetics* (Mason et al., 1977) represents the best current source describing the process of nutritional care planning. Student dietitians in the General Dietetics Coordinated Study Plan at Michigan State University have been taught the process of

generating a NUTRITIONAL CARE PLAN by a traditional approach which included a lecture based on that text. The students are provided with sample nutritional care plans to have reference examples. They are given the opportunity to practice developing a NUTRITIONAL CARE PLAN from given assessment data as a group working through the process, and later, individually working through the process. Supervision and feedback are provided by instructors.

Recent literature documents the instructional strategy of another program of Coordinated Undergraduate student dietitians (Vickery and Boylan, 1981). The reported reason for change from the previous to a new instructional strategy was that students reported difficulty in developing a NUTRITIONAL CARE PLAN and in translating knowledge into a plan for practical implementation. The authors developed a NUTRITIONAL CARE PLAN model to be used in teaching the nutritional care planning process. The model was presented as a learning-by-doing approach to the process. The study reported this model to be a satisfactory instructional tool; but, in their literature report, the authors did not precisely delineate the process followed.

In conclusion, the process of nutritional care planning has not been clearly and systematically outlined for student dietitians. The development of a systematic process of generating a NUTRITIONAL CARE PLAN which is designed for student dietitians' learning will fill a need for the profession of dietetics.

The investigator developed "Nutritional Care Planning--A Process," a self-instructional module which utilized a systems approach

in delineating a nutritional care planning process for student dietitians. The problem to be investigated in this study is whether the self-instructional module, "Nutritional Care Planning--A Process," is equally as effective as the traditional lecture method in producing student dietitians' learning of the nutritional care planning process.

Assumptions

The following statements represent the assumptions made prior to and during this study.

1. The essential elements of the nutritional care planning process are included in both the traditional lecture and modular methods of instruction.
2. The self-instructional mode and the lecture presentation both are valid methods for delivery of material to facilitate students' learning.
3. The instructor for the lecture presentation possesses average teaching skills.
4. The student dietitians possess skills for procuring a diet history and assessment of the diet history as demonstrated by their previous performance of these skills.
5. The student dietitians may have had general exposure to the concept of nutritional care planning, but not specifically as described by the modular or traditional lecture methods of instruction.
6. The documentation of a systematic process of generating a NUTRITIONAL CARE PLAN for student dietitians does not exist.
7. A self-instructional module on the systematic approach to the nutritional care planning process does not exist or is not in general use in dietetic education.

Hypotheses

The following hypotheses represent the hypotheses being tested in the study:

- 1H₀: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates equal achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *process* component.
- 1H_a: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates a greater achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *process* component. The self-instructional module treatment group evidence greater achievement.
- 2H₀: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates equal achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *tool* component.
- 2H_a: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates a greater achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *tool* component. The self-instructional module treatment group evidence greater achievement.
- 3H₀: MSU student dietitians given a self-instructional module on nutritional care planning, will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- 3H_a: MSU student dietitians given a self-instructional module on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- 4H₀: MSU student dietitians given a self-instructional module on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.

- 4H_a: MSU student dietitians given a self-instructional module on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.
- 5H_o: MSU student dietitians given a lecture presentation on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- 5H_a: MSU student dietitians given a lecture presentation on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- 6H_o: MSU student dietitians given a lecture presentation on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.
- 6H_a: MSU student dietitians given a lecture presentation on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.

Potential Significance of the Study

The potential significance of the study lies in the delineation and standardization by self-instructional module of a particular stable area of knowledge and skill (nutritional care planning) not previously delineated for student dietitians, specifically in the General Dietetics Coordinated Study Plan at Michigan State University. Within the Assessment component of a Model for the Provision of Nutritional Counseling and Nutrient Sources (Appendix A), two self-instructional modules exist. One presents the problem-oriented medical record (Morrissey, 1978) and the other, the diet history (Jasmund, 1980), both for student dietitians. The next logical step is PLANNING on the nutritional counseling model

(Mason et al., 1977). The development and validation of a self-instructional module on the process of nutritional care planning for student dietitians will expand the standardization of content to the Planning component of the nutritional counseling model.

CHAPTER II

REVIEW OF LITERATURE

Need for the Nutritional Care Planning Process

The NUTRITIONAL CARE PLAN, either as a written or a thought process, is an essential tool for the clinical dietitian in providing optimal nutritional care and promoting well-being for individuals and groups. A NUTRITIONAL CARE PLAN is both a documentation and communication to participants in the health care team planning for the overall care of the client (Mason et al., 1977; Vickery and Boylan, 1981). Nutritional Care Planning for a client has been considered to be one of the three components of the definition of clinical dietetics (Committee to Develop a Glossary on Terminology for the Association and Profession, 1974). In the April 1981 report on the role definition study for the field of clinical dietetics initiated by the American Dietetic Association (A.D.A.), major responsibilities were spelled out for the clinical dietitian. These responsibilities specifically delineated roles which the clinical dietitian must assume to insure delivery of quality nutritional care to the client. At the client/patient level of the nutritional care process, nutritional care planning was delineated as a major responsibility of the clinical dietitian in The A.D.A. Role Delineation for the Field of Clinical Dietetics (Baird and Armstrong, 1981).

The clinical dietitian using the NUTRITIONAL CARE PLAN not only appraises nutritional status and existing problems of the client, but also coordinates the management of these problems with overall patient care management. Furthermore, the plan serves as an evaluation standard to compare the effectiveness of the nutritional management strategies. The well-developed care plan will improve health team interaction and communication by integrating into the total health care plans for the client as well as act as the foundation for provision of optimal client-centered nutritional care (Mason et al., 1977; Vickery and Boylan, 1981).

Although there are numerous references of and now a role responsibility ascribed to nutritional care planning in the literature, there is a lack of information describing the process for practicing clinical dietitians or for student dietitians learning the process.

Need for Students to Learn the Nutritional Care Planning Process

The skill involved in generating an effective NUTRITIONAL CARE PLAN must be supported by a sound base of scientific knowledge. Vickery and Boylan (1981) stated that student dietitians who are only able to develop "superficial NUTRITIONAL CARE PLANS" might have difficulties functioning as effective practicing clinical dietitians despite their knowledge base of scientific facts and principles.

In view of the critical nature of the NUTRITIONAL CARE PLAN to the practicing clinical dietitian (Baird and Armstrong, 1981), the method by which student dietitians learn the process of nutritional

care planning is worthy of examination. This study was to compare the effects of the traditional lecture and the experimental self-instructional modular methods of instruction on student dietitians' learning.

Traditional Lecture Instruction

Traditional lecture instruction is a method of instruction which is centered around the teacher or instructor. This teacher or instructor lectures to groups of students without emphasis placed on each student (Myers and Greenwood, 1978). Group-oriented, teacher-directed instruction appears to ignore individual differences and teach individuals as though they were an homogeneous group (Roach and Wakefield, 1974; Cross, 1976). Cross (1976) reported a discouraging fact that students carry away in their heads and notebooks less than 42 percent of the lecture content. Traditional lecture instruction permits the level of attainment to vary while the amount of time taken in delivery of instruction is perceived as a constant across the group of learners (Cross, 1976). In the past few years, the shift in emphasis is from the teacher and teaching process of the traditional instructional approach to centering on the learner and the learning process (Hart, 1976).

Historically, the traditional model of instruction on the nutritional care planning process involved student dietitians being instructed through lecture, practicing, evaluating, and discussing with instructors NUTRITIONAL CARE PLANS they have developed. Vickery and Boylan (1981) described introduction of a new model format for

teaching student dietitians to develop NUTRITIONAL CARE PLANS in their Coordinated Undergraduate Program in Dietetics at the University of Alabama. This model involved developing a NUTRITIONAL CARE PLAN according to each identified dietary problem, identifying indicators of that particular problem, planning intervention strategies, and delineating a method to evaluate the effectiveness of that intervention.

At Michigan State University, student dietitians in the General Dietetics Coordinated Study Plan have received the traditional lecture model of instruction in the past. In other words, a lecture on the development of the NUTRITIONAL CARE PLAN was presented by the instructor, followed in simulated and clinical settings by supervised practice, evaluation, and discussion of the care plans that each student dietitian developed. The present study will incorporate the lecture on the development of the NUTRITIONAL CARE PLAN. The practice component will not be studied.

Individualized Instruction

Cross (1976) identified five characteristics of individualized instruction which are widely accepted principles necessary for effective learning. First, the student must take major responsibility for his/her learning by taking on an active rather than a passive involvement in instruction. Second, the goals of learning will be clearly delineated for the student. Third, small lesson units concentrating on a single concept are desirable. These units can provide the student with immediate feedback and reinforcement by correcting learning behavior. Fourth, in order to be effective, learning units must be small with

frequent testing to provide the learner with feedback and evaluation. Lastly, individualized instruction is self-pacing to allow the learners control of the pace as they progress through the instruction.

The goal of presenting instruction materials in a manner that will be of the most use to the learner underscores the basic concept behind individualized instruction: What the student is doing in a learning event is more important than what the teacher is doing (Cross, 1976).

Historical Overview of Individualized Instruction

The development of individualized instruction has a lengthy history that is evolutionary in nature (Klaus, 1969; Cross, 1976). Recognition of the learner as an individual had its roots in ancient times. Development of some major approaches to individualized instruction began to surface at the turn of the century. Classroom approaches to individualized instruction were seen in John Dewey's Laboratory School of 1896 and Washburne's Winnetka Plan of the 1920s. Programmed instruction's beginnings were seen in Pressey's teaching machine of the 1920s and B. F. Skinner's approach to teaching people of the 1950s. These approaches evidenced that individualized instruction has had a logical and chronological progression. Later models of individualized instruction built and improved on earlier ones, emphasizing strengths and correcting weaknesses. The most current applications of programmed instruction involve systems approaches. Computers can be used to assist in individualized learning and represent the technological extension of programmed instruction.

Individualized instruction has evolved from ancient times when Socrates first displayed interest in the individual learner (Klaus, 1969). The importance of learner participation and self-direction was recognized by Quintilian, a Roman educator in his development of an automated device for use in teaching handwriting. Comenius, a seventeenth century educator, also recognized the importance of tailoring instruction to the individual learner (Klaus, 1969).

One of the first classroom attempts at meeting the individual's instructional needs was in John Dewey's Laboratory School in 1896. Most widely publicized was Washburne's Winnetka Plan which was implemented in the Winnetka, Illinois public schools in the 1920s. This plan divided instruction into units or modules, each with its own aims and embedded tests of learning progress (Klaus, 1969). The beginnings of the concept of mastery learning are found in the Winnetka Plan.

The twentieth century has seen the development of some major approaches to individualizing instruction. They are dominantly behaviorist in emphasis (Cross, 1976). That is, the individualized instruction emphasizes the application of scientific principles such as specifying behavioral objectives, promoting immediate reinforcement and small packages of clearly specified learning tasks (Cross, 1976). Numerous "brand names" exist from the grandfather of the newer approaches or Programmed Instruction, to the newest approaches in higher education or Audio-Tutorial, and Personalized System of Instruction.

Programmed Instruction had its early beginnings in the 1920s when S. L. Pressey invented a teaching machine which emphasized small

units of learning and immediate feedback and reinforcement (Marson, 1972; Cross, 1976). In the 1950s, B. F. Skinner related concepts learned from animals to teaching of people. He recognized that the appropriate use and timing of reinforcement was all-important to learning. Programmed Instruction consists of a series of "frames" arranged carefully to successively "shape" learner behavior. A criticism of Programmed Instruction is the rigidity of the method. In other words, the rate of learning is the only thing the individual learner can control. Many learners complain of boredom using Programmed Instruction with the small "frames" of instruction. Programmed Instruction does reduce the amount of time required to learn facts and skills; however, Programmed Instruction should be combined with other learning activities, not replace them (Cross, 1976). Two branches of Programmed Instruction are emerging to attempt to correct weaknesses such as rigidity and boredom reported in Programmed Instruction.

The first branch of Programmed Instruction operates under the premise that the use of computers can assist in solving some of the complex problems involved in truly individualizing instruction. Computer Assisted Instruction (CAI) involves the tutorial use of the computer on an interactive basis with learners as they move through a self-paced course of instruction. Although the computer's strength lies in individualization and reduction of learning time by providing instantaneous feedback and remediation, the most serious educational issue raised by Computer Assisted Instruction is that of education as content (strictly transfer of information) versus education as process

(Cross, 1976). Computer Assisted Instruction transfers information from one receptacle to another, but it is sterile. Adding only efficiency to education is a real danger to new students (Cross, 1976). Computer Assisted Instruction is a more sophisticated learning process evolving from Programmed Instruction, but it should not replace other learning activities.

The second branch of Programmed Instruction is Computer Managed Instruction which eliminates the need for students' interaction on line with the computer. The computer assists the individual in identifying learning needs through testing and offers the appropriate assignments designed to satisfy individual learning requirements. As a tool, Computer Managed Instruction has considerable potential for managing individualized instruction (Cross, 1976).

Modular Instruction

The gradual development of individualized instruction via Programmed Instruction is seen as evolutionary (Cross, 1976). The speed of adopting self-paced modules is revolutionary. Cross (1976) reported a statement that the use of some form of modular instruction is probably the fastest growing trend in the history of Western education.

Modular instruction evolved as a direct reaction to Programmed Instructions' small "frames" of learning material. The learning units in modular instruction would be larger than the Programmed Instruction "frame," but smaller than a semester course. A module is by definition a self-contained or self-instructional unit of instruction with

well-defined objectives consisting of learning materials, a sequence of activities, and provisions for evaluation. A module provides students with information needed to acquire specific knowledge and skills, and serves as one component of a course or total curriculum (Hiob, 1978; Cross, 1976).

Learning modules also arose out of the concept of mastery learning which specifies that one unit must be learned at a specific competence level before the next unit of sequence is undertaken (Cross 1976). Most modules demand active participation of the learner interacting with the instructional materials. Students will perform specified learning tasks and be given feedback on that performance in terms of mastery of the content. Instructions for what the students should do if they do not achieve mastery are also included (Hiob, 1978).

Two programs of learning have emerged from self-paced learning modules and mastery learning: The Audio-Tutorial (A-T) approach and the Personalized System of Instruction (PSI). The Audio-Tutorial approach emphasizes self-paced learning, individualized scheduling, multimedia, and adjustable size of the learning unit. The Personalized System of Instruction is based on the self-paced mastery learning concept, and uses the written word, motivational lectures, and student proctors as peer tutors. Both systems, although containing different philosophies and viewpoints, make special provisions for personal contact between learners and people either in quiz sessions (A-T) or as student proctors (PSI).

Self-instructional modules as well as the Audio-Tutorial approach and the Personalized System of Instruction all arise out

of the mastery learning movement. Additionally, they represent systematic approaches to instruction (Cross, 1976). A systematic approach to instruction is both logical and scientific (Davis et al., 1974).

Systematic Approach to Instruction

Hiob (1978) stated that "the systems approach" does not exist; rather, a variety of systems approaches are in existence. A simple definition of the systems approach to instruction is: "a problem-solving process that organizes decision-making systematically, so that one relates all of the relevant factors in a given problem, at the time when they need to be related" (Hiob, 1978).

Davis et al. (1974) characterized a systematic approach to instruction as consisting of both a point of view of the teaching-learning process and a methodology. First, as a point of view, the approach is an arrangement by which the teacher and student can interact with one another in order to facilitate student learning. Second, the approach entails the use of a specific methodology for designing learning systems. In other words, there are to be systematic procedures for planning, designing, implementing, and evaluating both the learning and teaching processes. They further stated that the approach may or may not include the traditional teacher as the information could be transmitted in a variety of modes. These modes include traditional text, audiovisual, programmed text, self-instructional module and so on.

The systems approach must minimally include a learner, a goal for learning, and a procedural plan for achieving the goal (Davis et al., 1974). These elements are addressed in the definition of a learning system: "an organized combination of people, materials, facilities, equipment, and procedures which interact to achieve a goal" (Davis et al., 1974). An instructor can function in two capacities in a learning system. One role of the instructor can be that of designer of the system. A second role can relate to one of the system elements, e.g., the traditional teaching role can be assumed by the instructor (Davis et al., 1974; Hiob, 1978).

Thus, the learning system consists of components which are planned and interdependent. Also, the learning system must have a goal, or purpose, which will guide the system design process.

According to Friesen (1973), the design of instructional materials requires the designer to apply the system of logic in order to accomplish the specified learning objectives. In other words, the instructional designer must utilize a systems approach to instructional design.

Andrews and Goodson (1980) characterized a systematic approach of instructional design as a scientific method with an input-output-feedback-revision cycle. A systematic approach to instructional design is both logical and useful in education (Andrews and Goodson, 1980). Furthermore, Klaus (1969) stated that a systems approach is necessary for individualized instruction.

Systematic Approach to the Nutritional Care Planning Process

A systematic approach to the process of nutritional counseling was presented by Mason et al. (1977) (Appendix A). The elements of Assessment, Planning, Implementation, and Evaluation comprise the model. Mason et al. (1977) contended that in order to assure the goal of quality nutritional care, a systems approach to the process of nutritional care is an essential as well as an effective means of accomplishing that goal. The process of nutritional counseling allows the practicing clinical dietitian to work towards that goal systematically. In addition, the NUTRITIONAL CARE PLAN itself is viewed as a systematic approach to the assessment of an individual's nutritional well-being.

A systems approach to nutritional care is the most operable means of ensuring quality, comprehensive client care which is the goal of the practicing clinical dietitian (Mason et al., 1977; Baird and Armstrong, 1981). Utilizing a systematic approach, the nutritional care planning process could be logically and scientifically taught to student dietitians.

Application of Modular Instruction to Education in Health Professions

Documentation of the effectiveness of modular instruction exists (Cross, 1976; Hiob, 1978). The literature contains ample evidence that individualized instruction through the use of modules is working, whether it is a small part of or the entire curriculum. Some of the more extensive review studies were done by Bridge and Taveggia (1976) which document that self-instructional modules are as good as

or superior to conventional methods (Hiob, 1978). In addition, Hiob (1978) recommended that much of university instruction which has relatively stable content should be presented through the use of well-defined modules where subject matter and constraints allow. Important considerations in terms of subject matter and possible constraints include determination of actual need for instruction in the particular subject area which is under scrutiny. Additionally, the content should remain reasonably constant and not be slated for dramatic change. The length of the content should not be extensive, i.e., too short or too long. Lastly, the unit should address an area which has posed some difficulty for students in terms of learning the material (Hiob, 1978).

Self-instructional materials have been used as tools to improve clinical education in the allied health professions (Holcomb and Milligan, 1974). Specifically, modular instruction has been used in medical, nursing, and dietetic education for a variety of instructional purposes.

Fiel and Ways (1972) claim that ample evidence supports the use of self-instructional materials in medical education. The self-instructional method of learning has been found to be superior to other instructional methods in terms of student performance on the National Board of Medical Examiners (Stritter et al., 1973). Retention and comprehension in specific content areas of medicine were judged better in students using self-instructional materials than when material was presented in classroom (Peck and Benton, 1970; Buckwalter et al., 1974).

Nursing educators have found use for self-instructional materials to not only efficiently utilize instructors, but to integrate high quality self-instructional materials into an already crowded nursing curriculum (Kiang, 1970; Marson, 1972). Self-instructional methods have been found to be effective methods of instruction for nursing students (Kiang, 1970; Wiltkopf, 1972; Kuchinoff and Holzemer, 1979). Immediate retention and achievement have been found, in some instances, to be superior (Myers and Greenwood, 1978).

Application of Modular Instruction to Dietetic Education

The Study Commission on Dietetics (1972) suggested that programmed instruction be implemented in the Coordinated Undergraduate Programs in Dietetics. Self-instructional modules represent an evolved form of programmed instruction. The self-instructional methods have been shown to be as effective as traditional methods of instruction (Roach and Wakefield, 1974; Pietrzyk, Britton, and Chamberlain, 1978; Morrissey, 1978; Hutton and Davidson, 1979; and Jasmund, 1980).

Roach and Wakefield (1974) compared the effects of teaching of basic principles and concepts in quantity food purchasing by self-instructional and lecture methods. They found that student performance was not significantly different from one method to the other. However, ratings overall and individually of reactions to the instructional method were significantly different in favor of the self-instruction groups. The authors concluded that the self-instructional method appeared to be an effective innovation (Roach and Wakefield, 1974).

Guley (1975) developed a self-instructional module on production scheduling in a ready food system and compared the effects of the module and lecture methods of instruction. The students reached a common level of achievement when participating in either method of instruction. Additionally, the students' attitudes towards either instructional method did not vary significantly. Guley (1975) concluded that other modules should be developed and evaluated for incorporation into management-oriented college courses.

Morrissey (1978) developed and tested a self-instructional module on the problem-oriented medical record. This study validated the learning unit as an effective instructional method as well as one viewed favorably by student dietitians.

Hutton and Davidson (1979) documented successful incorporation of self-instructional learning packages in their Coordinated Undergraduate Program (CUP) in dietetics at the University of Alabama. In this instance, learning packages were continuously evaluated by content experts, student feedback, and most importantly, positive change in student behavior and performance. These learning packages were incorporated into the University of Alabama CUP curriculum to serve a variety of purposes. They guided students in reviewing required coursework, they assisted transfer students, enriched lectures, and supplemented clinical experience. Hutton and Davidson (1979) asserted that these self-instructional learning packages were successful teaching/learning tools available to dietetic educators.

Jasmund (1980) developed a self-instructional module to facilitate student dietitians' learning to elicit a client's diet history. A comparison of the effectiveness of the self-instructional module and a lecture presentation with the same content failed to demonstrate a significant difference in achievement between achievement groups. Jasmund (1980) concluded that, based on the findings, self-instructional modules could be used in place of lecture for presenting material (such as the process of eliciting a diet history) that is relatively stable in dietetic education.

Documentation exists of the effectiveness of self-instructional modules. A variety of self-instructional modules have been developed for use in dietetic education with recommendations for the development of additional modules.

A self-instructional module on a systematic approach to nutritional care planning has not been tested; therefore, it has not been shown to be equally as effective as the traditional lecture method of instruction as applied to the process of nutritional care planning. The profession of dietetics can benefit from the additional development and validation of self-instructional materials such as self-instructional modules.

CHAPTER III

METHODOLOGY

Methodology used in this study is described under the headings of Preparation for the Study, Design of the Study, Analysis of Data, and Limitations.

Preparation for the Study

Preparation for the study is described under the headings Operational Definition, Identification of Content, Development of the Self-Instructional Module, Development of the Lecture, Development of the Evaluation Checklist, and Reliability of Evaluators.

Operational Definition

Throughout the development and evaluations of the self-instructional module the following definition was utilized:

NUTRITIONAL CARE PLAN:

As a *process*, the plan follows Assessment and is a series of dynamic management strategies which are designed to:

- initiate controlled change on the part of the client to realize optimal nutritional status and/or
- support maintenance of nutritional status on the part of the client.

As a *tool*, the NUTRITIONAL CARE PLAN is a documentation communicating the management strategies for achieving and/or maintaining optimal nutritional status of the client.

During implementation, goals will be mutually agreed upon by the self-determining client and the dietitian.

Nutritional care planning: The logical thought process employed in generating the NUTRITIONAL CARE PLAN.

Prior to beginning this study, the investigator developed a rationale for a proposed definition of NUTRITIONAL CARE PLAN. Directors of Coordinated Undergraduate Dietetic Programs in Michigan were consulted. In addition, the clinical faculty of Michigan State University's General Dietetics Coordinated Study Plan contributed to this definition as an operational definition to be used in the ensuing study.

The packet of materials utilized to solicit input to the operational definition for NUTRITIONAL CARE PLAN is found in Appendix B.

Identification of Content

The process of developing a NUTRITIONAL CARE PLAN for a client is a critical skill for the student dietitian to master (Baird and Armstrong, 1981). The NUTRITIONAL CARE PLAN represents a tool for the practicing clinical dietitian in client nutritional care management (Mason et al., 1977). The process of nutritional care planning involves a series of dynamic management strategies which are skills the student dietitian must learn. As the literature has revealed a paucity of discussion related to the nutritional care planning process, the learning of the process represents a stable content area in the educational of the student dietitian.

The Hiob model for the systematic development of modules (1978) was followed (Appendix C) to establish an appropriate learning outcome for the nutritional care planning process. The following learning outcome was generated.

Given the Assessment component data analysis and utilizing the process of nutritional care planning, the student will be able to generate a plan to meet the nutritional needs of a client, meeting the criteria stated on the evaluation checklist with 85% accuracy.

In order to identify the critical subordinate skills in the process of nutritional care planning, an hierarchical analysis of the learning outcome was conducted. Appendix D illustrates these skills in a vertical display according to the Hiob model (1978). The analysis of learning outcome also identifies the necessary entry or prerequisite skills to the process which comprise the knowledge and skills inherent to the collection of assessment data on a client.

The analysis of learning outcome provided the organization of content for both a self-instructional module and a lecture for this study. Stability of content is a necessary criterion for developing self-instructional modules (Hiob, 1978). Therefore, in this study the identical content is contained in both the self-instructional module and the lecture presentation.

Development of the Self-Instructional Module

The investigator developed a self-instructional module entitled "Nutritional Care Planning--A Process" utilizing the Hiob Model (Appendix C). This model is a systematic approach to the process of developing self-instructional modules. The module was constructed following the steps illustrated in Appendix C using numerous literature references to the process of nutritional care planning (see Bibliography) and the expertise of practicing clinical dietitians and faculty

in the General Dietetics Coordinated Study Plan. The Analysis of Learning Outcome illustrates the systematic approach used in the module development (Appendix D). Once the self-instructional module was developed, the investigator formatively tested the module on a one-to-one and small-group basis with student dietitians separate from the test population in order to correct inaccuracies and facilitate students' use of the module. Revision of the module in preparation for the summative testing consisted mainly of format changes, page referencing, and clarification of content. Student dietitian feedback from the formative testing provided the basis for the revision.

Development of the Lecture

The investigator developed a lecture consistent with the content and systematic analysis of the learning outcome for the nutritional care planning process. The clinical instructor for the course in which the process was to be taught reviewed the module as well as the lecture outline prepared by the investigator. Overhead visuals for use in the lecture included definitions of terms and content areas. No hand-out materials were planned since students in the self-instructional module group did not receive any hand-out materials. The investigator discussed the lecture presentation with the instructor in order to insure inclusion of all essential elements of nutritional care planning in the instruction and examples. The instructor for the course was a Registered Dietitian with practitioner experience and was assumed to possess at least average teaching skills.

Development of the Evaluation Checklist

Evaluation of students' performance is an essential part of the learning process. To assess the accuracy and completeness of students' NUTRITIONAL CARE PLANS, an evaluation checklist was developed. The Nutritional Care Planning Checklist (Appendix E) was designed as a rating scale. Rating scales are effective in measuring learning in the cognitive, affective, and psychomotor domains (Roth, 1978). The checklist was designed to measure both the *process* and *tool* components consistent with the operational definition of nutritional care planning. The *tool* component involved the correct and complete format for formulation of goals and objectives. The *process* component involved the necessary skills to produce the NUTRITIONAL CARE PLAN. Similar checklists have been designed for use in medical schools to evaluate medical students' performance in interviewing skills (Hutter et al., 1977). Jasmund (1980) designed and validated an evaluation checklist to measure student dietitians' performance in eliciting a diet history from a client. Each item on the Nutritional Care Planning Checklist was assigned a weight of importance according to its importance in generating a complete and accurate NUTRITIONAL CARE PLAN. The most important elements of a plan were assigned greater weight than the less essential elements. The *process* and *tool* components received separate scores and student dietitians must demonstrate competency (≥ 85 percent) on each component to achieve competency for the entire instructional unit.

In order to develop an evaluation checklist for use as a tool to assess student dietitians' performance on the pre- and post

tests for both the self-instructional module and the lecture, the critical components of a NUTRITIONAL CARE PLAN were outlined by the investigator. These components were derived from a review of the literature as well as the investigators' past clinical dietetics experience and were entirely consistent with the self-instructional module content. Next, the input from two practicing dietitians was recorded to contribute to the completeness of the checklist. Given a client's assessment data, each dietitian described the process she followed in generating the client's NUTRITIONAL CARE PLAN. In addition, each dietitian listed what she identified as critical components of the NUTRITIONAL CARE PLAN. The investigator recorded and assembled these data for incorporation into the checklist. Four faculty members in the General Dietetics Coordinated Study Plan were asked to contribute to the evaluation instrument construction. From this collection of input, the evaluation checklist was assembled into a list of items essential to a complete and accurate NUTRITIONAL CARE PLAN.

The list of essential items were examined for their observability. Clearly delineated descriptors of each item or criterion on the checklist were identified to facilitate objectivity and reliability in evaluation. These descriptors served to make the process of rating more objective by decreasing the opportunity for rater judgment and bias. Once all of the essential criteria were identified, a way to discriminate among performance levels was determined to also increase objectivity. Three levels of performance were selected for each criteria for practicality in evaluation. The Student Level on the checklist was identified as follows:

Scale

"2"	Satisfactory	Has reached satisfactory standard of competence.
"1"	Fair	Is learning and should improve. Requires more time and instruction.
"0"	Inadequate	Does not evidence this knowledge and skill. Needs remedial instruction.
"NA"	Not applicable	Is not applicable to the situation.

The formative testing stage of the Junkermier (1980) module allowed opportunity to check the validity, practicality, reliability, and objectivity of the evaluation checklist as identified. Validity referred to the content of what was to be measured by asking the question: Did the checklist measure what it was intended to measure (Tower and Vosburgh, 1976)? Evaluation of pre- and post tests from the formative evaluation evidenced that the higher scores were obtained by students who generated a more complete and accurate NUTRITIONAL CARE PLAN.

Reliability measured the ability of the checklist to get the same results consistently under the same conditions. According to Tower and Vosburgh (1976), the checklist satisfied this criterion since it required very little hesitation in rating a NUTRITIONAL CARE PLAN due to the clear and concise nature of the items in the checklist.

Practicality referred to the ease with which the checklist may be used (Tower and Vosburgh, 1976). The checklist satisfied this criterion since the raters reported the checklist was short enough to complete in the time allowed for evaluation. Additionally, the

checklist indicated change in student performance from pretest to post test.

Objectivity was defined by Tower and Vosburgh (1976) as the degree to which two different persons would be able to reach similar scores when they had the opportunity to score the same test. This was referred to as inter-rater reliability and was achieved through training the raters as discussed in the next subheading, Reliability of Raters.

In summary, the rating procedure of the evaluation checklist considered the four major evaluation criteria as cited by Tower and Vosburgh (1976). These included validity, practicality, reliability, and objectivity.

Reliability of Raters

One difficulty in using a rating scale is that it is vulnerable to low inter-rater reliability due to biases of the raters (Roth, 1978). Inter-rater reliability was established for two raters prior to the evaluation of the pretests and post tests for this study. The intra-class correlation coefficient was used to accurately assess the reliability of the raters. The coefficient was used as a measure of homogeneity of observations (scores) within classes (students) relative to between classes (Hays, 1973). In other words, the coefficient indicated how well the raters agreed on the scores of the same student as well as how well the raters discriminated on scores between the students (Ebel, 1951).

Originally, the investigator began training the raters for reliability with three Registered Dietitians as raters (two clinical instructors on the faculty of the General Dietetics Coordinated Study Plan and the investigator). Use of three raters would ease the number of NUTRITIONAL CARE PLANS each would need to evaluate if an acceptable reliability coefficient could be achieved. These individuals were specifically trained in using the Nutritional Care Planning Checklist (Appendix E) for the evaluation of the pretests and post tests by the investigator.

The first step in training the raters involved a methodical discussion of each criterion and descriptor on the Nutritional Care Planning Checklist (Appendix E). Any discrepancies in interpretation of the criteria or descriptors were discussed and decisions were made and recorded on how each criterion or descriptor was to be interpreted in evaluating a NUTRITIONAL CARE PLAN.

The three raters evaluated three sample NUTRITIONAL CARE PLANS from the formative evaluation using the prepared checklist. The first trial produced the following results:

$$Tool = .846$$

$$Process\ 1 = .921$$

$$Process\ 2 = -.483$$

At this point, the *process* component had been split into two sections to facilitate scoring. These evaluations were reviewed for consistency with the three raters and problem areas or discrepancies in evaluation of the NUTRITIONAL CARE PLANS were discussed. In

addition, the three raters discussed the checklist and attempted to come to consensus on the way *Process 2* was being scored.

The second trial involved the three raters scoring another set of three sample NUTRITIONAL CARE PLANS on *Process 2*. *Process 2* came up in the negative again. The correlation was not high enough among the three raters to allow the use of three raters in the study. The evaluation instrument had proven to be practical in terms of the ease and time involved in scoring. (Raters reported an average of approximately one-half hour to evaluate one NUTRITIONAL CARE PLAN.) In addition, two of the raters appeared to be agreeing very well in their scores. To look at the amount of agreement between these two raters for the purpose of reliability, a Pearson product moment correlation coefficient was run on the scores the students obtained from each rater. The correlation coefficient gave a measure of the degree of correspondence between two variables (raters), based on paired values (scores) of the variables obtained for each of a number of things (NUTRITIONAL CARE PLAN scores) (Ebel, 1972). A requirement for using the Pearson product moment correlation coefficient is that it be used for pairs of interval level data (Nie et al., 1975). The assumption was made by the investigator that the students' scores were interval level data or at least approached interval level data. Labovitz and Tufte argue for using the Pearson product moment correlation coefficient even if data satisfy only the assumptions of ordinal level measurement (Nie et al., 1975). A value of $r = .967$ was obtained; therefore, a high level of agreement on the evaluations between these two raters

was shown. Based on the results, the investigator chose to go with two raters for the evaluation of students' pre- and post tests.

Design of the Study

The research design selected for this study was the randomized control group pretest-post test design (Isaac and Michael, 1976). This design incorporated randomly assigned experimental (self-instructional module) and control (traditional lecture) groups. A pretest administered prior to exposure to the experimental treatment was followed by a post test. A comparison of the mean differences from pretest to post test between groups was then conducted.

This section includes the following subheadings to further describe the research design: The Selection of Subjects, Prerequisites, Risk/Benefit Assessment, Pretest, Assignment to Treatment Groups, Traditional Treatment, Experimental Treatment, and Post Test.

Selection of Subjects

The selection of the subjects for this study included all twenty of the student dietitians enrolled in the second professional course of their junior year in the General Dietetics Coordinated Study Plan at Michigan State University. Rationale for selection of these students centered around prerequisites for this particular content area, as mentioned below.

Prerequisites

The student dietitians were to possess the necessary skills in the Assessment component of the Mason et al. (1977) Nutritional Counseling model (Appendix A). To be able to participate in the study, students must be able to collect the Assessment data from a client by showing competence in reading a medical record, eliciting a diet history, and analyzing the data collected on that client.

Prior to entry into this study, each student dietitian had successfully completed a self-instructional module entitled "The Problem Oriented Medical Record for Dietetics" (Morrissey, 1978), as well as collected data from a client's medical record. They also had successfully completed a self-instructional module entitled "The Diet History--A Tool and a Process" (Jasmund, 1980); and, therefore, the prerequisite skills required for the study were satisfied. The twenty identified students in the General Dietetics Coordinated Study Plan represented the entire population since they were the only subject population meeting these prerequisites in Michigan State University at the time of the study.

Risk/Benefit Assessment

Upon selection of the student dietitian population, a proposal assessing the risks and benefits of this study as required by the University Committee on Research Involving Human Subjects (UCRIHS) was written and approved (Appendix F). One week prior to the study, the student dietitians were fully informed of the risks and benefits

of the study and informed written consent was obtained from each of the twenty (100 percent) in the test population.

Pretest

The pretest was developed by the investigator. It provided the necessary assessment data on a simulated client from which the student could generate a NUTRITIONAL CARE PLAN. Prior to the administration of treatment methods, all twenty student dietitians were given an identical pretest in a regular class period designed to test their entry level knowledge and skill at generating a NUTRITIONAL CARE PLAN. The pretest consisted of a general instruction sheet, the assessment data on a simulated client, and a nutritional care planning worksheet on which students were to generate a NUTRITIONAL CARE PLAN (Appendix G). The investigator was present at the pretest session to deliver verbal instructions to the student dietitians. Students in the two treatment groups were asked not to discuss or share materials from the lecture or the self-instructional modular treatment of nutritional care planning.

Assignment to Treatment Groups

Students were randomly assigned to the two treatment groups and evenly divided. Ten were assigned to the traditional lecture treatment group as controls. Ten were assigned to the experimental self-instructional modular treatment group.

Traditional Treatment

The student dietitians in the traditional lecture treatment received a lecture in their regularly allotted two-hour class time on the nutritional care planning process, according to the presentation prepared by the investigator, but delivered by the regular course instructor. The lecture presentation was delivered to all 10 student dietitians on the regular class day during the week the students in the experimental group were working through the self-instructional module, "Nutritional Care Planning--A Process."

Experimental Treatment

The student dietitians received verbal and written directions on how to proceed through the self-instructional module. The self-instructional unit was placed on reserve in the library immediately following administration of the pretest and assignment to treatment group. Students were requested to remain in the library to work on the module. A minimum of two hours was spent by the students in the formative evaluation; therefore, the investigator anticipated the students in the experimental group would spend more time than the traditional lecture group taking notes on the material and reviewing new and/or more difficult concepts. The module was on reserve for one week, to accommodate individual student class and work schedules.

Post Test

The post test was developed by the investigator. It provided the necessary assessment data from which the student could generate a

NUTRITIONAL CARE PLAN. The entire class of twenty student dietitians reassembled on the following week in their regularly scheduled class time, and the post test was administered. The format of the post test was identical to the pretest, consisting of general directions for taking the test, assessment data on a new simulated client (distinct from the pretest simulated client), and the nutritional care planning worksheet on which the students were to generate a NUTRITIONAL CARE PLAN (Appendix H). The investigator was present to deliver verbal instructions to the student dietitians.

Analysis of Data

Checklist

The two raters scored the pretests and post tests of the twenty student dietitians using the Nutritional Care Planning Checklist (Appendix E). The two raters scored the tests without the knowledge of the treatment or whether the test was a pretest or post test.

Statistical Evaluation

The statistical analyses used in this study included analysis of covariance (ANCOVA) and t-tests. The Statistical Package for the Social Sciences was used for data analysis in this study (Nie et al., 1975).

Tests of significance deal with the question of whether an observed difference is real due to a chance variation. Test statistics are used to measure the difference between two groups. The observed significance level (P or the P value) is the chance of getting a test

statistic as extreme as or more extreme than the observed one. The chance is computed on the basis that the null hypothesis is correct. Small values of P are evidence against the null hypothesis and indicate that something besides chance was operating to make the difference (Freedman et al., 1978). The significance level is represented conventionally as α (Hays, 1973; Nie et al., 1975; Gilbert, 1976; Blommer and Forsyth, 1977). An overall significance level of $\alpha = 0.05$ was selected and assumed appropriate for this study. The use of 0.05 level of significance in hypothesis testing is a convention (Kirk, 1968; Hays, 1973; Nie, 1975).

Although the overall level of significance was set as $\alpha = 0.05$ for this study, Kirk (1968) and Morrison (1976) stated that for planned comparisons of dependent data (pretests and post tests) the type I error probability (α) must be set at α for the family of hypotheses. Additionally, Kirk (1968) stated that in planned multiple comparisons of nonindependent (dependent) data, the level of significance (α) or the probability of making a type I error is equal to dividing α evenly among the number of comparisons made. This is appropriate when the consequences for making a type I error are equally serious for all comparisons (Kirk, 1968).

The investigator recognized that the question of setting the α level for each hypothesis versus setting α for a collection of hypotheses has been a debated matter as documented by Kirk (1968). The investigator chose to set α for the entire collection of hypotheses thus following arguments by Kirk (1968) and Morrison (1976). This decision was based on the investigator's unwillingness to increase

the chance of a type I error which would occur by setting α for each hypothesis (Kirk, 1968).

The overall α rate was originally set at $\alpha = 0.05$. However, since there was a family of hypotheses (six), to insure that the type I error rate (the probability of falsely rejecting *at least* one of the six hypotheses when all were true) was held down, Morrison (1976) suggested that the Bonferroni inequality should be used in selecting the α rate for the individual hypothesis. This implies that the original $\alpha = 0.05$ is divided by six to give $\alpha = 0.0083$. With an α this small, not only has the power of the test been diminished, but the probability of a type II error (β) has increased drastically (Kirk, 1968). The investigator was unwilling to risk this probability, thus the overall α rate was increased to $\alpha = 0.10$. For the family of hypotheses (six), the α level for each hypothesis tested was 0.10 divided by six equals 0.017. Therefore, α was equal to 0.017 for each hypothesis.

Each component of the evaluation checklist, *process* and *tool*, had three statistical tests run on the pretest and post test scores (dependent data), i.e., one ANCOVA and two t-tests. Thus, for this study, the overall significance level of $\alpha = 0.10$ was divided by the number of hypotheses tested (six). This yielded a significance level of $\alpha = 0.017$ which was used for the ensuing testing of each hypothesis.

Analysis of covariance (ANCOVA) was used to determine the effectiveness of the instructional treatment between the self-instructional module and the lecture group. ANCOVA is used to compare

the variance between the treatment groups to the variance within each treatment group after equating the groups on the pretest as the covariate. ANCOVA is appropriately used to statistically control a concomitant variable (pretests) which may be impractical or impossible to control experimentally (Lindquist, 1953; Isaac and Michael, 1976). By a purely statistical control, the same precision in the evaluation of the treatment effect as if the variable (pretests) had been experimentally controlled can be achieved. Therefore, differences between treatment groups on the post test may be appropriately attributed to the treatment. The ratio of the between group and within group variance provides the F-value. Again the F-value will be significant at a value of $\alpha = 0.017$ since the significance level of $\alpha = 0.10$ was divided by the number of tests (six) run on the *process* and *tool* components.

Hypotheses 1 and 2 were addressed by these analyses.

- 1H₀: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates equal achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *process* component.
- 1H_a: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates a greater achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *process* component. The self-instructional module treatment will evidence greater achievement.
- 2H₀: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates equal achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *tool* component.
- 2H_a: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates a greater achievement (as measured by the

post test scores) between the lecture treatment and the self-instructional module treatment, on the *tool* component. The self-instructional module treatment will evidence greater achievement.

The investigator chose to analyze if a significant difference in achievement from pretest to post test occurred in each of the instructional treatments. Thus, the paired t-tests were applied to determine whether there was a significant difference in achievement from pretest to post test for a given treatment attributable to instruction. The t-test is a small sample test for comparing two means and drawing inferences on the results (Gilbert, 1976). The paired t-test was used to determine the probability that differences in achievement from pretest to post test were attributable to the given treatment or due to chance. A paired t-test is appropriate to use when two tests are completed on the same group to compare the test scores before and after the instructional treatment (Nie, 1975). The groups were independent. The pretest and post tests were done on the same people, thus were dependent (Gilbert, 1976). The significance level ($\alpha = 0.10$) was divided by the number of hypotheses tested (six). This yielded a significance level of $\alpha = 0.017$.

Hypotheses 3, 4, 5, and 6 were addressed by these analyses.

- $3H_o$: MSU student dietitians given a self-instructional module on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- $3H_a$: MSU student dietitians given a self-instructional module on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.

- 4H₀: MSU student dietitians given a self-instructional module on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.
- 4H_a: MSU student dietitians given a self-instructional module on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.
- 5H₀: MSU student dietitians given a lecture presentation on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- 5H_a: MSU student dietitians given a lecture presentation on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- 6H₀: MSU student dietitians given a lecture presentation on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.
- 6H_a: MSU student dietitians given a lecture presentation on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.

Curriculum Feedback

The student dietitians were to complete curriculum feedback sheets upon completion of either the lecture or the self-instructional module. The use of such instructional feedback was useful to gain insight into student perceptions of self-instruction versus lecture methods of instruction. In addition, feedback from students would be valuable for revision of the instructional unit for future student dietitians.

Limitations

The following limitations are recognized in this study.

1. The small n (ten students in each of two treatment groups) was a limiting factor in this study. Though the entire population of the Michigan State University General Dietetics Coordinated Study Plan's junior level class is used in this study, these student dietitians represented one coordinated undergraduate dietetics program from a field of seventy-two programs in the United States.
2. Students have had limited exposure in the dietetic curriculum at Michigan State University to self-instructional modular instruction and their total exposure is not known.
3. Although it was planned that the modular and lecture treatments were equivalent in content, no formal measure was used to insure their equivalency because they were both developed from the same learning outcome and analysis of that learning outcome.
4. The self-instructional module uses a paper and pencil mode. The module needs to be recognized as a simulation which will prepare student dietitians for real-world application of the process of nutritional care planning.
5. The amount of time allowance for the instructional treatment of nutritional care planning is limited by the course calendar. The constraints are in terms of scheduling the pre- and post tests and instructional treatments, and integrating them into the appropriate sequence which satisfies prerequisite skills as well as skills that depend on nutritional care planning.

6. Use of 85 percent and above as an expected level of competency without opportunity for practice is unrealistically high for a first trial of a new skill, especially under the mastery learning model adhered to by Michigan State University's General Dietetics Coordinated Study Plan.
7. External validity is not assured in this study. Results are applicable to the student dietitians at Michigan State University in the General Dietetics Coordinated Study Plan (GDCSP) but, the results are not generalizable to other coordinated undergraduate programs in dietetics, because Michigan State University's GDCSP was not randomly selected for this study. A random selection of coordinated undergraduate programs in dietetics for testing would be necessary to determine generalizability. This study was conducted at a single academic institution with a single group of student dietitians.

CHAPTER IV

RESULTS AND DISCUSSION

The differences or absence of differences between the mean scores of the pretests and post tests both between and within instructional treatments provided the bases for the results in this study. The pretest and post test mean scores are reported for both the *process* and *tool* components.

This chapter presents the results as well as the discussion of the results of this study. The chapter is organized under the following headings: Results of ANCOVA, Results of the t-Tests, Competency Comparison, and Curriculum Feedback.

Results of ANCOVA

The scores for both the *process* and *tool* pretests were used as covariates for the *process* and *tool* post tests to analyze the mean score results of the self-instructional module and lecture groups.

The following hypotheses were being tested:

- 1H₀ MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates equal achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *process* component.
- 1H_a: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates a greater achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *process* component. The self-instructional module treatment will evidence greater achievement.

- $2H_0$: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates equal achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *tool* component.
- $2H_a$: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates a greater achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *tool* component. The self-instructional module treatment will evidence greater achievement.

ANCOVA can statistically adjust the differences in the covariates; in this case, namely the pretest scores on both the *process* and *tool* components.

For the *process* component, the F value (.047) as determined from the main effects, was not significant at $\alpha = 0.017$ (Table 1).

Table 1. Analysis of covariance (ANCOVA) results of pretest and post test scores of student dietitians in experimental and traditional treatment groups for the *process* component

Source of variation	Sum of squares	df	Mean square	F	Significance of F*
Covariates	249.181	1	249.181	3.100	.096
	249.181	1	249.181	3.100	.096
Main effects	370.045	1	370.045	4.603	.047
	370.045	1	370.045	4.603	.047
Explained	619.226	2	309.613	3.852	.042
Residual	1366.574	17	80.387		
Total	1985.800	19	104.516		

* $p < 0.017$.

For the *tool* component, the F value (.582) as calculated for the main effects in Table 2, was not significant at $\alpha = 0.017$.

According to these data, the null hypotheses were not rejected for both the *process* and *tool* components.

$1H_0$: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates equal achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *process* component.

$2H_0$: MSU student dietitians will generate a NUTRITIONAL CARE PLAN which demonstrates equal achievement (as measured by the post test scores) between the lecture treatment and the self-instructional module treatment, on the *tool* component.

The alternative hypotheses for both the *process* and *tool* components were rejected.

Table 2. Analysis of covariance (ANCOVA) results of pretest and post test scores for student dietitians in experimental and traditional treatment groups for the *tool* component

Source of variation	Sum of squares	df	Mean square	F	Significance of F*
Covariates	187.637	1	187.637	0.446	.513
	187.638	1	187.637	0.446	.513
Main effects	132.466	1	132.466	0.315	.582
	132.466	1	132.466	0.315	.582
Explained	320.102	2	160.051	0.381	.689
Residual	7148.098	17	420.476		
Total	7468.200	19	393.063		

* $p < 0.017$.

In other words, no significant difference existed between the experimental and traditional treatment groups in student dietitians' performance in generating a NUTRITIONAL CARE PLAN on both *process* and *tool* components.

Results of the t-Tests

Four paired t-tests were run in the analysis of data. The effectiveness of both the self-instructional module and the lecture as methods of instruction was tested by the following hypotheses:

- 3H₀: MSU student dietitians given a self-instructional module on nutritional care planning, will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- 3H_a: MSU student dietitians given a self-instructional module on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- 4H₀: MSU student dietitians given a self-instructional module on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.
- 4H_a: MSU student dietitians given a self-instructional module on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.
- 5H₀: MSU student dietitians given a lecture presentation on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.
- 5H_a: MSU student dietitians given a lecture presentation on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.

- 6H₀: MSU student dietitians given a lecture presentation on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.
- 6H_a: MSU student dietitians given a lecture presentation on nutritional care planning will show a gain in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.

Experimental Treatment Group

The pretest and post test mean scores of the student dietitians in the experimental treatments are reported in Table 3, for both the *process* and *tool* components.

Table 3. Mean scores of student dietitians in experimental and traditional treatment groups

Treatment	Pretest		Post Test	
	<u>\bar{x}</u>	<u>S.D.</u>	<u>\bar{x}</u>	<u>S.D.</u>
Experimental:*				
<i>Process</i>	52.30	11.61	75.00	11.54
<i>Tool</i>	31.50	14.53	59.90	25.10
Traditional:†				
<i>Process</i>	54.40	8.82	67.20	7.33
<i>Tool</i>	41.70	21.23	56.70	14.13

*Self-instructional module

†Lecture.

The mean score by percentage of the *process* component on the pretest was 52.3 compared with 75.0 on the post test, representing a difference of means equal to 22.7 (Table 3). This gain in achievement from pretest to post test was significant ($P = .000$) at $\alpha = 0.017$ (Table 4).

The *tool* component mean scores by percentage were 31.5 and 59.9 from pretest to post test, respectively. The difference of means from pretest to post test was 28.4. This gain in achievement from pretest to post test was significant ($P = .002$) at $\alpha = 0.017$ (Table 4).

Table 4. t-Test results of pretest and post test scores for *process* and *tool* components for student dietitians in experimental and traditional treatment groups

Treatment	t-Value*	P
Experimental (n = 10):		
<i>Process</i>	-5.96	.000 [†]
<i>Tool</i>	-3.82	.002 [†]
Traditional (n = 10):		
<i>Process</i>	-4.48	.001 [†]
<i>Tool</i>	-1.86	.048 [‡]

*df = 9.

[†]Significant at $p < 0.017$.

[‡]Not significant.

Student dietitians in the self-instructional module treatment group evidenced a significant gain in achievement from pretest to post test for both the *process* and *tool* components. The null hypotheses 3 and 4 were rejected:

$3H_0$: MSU student dietitians given a self-instructional module on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.

$4H_0$: MSU student dietitians given a self-instructional module on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.

On the basis of these data, the alternative hypotheses were not rejected.

Traditional Treatment Group

The pretest and post test mean scores of the student dietitians in the traditional treatment are reported in Table 3, for both the *process* and *tool* components.

The mean score by percentage of the *process* component on the pretest was 54.5 compared with 67.2 on the post test. The difference of means was 12.8 which represented a gain in achievement from pretest to post test. This gain was significant ($P = .001$) at $\alpha = 0.017$ (Table 4).

The *tool* component mean scores by percentage were 41.7 and 56.7 on the pretest and post test, respectively. The difference of means from pretest to post test was 15.0. A gain in achievement was shown in the *tool* component as evidenced by the difference in pretest and post test mean scores; however, the gain was not significant at $\alpha = 0.017$.

The null hypothesis 5 was rejected:

$5H_0$: MSU student dietitians given a lecture presentation on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *process* component.

On the basis of these data, the alternative hypothesis 5 was not rejected.

Student dietitians in the lecture treatment group evidenced a significant gain in achievement for the *process* component (Table 3).

The null hypothesis 6 was not rejected:

$6H_0$: MSU student dietitians given a lecture presentation on nutritional care planning will show no difference in achievement in generating a NUTRITIONAL CARE PLAN from pretest to post test for the *tool* component.

The alternative hypothesis 6 was rejected on the basis of these data.

Student dietitians in the lecture treatment group evidenced a gain in achievement for the *tool* component; however, the gain was not a significant gain at $\alpha = 0.017$. This lack in significant gain in achievement on the *tool* component may have stemmed from a difference in individual student's practice of actually writing goals and objectives as was necessary in the self-instructional module, and verbalizing goals and objectives as was the case in the lecture method of instruction.

Competency Comparison

Table 5 illustrates the post test scores by percentage range of student dietitians in both treatment groups. Competency is defined by the Michigan State University General Dietetics Coordinated Study Plan faculty as ≥ 85 percent, for junior level student dietitians in

Table 5. Number of student dietitians in experimental and traditional treatment groups by range of percentage achievement on pretest and post test scores

	Experimental		Traditional	
Achievement	Pretest	Post test	Pretest	Post test
<u>%</u>	-----Number of student dietitians-----			
<i>Process</i> component:				
85 and above*	0	0	0	1
50-84	7	10	8	9
49 and below	3	0	2	0
Total	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
<i>Tool</i> component:				
85 and above*	0	0	0	0
50-84	6	9	2	7
49 and below	4	1	8	3
Total	<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>

*Competency.

accordance with a mastery learning model. None of the student dietitians in either method achieved competency on the pretest *process* or *tool* components. These results are to be expected since the pretest was administered prior to any instruction.

Following instruction, none of the students in either treatment group received less than 50 percent on the *process* component. One student from the self-instructional module treatment group achieved competency on the *process* component. No students from the lecture method achieved competency on the *process* component.

The *tool* component results included one student dietitian from the lecture and three student dietitians from the self-instructional module method receiving less than a 50 percent score. No students from either method of instruction achieved competency on the *tool* component, even though they registered an overall gain in achievement.

An important factor to consider in the nutritional care planning process is the value of practice (Vickery and Boylan, 1981). Danish (1975) cited the need for practice in order to learn skills. Inherent in a process such as nutritional care planning is the need for practice. Students needed additional practice to achieve competency.

Curriculum Feedback

After the summative evaluation, the student dietitians in both the lecture and self-instructional module groups completed their respective curriculum feedback forms (Appendix I). The curriculum feedback form for the lecture presentation consisted of the form the student dietitians were accustomed to using in their General Dietetics

Coordinated Study Plan courses. Questions asked for student evaluations of the most valuable aspects of the lecture as well as identification of additional items to aid in learning the subject matter. Space was provided for the students' comments. The curriculum feedback for the self-instructional modules consisted of questions to evaluate the length and format of the module. The students were to state their favorite and least favorite sections of the module. Space was provided for additional comments. The forms were to elicit student feedback to determine the overall acceptability of the lesson. The detail of the self-instructional module curriculum feedback was to additionally facilitate revision of the unit. The student dietitians' comments were assembled and are reported in Figures 1 and 2, Appendix I.

Overall, the input from the self-instructional module and lecture groups were favorable. Concrete suggestions were elicited for improving both presentations of the lesson.

Self-Instruction

Although the majority of the student dietitians marked the length of the module as "satisfactory," the majority of their comments indicated they felt it was too long (Figure 1, Appendix I). The student dietitians were told that, based on formative testing, the module would require two to four hours to complete. Several students reported it took at least four hours to complete the module. Students had the opportunity to refer back to earlier sections of the module for clarification and review of content. Student dietitians most likely spent more time reviewing the content of the module as it was new

material, and took notes. Individual differences in rate of learning were also accommodated in the self-instructional module. The self-pacing and allowance for individual differences in learning are characteristic of self-instructional modules.

The students reported the most difficulty on Section 2 (Generating Goals and Objectives) and Section 7 (Classifying Objectives into Priorities), in that order. These responses were anticipated since both areas are highly dependent on practice and experience. The sections enjoyed most by students were Section 8 (Identifying Strategies) and Section 4 (Identifying Client's Values), in that order.

Students stated on the curriculum feedback sheet that they enjoyed the examples and applications of information throughout the module. Their major complaint was the length of the module, even though they felt the material included was important and should not be shortened.

Lecture

In contrast, the student dietitians participating in the lecture group found the length to be satisfactory (Figure 2, Appendix I). The students knew prior to class that the entire class period would be devoted to nutritional care planning.

In general, the student dietitians felt the entire lecture was beneficial. Other parts of the presentation noted as valuable were the visual aids as well as examples and practical applications illustrated.

Several students responded negatively when asked if there were "areas where more concentration" would have been helpful. Two students indicated a need for more examples and two desired actual practice.

In response to ways the presentation could be changed to be more effective, some students felt that handouts and more examples would be helpful. The requests for more examples could reflect the shortness of time in the class period. Indeed, three students indicated the need for more time, although two students felt it was "too long," and one that it was of "satisfactory length." Handouts were neither planned for nor provided in either the self-instructional or lecture treatment groups.

Overall, students in the lecture group were not comfortable with the time spent in lecture on the process of nutritional care planning (either too short or too long), and they felt the need for more examples and practice. They were satisfied with the length of the class. They appreciated the overall content of the lecture and appreciated the organization of the presentation.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The major conclusion of this study was that the self-instructional module is as effective a method of instruction as the lecture method to facilitate student dietitians' learning the process of nutritional care planning. This conclusion applied to student dietitians who had met a specific set of requirements in terms of prerequisite knowledge and skills.

Neither the self-instructional nor the lecture method allowed for student dietitians to achieve competency (≥ 85 percent) without additional practice. A need exists to replicate this study and build-in practice of the skill entailed in generating a NUTRITIONAL CARE PLAN to measure the effects of practice and repetition. All students achieved scores in the 50 to 84 percent range for the *process* component, while one student in the lecture and three students in the self-instructional modular methods received less than a 50 percent score on the *tool* component.

According to student dietitians' responses on curriculum feedback sheets, both methods of instruction were viewed positively.

The findings of this study involving nutritional care planning indicated that self-instructional modules could be developed to be as

effective as traditional instruction in other stable content topics of dietetic education. The findings further confirm the following principles of self-instructional modular learning.

Hutton and Davidson (1979) also cited the value of self-instructional modules as adjuncts to traditional instruction in stable content areas of dietetic education. Hart (1976) stated a shift in emphasis from the teacher and the teaching process to the learner and learning process freed the teacher or instructor for greater attention to the individual student when self-instructional modules are used. Furthermore, the stable content of the self-instructional module provides consistency and standardization to the content students are exposed to on a specific topic. Thus, omission of critical material is not a possibility as it may well be in the lecture method. Wiltkopf (1972) reiterated that all students will receive the same standardized instructional materials. Hutton and Davidson (1979) additionally stated that not only is the self-instructional module easily accessible and convenient to students, but it allowed students to learn at their own pace, to review and reinforce learning by repetition when necessary, to allow for incorporation of additional information and provision of opportunities of higher level learning. Holcomb and Milligan (1974) placed utmost importance on the need by students in an allied health profession (such as dietetics) to begin the pattern of lifelong study, necessarily self-directed and often self-instructional. This pattern is best developed in schools where assistance in skills and attitudes required is available.

Recommendations

The following recommendations were identified as a result of this study.

1. According to student dietitian feedback in the summative testing of the self-instructional module, revision of the unit is necessary to facilitate student progression through the module. Because a revision will take the module through Step 7 or the Recycling phase of the Hiob model for constructing modules (Appendix C), the module should be funneled back through the entire flow diagram and retested to insure that the effectiveness of instructional treatment is retained through the module revision.

2. In order to increase the reliability and credibility of the study, the study should be replicated using a larger group distinct from the Michigan State University General Dietetics Coordinated Study Plan in order to substantiate the findings of the original study. No attempt was made in this study to establish generalizability of the results. The duplication of this study could facilitate comparison of a different group of student dietitians with the Michigan State University group of student dietitians.

3. According to Ebel (1972), the validity or the accuracy with which the self-instructional module measures what it ought to measure is also an area for study. The direct validation requires an operational definition of the trait being measured. Although an operational definition for NUTRITIONAL CARE PLAN was assembled, further feedback from practicing dietitians and faculties of dietetic programs could be elicited to rule out ambiguities.

4. Danish (1975) stated that practice and feedback are essential in skill learning. Vickery and Boylan (1981) emphasized the importance of practice and feedback, particularly in generating a NUTRITIONAL CARE PLAN. Competency in the process of nutritional care planning can be achieved through practice. Practice should be included as a variable in a future study on the effects of instructional treatment on student dietitians' learning of the nutritional care planning process. Additionally, longitudinal studies need to be conducted to determine if this nutritional care planning process as taught in a pre-baccalaureate dietetics program is effective in actual practice.

5. The lecture instructional method for the process of nutritional care planning should be formatively tested according to the Model for module construction used in this study to equalize the development process of instructional materials used in this study (Hiob, 1978).

CHAPTER VI

SUMMARY

A study was conducted to compare the effects of a traditional lecture treatment and an experimental self-instructional treatment as methods of instruction on student dietitians learning of the systematic approach to the nutritional care planning process. In preparation for the study, the investigator utilized the Hiob model for module design (Hiob, 1978) to identify the content, develop, and formatively test the Junkermier module (1980): "Nutritional Care Planning--A Process." A lecture presentation was also developed based on the systematic analysis of the learning outcome of the self-instructional module. In addition, an evaluation instrument was formulated considering the four criteria of evaluation: validity, reliability, practicality, and objectivity. The evaluation instrument was used with a high degree of correlation between two raters, who were both Registered Dietitians, in preparation for use in summative testing evaluation of student dietitians' learning.

Twenty student dietitians representing the entire population of the junior level in the General Dietetics Coordinated Study Plan were selected for the study. Their selection was based upon satisfaction of the prerequisite skills of possessing the necessary knowledge and skills to assess the dietary status of a client.

A risk/benefit assessment of a project involving human subjects was submitted to and approved by the University Committee on Research Involving Human Subjects (UCRIHS). Informed written consent forms were obtained from the total test population of twenty student dietitians one week prior to the study. All twenty student dietitians were assembled prior to the administration of instructional treatment to take a pretest to test their entry knowledge and skills on the process of nutritional care planning. Students were randomly assigned to treatment groups and divided evenly: ten in the traditional lecture and ten in the experimental self-instructional module treatments.

The experimental self-instructional module treatment received instructions and could work through the self-instructional module at their own pace in the library where it was on reserve for one week. The traditional lecture treatment received their presentation in a regularly scheduled class time during the week the students worked through the module.

Following administration of instructional treatments, a post test in a regular class time was given to assess the level of knowledge and skill the students possessed utilizing the same format as the pretest.

The two evaluators scored the student dietitians' pretests and post tests. The Statistical Package for the Social Sciences was utilized in data analysis. The paired t-test and analysis of covariance were the test statistics applied to the data.

Both the self-instructional modular and the lecture treatments were effective instructional methods for a systematic approach to a

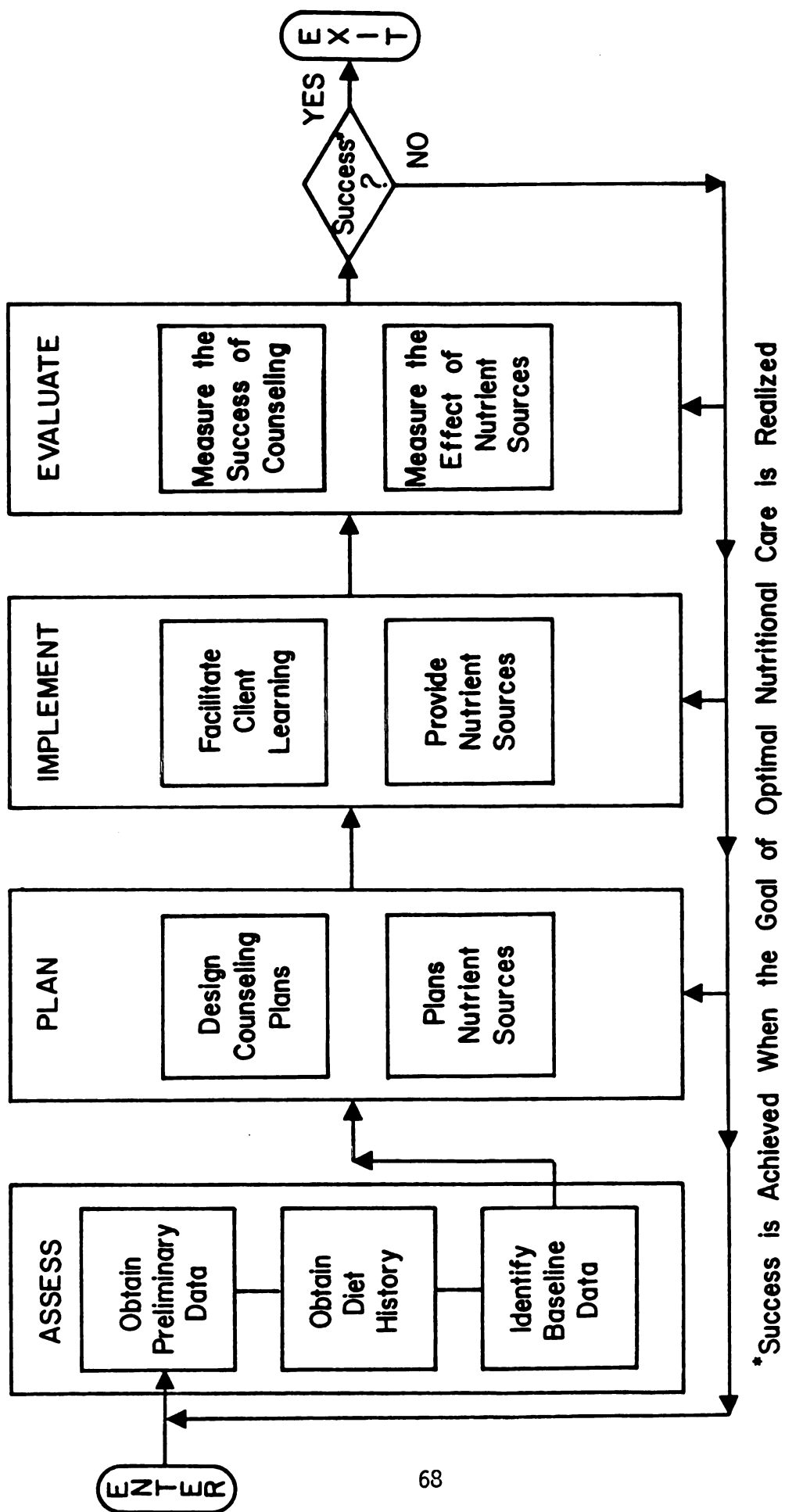
process of nutritional care planning and promoting student learning. The gain in achievement between student dietitians' pretest and post test scores on both *process* and *tool* components supports this summary statement. All gains in achievement were significant with the exception of the traditional group's achievement on the *tool* component. Additionally, no significant difference in achievement was found on the *process* and *tool* components between the self-instructional modular and lecture treatment groups in facilitating student dietitians' learning to generate a NUTRITIONAL CARE PLAN.

APPENDICES

APPENDIX A

A MODEL FOR THE PROVISION OF NUTRITIONAL COUNSELING AND NUTRIENT SOURCES

(Mason et al., 1977)



(Mason, Wenberg, and Welsch, 1977 revised.)

APPENDIX B

RATIONALE FOR A PROPOSED DEFINITION OF NUTRITIONAL CARE PLAN

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION
HUMAN ECOLOGY BUILDING

EAST LANSING • MICHIGAN • 48824

July 8, 1980

To: Directors, ADA Accredited Coordinated Undergraduate Programs in Dietetics
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Margene A. Wagstaff, R.D. - Wayne State University

cc: Burness G. Wenberg, R.D. - Advisor

From: Polly Junkermier, R.D.
Assistant Clinical Instructor

Re: Working Definition for a NUTRITIONAL CARE PLAN

As an undergraduate in a coordinated program, as a dietetic practitioner and now as a dietetic educator, I feel that the concept of a NUTRITIONAL CARE PLAN is critical but has been both poorly defined and described by our profession. I have selected the concept as the topic of my Master's thesis research.

I need your help. Enclosed are:

Rationale for a NUTRITIONAL CARE PLAN (green)
Working Definition for a NUTRITIONAL CARE PLAN (gold)
Response to Working Definition (blue)
Self-addressed stamped envelope.

Before I can proceed to develop and test a self - instructional module for student dietitians which will delineate the process of generating a NUTRITIONAL CARE PLAN for a client, I must have a working definition for NUTRITIONAL CARE PLAN.

I am requesting your expertise as a dietetic educator to assist in establishing consensus for the definition. The proposed definition has been derived from my review of the literature which I have synthesized in the enclosed Rationale. I look forward to your feedback. I would appreciate your completing the enclosed Response to the Working Definition and returning in the self-addressed envelope by July 31.

Thank-you for your cooperation and assistance. When I have compiled your responses plus those from the Michigan State University faculty, I will share with you the definition I will use in my upcoming module development. Again, thanks for your help.

Rationale: NUTRITIONAL CARE PLAN

The following definitions lay the groundwork for developing a definition of a NUTRITIONAL CARE PLAN:

Nutritional care - The application of the science and art of human nutrition in helping people select and obtain food for the primary purpose of nourishing their bodies in health or disease throughout the life cycle. This participation may be in single or combined functions: in feeding groups involving food selection and management; in extending knowledge of food and nutrition principles; in teaching these principles for application according to particular situations; and in dietary counseling (1).

Planning - It is a tool used to manage and control future activities (2). It involves a logical thought process of considering relationships among goals, actions and outcomes prior to taking action (3). Inherent to the concept of planning is the intent to effect change.

The American Dietetic Association has declared that nutritional care planning for the client is uniquely the role of the dietitian (1). As nutrition is one component of health, then nutritional care planning must be one component of health care planning. Health care planning consists of three concepts: health, care and planning. These may be defined as:

Health - A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (World Health Organization, 4).

Care - Concerned service (3).

Robinette (1970) views planning as both a tool and a process with the objective of effecting change (2).

What is the role of the dietitian in the planning of an individual's nutritional care? What is a NUTRITIONAL CARE PLAN? How does one generate a NUTRITIONAL CARE PLAN for a client?

Stern (1931) identified the need for the outpatient to assume responsibility for his/her nutritional care. In addition, the role of the dietitian was pinpointed as facilitating the client in the process of planning his/her nutritional care (5). According to Young (1957), a "patient-centered" approach to nutritional care entails "reaching the patient" so one can "teach the patient" (6). Individualization of nutritional care and involvement of the client are of paramount importance in the nutritional care planning process.

Rationale (Continued)

These questions are relevant to the profession of dietetics today. Young (1965) addressed the unique contribution of the dietitian as "interpreting the nutritional needs of human beings individually or in groups, sick or well, in terms of food" (7). The Study Commission for the Profession of Dietetics identifies the dietitian as translator of theory into practice (8).

Given the uniqueness of the development of a NUTRITIONAL CARE PLAN, what is it? Bennion (1979) emphasizes that the NUTRITIONAL CARE PLAN is a written record and communication tool to participants in the overall planning for care of the client. Bennion further declares involvement of the client with the dietitian in the process of recognizing nutritional problems and selecting possible solutions for implementation is essential to the provision of nutritional care. She believes that with experience, the dietitian is able to begin nutritional care planning while gathering data on or from the client (9).

Hunt et. al.(1980) claim that ideally an individualized NUTRITIONAL CARE PLAN should be developed for all clients in the health care facility regardless of their normal or therapeutic nutritional needs. The PLAN may be simple or complex, requiring minimal nutritional screening or a complete nutritional assessment. In all cases, the NUTRITIONAL CARE PLAN is dynamically linked to the client's current condition. Formulation of the NUTRITIONAL CARE PLAN is identified as the unique task of the dietitian and a problem-solving technique is advocated (10).

A dichotomy emerges as Robinette (1970) identifies problem-solving as "management of the present. Planning is management of the future." He further states that "When we concentrate on solving present problems, we exclude attention to situations that might become problems in the future.... Planning is like preventive medicine as compared to curative medicine." (2).

Mason et. al. (1977) define a NUTRITIONAL CARE PLAN as a compilation of objectives and strategies formulated with the client to achieve the goal of optimal nutrition for the client(11). This definition does honor the involvement of the client but makes no reference to the source and/or data from which the objectives have been formulated. The future orientation is honored in the term "strategies" which has been defined as "a plan of action as well as the pattern of actions that result (12).

The concept of nutritional care planning in client-centered care continues to appear in the literature. In contrast, the process of generating a NUTRITIONAL CARE PLAN for a client has not been clearly delineated.

Rationale (Continued)

Bibliography

- (1) Committee on Goals of Education for Dietetics, Dietetic Internship Council, Am. Dietet. A.: Goals of the lifetime education of the dietitian. J. Am. Dietet. A. 54: 91, 1969.
- (2) Robinette, T.K.: What is health planning? Nursing Outlook: 33, Jan., 1970.
- (3) Little, D.E., and Carnevali, D.L.: Nursing Care Planning. 2nd edition. Philadelphia: J.B. Lippincott Co., 1976.
- (4) Committee to Develop a Glossary on Terminology for The Association and Profession: Titles, definitions, and responsibilities for the profession of dietetics - 1974. J. Am. Dietet. A. 64: 661, 1974.
- (5) Stern, F.: How the food clinic contributes to the medical care of the outpatient. J. Am. Dietet. A. 10: 258, 1932.
- (6) Young, C.M.: Teaching the patient means reaching the patient. J. Am. Dietet. A. 33: 52, 1957.
- (7) Young, C.M.: The therapeutic dietitian - a challenge for cooperation. J. Am. Dietet. A. 47: 96, 1965.
- (8) Study Commission on Dietetics: The Profession of Dietetics. Chicago: Am. Dietet. Assoc., 1972.
- (9) Bennion, M.: Clinical Nutrition. New York: Harper and Row, 1979.
- (10) Hunt, S.M., Groff, J.L., and Holbrook, J.M.: Nutrition: Principles and Clinical Practice. New York: John Wiley and Sons, 1980.
- (11) Mason, M., Wenberg, B.G., and Welsch, P.K.: The Dynamics of Clinical Dietetics. New York: John Wiley and Sons, 1977.
- (12) Donabedian, A.: The quality of medical care. In Williams, S.J., ed.: Issues in Health Services, N.Y.: John Wiley and Sons, 1979.

Proposed Working Definition for NUTRITIONAL CARE PLAN

NUTRITIONAL CARE PLAN:

As a process, the NUTRITIONAL CARE PLAN is a dynamic management tool which initiates controlled change in the client to realize the goal of optimal nutritional status for the client.

As a tool, the NUTRITIONAL CARE PLAN is a written documentation of the method(s) for achieving optimal nutritional status of the client generated from identified nutritional needs of the client and mutually established goals of the client and the dietitian.

Supported by the following:

Nutritional Care Planning is the logical thought process employed in generating the NUTRITIONAL CARE PLAN.

Response to Working Definition for NUTRITIONAL CARE PLAN

☐

Agree totally

Comment: _____

☐

Agree in part

Comment: _____

☐

Disagree

Comment: _____

Additional Comments: _____

Thank-you!

Please return by July 31 in enclosed envelope to: Polly Junkermier, R.D.;
Department of Food Science and Human Nutrition; Room 1, Human Ecology Build-
ing; Michigan State University; East Lansing, Michigan 48824.

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION

EAST LANSING • MICHIGAN • 48824

June 12, 1981

To: Directors, ADA Accredited Coordinated Undergraduate Programs in Dietetics
Ruth Z. Finan, R.D. - Mercy College of Detroit
Patricia B. Mutch, Ph.D., R.D. - Andrews University
N. Annette Peel, R.D. - Eastern Michigan University
Margene A. Wagstaff, R.D. - Wayne State University

cc: Burness G. Wenberg, R.D. - Advisor

From: Polly Junkermier, R.D.
Assistant Clinical Instructor

Re: Response on Working Definition for a NUTRITIONAL CARE PLAN

Last July, I requested reaction and input from each of you regarding a proposed working definition for NUTRITIONAL CARE PLAN (see other side of page). Your response was both gratifying and helpful, providing me the basis necessary to formulate a working definition for NUTRITIONAL CARE PLAN. The working definition as compiled from your responses was used throughout development and testing of my self-instructional module entitled "Nutritional Care Planning - A Process". The working definition has evolved somewhat in the course of the module testing; however, the most current and representative form is as follows:

NUTRITIONAL CARE PLAN:

As a process, the plan follows Assessment and is a series of dynamic management strategies which are designed to:

- initiate controlled change on the part of the client to realize optimal nutritional status and/or
- support maintenance of nutritional status on the part of the client.

As a tool, the NUTRITIONAL CARE PLAN is a documentation communicating the management strategies for achieving and/or maintaining optimal nutritional status of the client.

During implementation, goals will be mutually agreed upon by the self-determining client and the dietitian.

NUTRITIONAL CARE PLANNING:

The logical thought process employed in generating the NUTRITIONAL CARE PLAN.

Please note that I was able to use your input to a great extent in assembling this definition. For your information, I have abstracted the input I received from each of you (see other side of page). If you have any questions regarding the working definition, please do not hesitate to ask.

I thank-you all for your cooperation and assistance. Your help was instrumental in laying the groundwork for the development and testing of my self-instructional module.

Proposed Working Definition for NUTRITIONAL CARE PLAN

NUTRITIONAL CARE PLAN: As a process, the NUTRITIONAL CARE PLAN is a dynamic management tool which initiates controlled change in the client to realize the goal of optimal nutritional status for the client. As a tool, the NUTRITIONAL CARE PLAN is a written documentation of the method(s) for achieving optimal nutritional status of the client generated from identified nutritional needs of the client and mutually established goals of the client and the dietitian.

Nutritional Care Planning is the logical thought process employed in generating a NUTRITIONAL CARE PLAN.

COMPILATION OF RESPONSES TO WORKING DEFINITION FOR NUTRITIONAL CARE PLAN

All respondents agreed in part as follows:

Comments:

Can the plan initiate change? Does the dietitian do nutritional or dietary assessment regularly?

Better to state: Tool by which controlled change in the client is affected to realize tool affects and evaluates change.

Dislike use of tool to define process. Disagree that planning requires change; rather, it might just include support or reinforcement.

The literature documentation of definitions of nutritional care planning/plan and health appear fine as far as they go; but they appear to be inadequate. Disagree that nutritional care planning is uniquely the dietitian's role. Assessment may be uniquely the role; but, planning is a cooperative activity including client and other team members.

As a process: dynamic management tool prepared by the care giver to initiate controlled change in the client to realize the congruent goals of the care giver and client to obtain optimal nutritional status for the client.

Does it have to be written? Or just verbal? This definition is only applicable to the self-determining client; i.e., that client whom you provide nutritional counseling.

Additional Comments:

Disagree that intent to effect change is inherent in planning. Tends to steer us toward crisis-oriented care rather than prevention. How about reinforcement for maintaining status quo in the absence of nutritional problems?

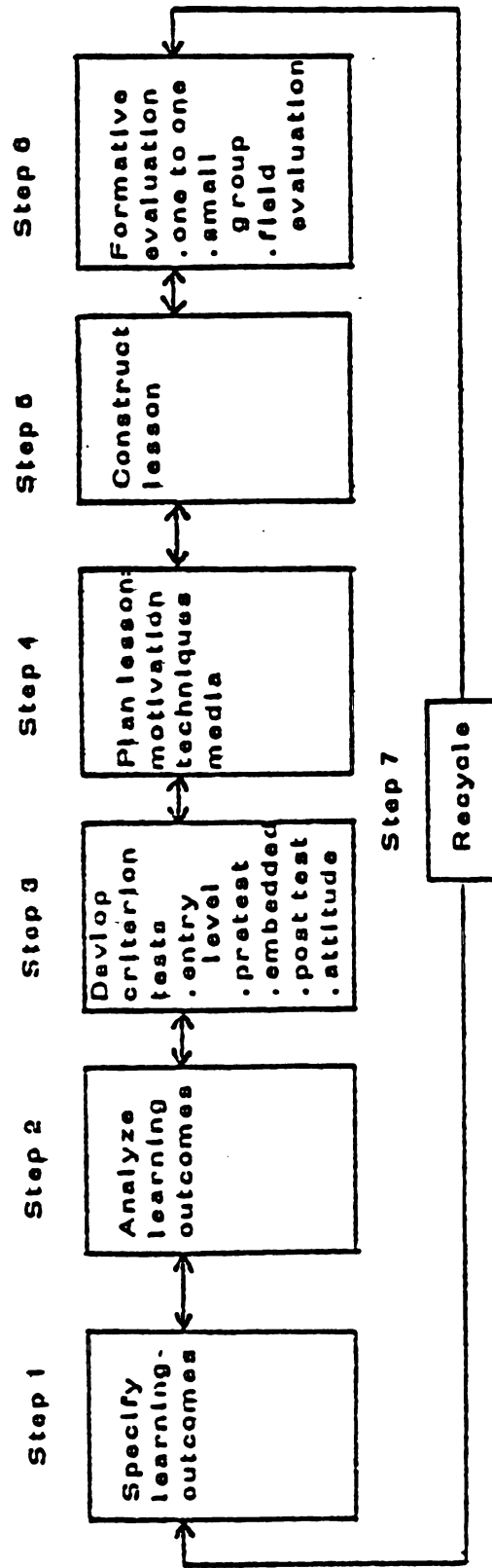
Perhaps NCP is a series of actions based on an assessment of the relationships between an individual's health/nutrition status, therapeutic processes, and health system/team variables.

Necessary to show that the care giver and client prepare and work together toward optimal nutrition.

APPENDIX C

HIOB MODEL FOR MODULE DESIGN

(Hiob, 1978)



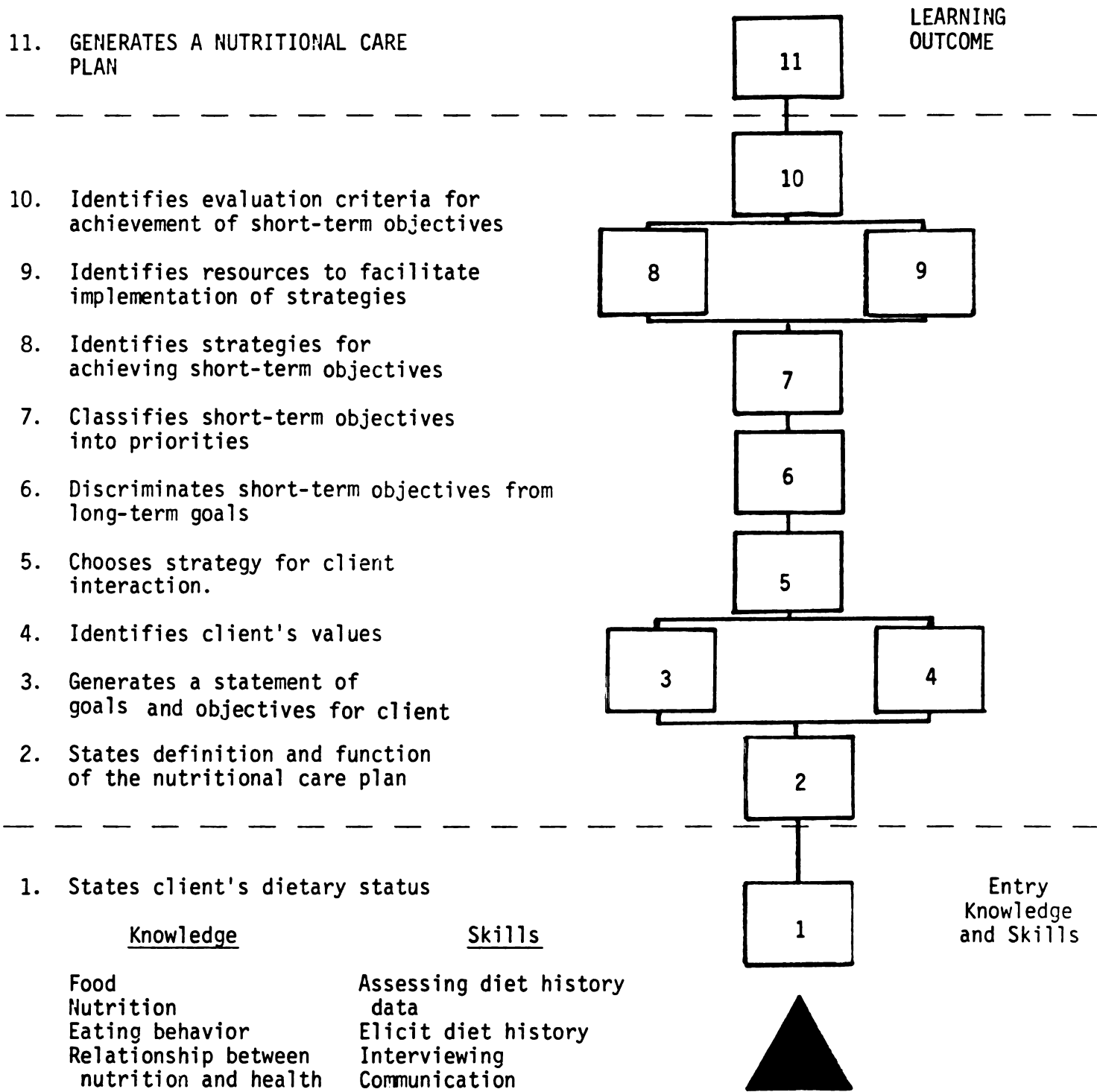
Hiob Model for Module Design (Hiob, 1978).

APPENDIX D

ANALYSIS OF LEARNING OUTCOME

ANALYSIS OF LEARNING OUTCOME

SKILL



APPENDIX E

NUTRITIONAL CARE PLANNING CHECKLIST

NUTRITIONAL CARE PLAN CHECKLIST

Student Dietitian _____

Evaluator _____

Date _____

CODE FOR LEVEL OF PERFORMANCE

The criteria for discriminating among the levels of performance are specified for each item on the checklist. If an item is not applicable to the situation, note this with an N/A.

Weight		PERFORMANCE CRITERIA
Score	Student Level	TOOL component of the Nutritional Care Plan
		I. GOALS AND OBJECTIVES
		A. Long-Term Goals
	5	... Writes goal(s) in appropriate format 2 - uses the client as subject <i>and</i> uses an active verb 1 - uses the client as subject <i>or</i> uses an active verb 0 - does not use client as subject <i>and</i> use an active verb
	5	... Identifies goal in specific terms 2 - states goal clearly, in measurable terms 1 - states goal less clearly, leaving room for interpretation 0 - states goal vaguely, without parameters
	5	B. Short-Term Objectives
		... Writes objective(s) in appropriate format 2 - uses the <u>Audience Behavior Condition Degree</u> format for writing objectives correctly 1 - uses the <u>ABCD</u> format but incorrectly uses <i>any</i> of the four components 0 - does not use the <u>ABCD</u> format for writing objectives
Points	%	TOTAL SCORE -- TOOL performance criteria
		PROCESS component of the Nutritional Care Plan
		I. GOALS AND OBJECTIVES
		A. Generates Long-Term Goals
	4	... Identifies relationship to Assessment data and completeness 2 - relates goals in a clear relationship to Assessment data <i>and</i> identifies all goals 1 - has difficulty in establishing the connection <i>or</i> goals are incomplete 0 - does not relate goals to Assessment data <i>and</i> goals are incomplete

Score	Weight Student Level	PERFORMANCE CRITERIA (CONT.)
	2	<p>... Identifies realistic time table for achieving client goal(s)</p> <p>2 - achievable within specified time frame, time frame is realistic</p> <p>1 - not achievable within specified time frame, time frame is unrealistic</p> <p>0 - no time frame specified</p>
	3	<p>B. Generates Short-Term Objectives</p> <p>... Are congruent with goals</p> <p>2 - in all instances</p> <p>1 - in minimal number of instances</p> <p>0 - are not congruent with goals</p>
	3	<p>... Are client-centered (A)</p> <p>2 - in all instances</p> <p>1 - in minimal number of instances</p> <p>0 - are not client-centered</p>
	3	<p>... Expresses reasonable behavior for client's situation (B)</p> <p>2 - behavior within reason according to Assessment data</p> <p>1 - behavior marginally reasonable - 1 barrier present</p> <p>0 - behavior not reasonable or more than 1 barrier present, or behavior not present</p>
	3	<p>... Expressed realistically for client (C)</p> <p>2 - achievable within a realistic time frame</p> <p>1 - not achievable within a realistic time frame</p> <p>0 - no time frame specified</p>
	3	<p>... Specified in measurable terms (D)</p> <p>2 - quantifiable <i>and/or</i> observable</p> <p>1 - has difficulty specifying in measurable terms</p> <p>0 - neither quantifiable <i>or</i> observable</p>
	3	<p>C. Identifies Values</p> <p>... Identifies values congruent with goals</p> <p>2 - congruent with/reflected in goals</p> <p>1 - difficulty in establishing congruence with goals</p> <p>0 - not congruent with goals</p>
	3	<p>... Identifies influence of client values on achievement of goals</p> <p>2 - identifies positive <i>and</i> negative according to the Assessment data</p> <p>1 - identifies positive <i>or</i> negative according to the Assessment data</p> <p>0 - does not identify positive <i>and</i> negative values according to the Assessment data</p>

Score	Weight Student Level		PERFORMANCE CRITERIA (CONT.)
	3		D. Identifies Approach to be used with client
			... Considers at least 3 of the following when indicating an appropriate approach to be used with client: ___ attitudes ___ change proneness ___ motivation ___ degree of anxiety 2 - includes 3 or more 1 - includes 1-2 0 - does not include or does not identify approach
	2		E. Sequences and Sets Priorities for Goals and Objectives
			... Sequences goals and objectives including the following: ___ increasing degree of complexity ___ time frame realistically scheduled ___ logical order 2 - includes all 1 - includes 1-2 0 - does not include any
	2		... Orders goals and objectives into priorities 2 - ordered by severity (i.e. life threatening to trivial), appropriately 1 - order established using inappropriate judgment 0 - no order established
Sub-Total			II. CLIENT EDUCATION
	2		A. Identifies Basic Objective(s)
			... Reflects first priority in the sequence of objectives 2 - identifies first priority and first sequenced objective (could be more than one) 1 - identifies first priority or first sequenced objective 0 - neither identifies first priority or first sequenced objective
	3		... Includes 3 of the following: ___ congruity with client values ___ motivation for client ___ reinforcement for client 2 - includes all 1 - includes 1-2 0 - does not include any

Score	Weight Student Level	PERFORMANCE CRITERIA (CONT.)
		B. Identifies Strategies to Facilitate Goal Achievement
3		... Relates to basic objective 2 - addresses client need(s) <i>and</i> objective achievement 1 - addresses <i>only</i> client need(s) 0 - does not address client need(s) <i>or</i> objective achievement
2		... Includes motivational strategy(ies) 2 - uses at least one strategy tailored to client's motivational needs 1 - uses at least one motivational strategy; however, it does not match client's motivational needs 0 - does not include client's motivational needs
2		... Are realistic for client 2 - majority considers client values <i>and</i> situation 1 - consider <i>only</i> client values <i>or</i> situation 0 - do not take client values <i>or</i> situation into consideration
2		... Displays 3 of the following: ___ variety ___ clarity ___ action ___ specificity ___ creativity 2 - includes 3 or more 1 - includes 1-2 0 - does not include any
		C. Identifies Resources
3		... Matches strategy(ies) 2 - resource facilitates objectives and relates to strategy 1 - resource facilitates objectives and relates to strategy <i>minimally</i> 0 - resource does not facilitate objectives and relate to strategy
2		... Recognizes human resource(s) 2 - appropriate use of human resources 1 - fails to include human resources that would facilitate goal achievement 0 - inappropriate use of human resources
3		... Includes the following: ___ current ___ appropriate to educational level ___ credible ___ consolidated when necessary ___ professional appearance and organization 2 - includes all 1 - excludes professional appearance and organization 0 - excludes professional appearance and organization <i>and</i> 1 or more others

Score	Weight Student Level	PERFORMANCE CRITERIA (CONT.)
		D. Identifies Evaluation Criteria
	3	... Uses a measure which reflects the basic objective(s) 2 - both appropriate <i>and</i> unbiased 1 - appropriate <i>or</i> unbiased 0 - neither appropriate <i>or</i> unbiased
	3	... Are comprehensive 2 - evaluation criteria <i>adequately</i> cover objective(s) 1 - evaluation criteria <i>minimally</i> cover objective(s) 0 - evaluation criteria <i>fail</i> to cover objective(s)
	2	... Are time efficient 2 - can be completed in finite time period 1 - questionable completion in finite time period 0 - cannot be completed in finite time period .
	3	... Includes performance level 2 - specifies expected performance level (eg. in percent, repetitions, etc.) 1 - specifies expected performance level in nonquantifiable terms 0 - does not specify expected performance level
Sub-Total		
Points	%	TOTAL SCORE -- PROCESS performance criteria (sum of subtotal I,II)

APPENDIX F

REVIEW OF PROJECT INVOLVING HUMAN SUBJECTS

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION
HUMAN ECOLOGY BUILDING

EAST LANSING • MICHIGAN • 48824

January 14, 1981

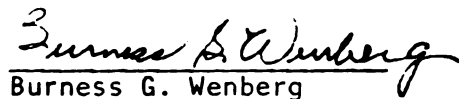
MEMORANDUM

TO: Dr. Henry E. Bredeck
Assistant Vice-President

FROM: Burness G. Wenberg, R.D.

RE: University Committee in Research Involving
Human Subjects

Polly Junkermier, R.D., a masters student in our Department, has prepared the attached proposal which relates to her research project. I serve as chairman of her Guidance Committee. I have reviewed the proposed project and it meets with my approval.


Burness G. Wenberg

BW;rw

Enc. 7 copies Proposal to UCRIHS
1 copy research proposal
1 copy Self-Instructional Module

1. ABSTRACT SUMMARY OF THE RESEARCH TO BE CONDUCTED.

The junior students in the General Dietetics Coordinated Study Plan at Michigan State University who volunteer will be randomly assigned to one of two methods of instruction: the Traditional Lecture method (the control group) and the Modular method (the experimental group). The content of the lesson to be presented will be identical in both instructional methods and entitled: "Nutritional Care Planning: A Process." Students in both the Traditional and Modular methods of instruction will take a pretest before the instruction and a post test after the instruction. Measurement of pre- and post test scores will be facilitated by the use of a validated checklist. Differences in pre- and post test scores may then be compared between the control and experimental groups. The Student's t-test will be applied to determine if there is a significant difference in the learning that took place between the two methods of instruction ($p < 0.05$). The expectation is that students will learn the process of nutritional care planning equally well in the control and experimental groups. Scores will be interpreted for students after they are analyzed.

2. SUBJECT POPULATION.

The subjects necessary for this study are student dietitians in a Coordinated Undergraduate Program in Dietetics which coordinates didactic and experiential training. The student dietitians should possess the skills and the knowledge involved in gathering and analyzing assessment data on a client. The student dietitians in their junior year of Michigan State University's General Dietetics Coordinated Study Plan will possess the necessary skills and knowledge for participation in this study by the middle of Winter term, 1981.

METHOD OF RECRUITMENT.

The study will be explained in full to the students in their class, HNF 302 (Dynamics of Dietetics). * Those who are not interested or do not wish to participate will receive the Traditional Lecture method of instruction since this is the usual mode of instruction for the nutritional care planning process. Those who are interested and volunteer to participate will be placed on the list for random assignment to an instructional method.

*The study will be explained to the students by the investigator.

3. RISK/BENEFIT ANALYSIS.

A. Potential Risk(s)

1. A potential risk is that students assigned randomly to the Traditional Lecture method of instruction may feel they are not receiving the full benefit of learning as compared to the students randomly assigned to the Modular method of instruction. Because the self-instructional module represents a newly developed learning tool, it may appear more attractive and "better" as a method of instruction to some students.

B. Procedure to Protect Against/Minimize Risk(s)

1. Addressing the identified potential risk A.1., students will be advised upon assignment to instructional method that they will have free access to the self-instructional module on the nutritional care planning process after the study is complete. In addition, the students will be assured that the self-instructional module and the lecture methods are valid modes of instruction.

3. RISK/BENEFIT ANALYSIS (CON'T).

C. Potential Benefits

1. In both methods, students will be learning the process of nutritional care planning, an essential skill to their future careers as health care professionals.
2. Students will have the opportunity to participate in a controlled research study.
3. Students will gain exposure to newly developed materials in dietetic education.

4. CONSENT PROCEDURES.

The investigator will describe the study to the junior students in the General Dietetics Coordinated Study Plan during their regular class meeting in HNF 302 (Dynamics of Dietetics). The random assignment of participants will be explained to the students. Students will be assured that there will be no recrimination for non-participation. Non-participants will receive the usual instructional treatment of this topic: the Lecture method.

For those students who volunteer to participate, the informed written consent forms will be distributed by the investigator for student review and signature. The signed forms will be collected.

5. CONSENT FORM. (See following page)

6. COPIES OF ALL INFORMATION.

A single copy of the self-instructional module is included for review. The Lecture presentation will follow the identical outline. Students assigned to the Modular method of instruction will report to the Dietetic Instructional Resource Center in the Human Ecology Building at a time convenient to their schedules in the designated week, to work through the module. The students assigned to the Lecture method will receive their instruction during a regular class session of HNF 302. Pre- and post tests will be administered during regularly scheduled class (HNF 302).

Michigan State University
General Dietetics Coordinated Study Plan

Informed Written Consent Form
(for use by student dietitians)

I have freely consented to take part in a research study being conducted by:
Polly Junkermier

under the supervision of: Burness Wenberg, Associate Professor, Department
of Food Science and Human Nutrition.

I agree that all of the following statements are true:

1. The study has been explained to me and I understand the explanation that has been given and what my participation will involve.
2. I understand that I am free to discontinue my participation in the study at any time, without penalty.
3. I understand that the results of the study will be treated in strict confidence and that I will remain anonymous. Within these restrictions, results of the study will be made available to me at my request.
4. I understand that my participation in the study does not guarantee any beneficial results to me.
5. I understand that, at my request, I can receive additional explanation of the study after my participation is completed.

Signed _____

Date _____

APPENDIX G

PRETEST

INSTRUCTIONS FOR TAKING THE PRE- AND POST TESTS

The data which follow have been gathered on a client and analyzed. To facilitate your review of the data, it has been recorded on the Assessment Worksheet. Read the Medical Information Summary and Assessment Worksheet carefully. These data provide you with the information necessary to generate a nutritional care plan for the client.

Use the Nutritional Care Plan Worksheet to document your plan. Identify the number you feel to be necessary of goals, objectives, strategies, resources, and evaluation criteria listed. Plan to take approximately 15 to 20 minutes to review the data and another 30 minutes to generate your nutritional care plan.

Please do not hesitate to ask should you have a question. Remember, these instructional materials are in the testing stage! I appreciate your cooperation and time.

Student Dietitian _____

Date _____

PRELIMINARY DATA SCHEDULE (from the medical record)Client's initials C.B.Admission date 1/11/81Room number 743-1Physician REID

I. SUBJECTIVE DATA

A. BiologicPresent complaint: PAIN IN LOWER BACKReview of systems: NEGATIVE - EXCEPT THROBBING PAIN IN LOWER BACK, TENDER TO THE TOUCH.Previous major illnesses: GOUT, T & A X 35 YRS., APPENDECTOMY X 30 YRSMotor sensory abilities (unconfirmed): NO HEARING PROBLEM, NO KNOWN NEUROLOGICAL DEFICITS, ? VISION, ? DENTITIONAllergies (food, drug, or other): NO KNOWN ALLERGIES

II. OBJECTIVE DATA

B. BiologicAge: 45 YRS.Sex: MALEHeight: 5'10"Weight: 225 #Admitting diagnosis: ACUTE PAIN IN LUMBAR-SACRAL REGION OF THE BACKMotor sensory abilities (confirmed): GLASSES FOR READING ONLY, ADEQUATE DENTITION, NO HEARING OR NEUROLOGICAL DEFICITS.Progress of illness since admission: ACUTE PAIN SUBSIDED @ BEDREST AND VALIUM P.R.N. PT. RESTING COMFORTABLY.

A. Biologic (con't):

Date	Laboratory Tests and Results	Normal	Date	Diagnostic Procedures and Results
1/11/81 ↓	FBS = 100 mg/100 ml CHOL = 270 mg/100 ml TG = 144 mg/100 ml Hb = 15.2 gm/100 ml Hct = 45.1 % Uric Acid = 6.9 mg/100 ml	70-100 150-280 10-150 13-16 12-50 3.0-7.0	1/12/81 1/12/81	LOWER LUMBAR & SACRAL REGION OF BACK: NORMAL EXG - NO CHANGE FROM PREVIOUS READING
Medications				

VALIUM - P.R.N. FOR PAIN

MILK OF MAGNESIA - 30 CC. QD

B. Food IntakePhysician's diet orders: 1800 CALORIES, WEIGHT REDUCTION
 Food consumption since admission: CONSUMED ALL FOOD OFFERED AT EACH MEAL;
REQUESTED SNACKS X2 QD.

Family history: WIFE - ALIVE AND WELL, 3 CHILDREN; 5 SIBLINGS
ALIVE AND WELL; FAMILY HISTORY OF MYOCARDIAL INFARCTION.

Marital status: MARRIED

Occupation: U.S. ARMY RETIRED, CURRENTLY POSTAL CARRIER/CLERK

Education: HIGH SCHOOL GRADUATE

Financial status: SUPPORTS FAMILY WITHOUT FINANCIAL ASSISTANCE FROM PUBLIC SOURCES

Religion: PROTESTANT

Ethnic origin: AMERICAN

Literacy: READS AND WRITES AT LEAST AT HIGH SCHOOL GRAD. LEVEL

Speech barrier? yes no X

Language barrier? yes no X

If yes for either, describe:

Smoking? yes Amount:
no X

Eating behaviors (confirmed): SNACKS BETWEEN MEALS ; GOOD APPETITE -
EATS ALL FOOD OFFERED.

WEIGHT NORMAL 2 YRS. AGO.

DIET HISTORY (from the client interview)

Student Dietitian _____

Date _____

I. SUBJECTIVE DATA**A. Biologic**

Weight history: GAINED 50 LBS. IN 2 YRS. AFTER RETIRING FROM THE ARMY. PRIOR TO THAT TIME, NO WEIGHT PROBLEM

Physical restrictions: NONE

Food allergies and intolerances: NO KNOWN ALLERGIES; TOLERATES ALL FOOD

Chewing and swallowing difficulties: ADEQUATE DENTITION ; NONE

Appetite:

Prior to admission (status quo and variations) EXCELLENT

Since admission (food acceptance) EXCELLENT - NO CHANGE

B. Food Intake

Hour of day	Foods (description of preparation and service)	Amount
6 A.M.	ORANGE JUICE EGGS, FRIED TOAST, WHITE CEREAL, BRAN FLAKES SUGAR BUTTER MILK, WHOLE COFFEE	12 OUNCES 2 2 SLICES 3/4 CUP 1 TBSP. 1 TSP. 8 OUNCES 2-6 OUNCE CUPS
9:30 A.M.	DOUGHNUTS, PLAIN CAKE HOT CHOCOLATE	2 2-6 OUNCE CUPS
11:30 A.M.	SANDWICHES (2): BREAD, WHOLE WHEAT LUNCHEON MEAL, BOLOGNA CHEESE, AMERICAN CHEDDAR MAYONNAISE POTATO CHIPS APPLE SUGAR COFFEE	4 SLICES 4-1 OUNCE SLICES 2 OUNCES 1 TBSP. 1 SMALL BAG 1 MEDIUM 2 TSP. 2-6 OUNCE CUPS
5:30 P.M.	BEER, REGULAR	2-12 OUNCE CANS
6:30 P.M.	PORK CHOPS, FRIED MASHED POTATOES & GRAVY GREEN BEANS BUTTER GREEN SALAD FRENCH DRESSING FRUIT COCKTAIL BUTTER MILK, WHOLE ICE CREAM, VANILLA COFFEE SUGAR	2-3 OUNCE CHOPS 1 CUP 3/4 CUP 1 CUP 1 TSP. 1 TBSP. 1 CUP 1 TBSP. 16 OUNCES 1 1/3 CUPS 1-6 OUNCE CUP 1 TSP.
9 P.M.		

B. Food Intake (con't):Food Frequency Summary

Food	Amount (per day &/or wk.)	Food	Amount (per day &/or wk.)
1. Milk (type)	3 CUPS, WHOLE	8. Vegetables	3
2. Dairy products	2 OZ. CHEESE, 1 ¹ / ₂ C. ICE CREAM	Vitamin A	2 TIMES / WEEK
3. Eggs	2	9. Fruits	6
4. Meat (or fish)	10 OZ.	Vitamin C	3 (OUT OF 6 SERVINGS)
5. Meat substitutes	RARELY	10. Fats	7 TBSP + 2 tsp.
6. Breads/cereals/grains	10	11. Alcohol	2 BEERS
7. Potatoes	3	12. Concentrated sweets	2 TBSP. SUGAR

C. Environmental

Living conditions: WIFE PURCHASES GROCERIES, COOKS WITH GERMAN FLAIR.

Facilities: ADEQUATE FOOD STORAGE AND PREPARATION

Financial status/resources: ADEQUATE

Nutrition knowledge: NO FORMAL NUTRITION EDUCATION; WIFE RECEIVES PREVENTION MAGAZINE

D. Behavioral

Eating patterns: CONSUMES 3 REGULAR MEALS DAILY; CONSUMES A MORNING AND EVENING SNACK.

Physical activity: MODERATELY ACTIVE, WALKS 6 MI. DAILY WITH 25# BAG ON HIS BACK (POSTAL CARRIER); CAMPS X2/MONTH & CEPT IN WINTER; ENJOYS SPECTATOR SPORTS

Attitudes and values (health): "LOVES TO EAT", "LIKES ALL FOOD", EQUATE: EATING WITH RELAXATION EG. IN FRONT OF TELEVISION, EATS AS A REWARD.

Health practices: PAST FAILURES AT WEIGHT REDUCTION, INABILITY TO "KEEP IT OFF"

Vitamin and food supplement usage: TAKES 1-A-DAY TYPE VITAMIN SUPPLEMENT AT WIFE'S INSISTENCE

D. Behavioral (con't):

Prescription and non-prescription substance usage (tobacco, alcohol, laxatives, antacids, medications): ALCOHOL = 2 BEERS DAILY, 0 TOBACCO USE, NO
REGULAR MEDICATIONS, OCCASSIONAL ANTACID AFTER A HEAVY
MEAL.

Previous diet modifications: HISTORY OF 1000 CALORIE DIETS, INABIL-
ITY TO KEEP WEIGHT OFF.

Cultural factors (food symbolism, ethnic and religious practices): C.B. = AMERICAN,
WIFE IS OF GERMAN ANCESTRY

E. Additional data

EATS IN SNACKSHOP AT WORK; PACKS: BACK LUNCH x 5 DAYS/WR
EATS OUT x 6 /MONTH.

Student Dietitian _____ Date _____

ASSESSMENT
WorksheetClient C.B.
(initials)A. Biologic Data: Indicators of Health
(anthropometric, biochemical, and clinical)HT: 5' 10"WT: 225#

Medium body frame

BIOCHEMICAL DATA

FBS	100 (70-100mg/ml)
Chol	270 (150-280mg/ml)
TG	144 (40-150mg/ml)
Hb	15.2 (13-16gm/100ml)
Hct	45.1 (42-50%)
Uric acid	6.9 (3.0-7.0mg/100ml)

☐

No deviations ascertained at this time

BIOCHEMICAL DATA - WITHIN NORMAL LIMITS

☒

Deviations requiring food and/or nutrient modification

Client exceeds ideal body weight of 166 - 170#. Weight reduction indicated.

B. Environmental Data (personal world: employment, family, community and education)

Employment: U.S. Army retired; postal clerk.

Family: Married with wife and 3 children; 5 siblings living.

Recreation: Stands on feet all day at work; occasionally camps outdoors on weekends; spectator sports viewed on television.

Other: Wife prepares/procures food; adequate facilities; wife is of German extraction and cooks German foods.

☒

No factors influencing dietary status adversely.

Possibly spectator sports if snacking is associated with watching television. Or, wife's German cooking is a potential concern.

☐

Factors influencing dietary status adversely.

Unalterable by client:

Alterable by client:

Avoid snacking while watching television.

- C. Behavioral Data (thoughts, feelings, and actions influencing food intake)
 Meals: 3 regular meals daily; 2 snacks.
 Attitudes: Loves to eat; likes all foods-no dislikes. Equates eating with relaxation.
 Psychological factors: Good appetite.
 Physiologic factors: Increased physical activity on the job; "can feel the extra weight."
 Previous diet modifications: Attempted weight reduction in past. Unsuccessful on a very restrictive diet.
 One-a-day vitamin taken every day.

☐

No factors influencing dietary status adversely.

☒

Factors influencing dietary status adversely.

Unalterable by client:

Alterable by client:

2 snacks - omit; equating eating with relaxation.

- D. Food Intake Summary
 On separate page (DIETARY ADEQUACY WORKSHEET)

- E. Modification of Food Intake
 Check "yes" if appropriate

Check "no" if inappropriate and include supporting data.

Yes ___ No X Food Guide/Standard

Calories: about 4600 currently. Requires about 2700 calories according to the RDA for weight maintenance. All other RDA nutrient needs met.

Yes X No ___ Diet Prescription
 1800 calories, weight reduction

Yes X No ___ Biologic, Environmental, and Behavioral Factors

Food intake should be modified accordingly:

Omit snacks. According to the Basic Five Guidelines:

Meat/Protein: 2 - 3 ounce servings
 Breads/Cereals: 6 servings
 Fruits: 3 servings (1/2 cup each)

Vegetables: 2 servings (1/2 cup each)
 Milk/Dairy: 2 cups lowfat milk
 Other: 4 fat servings

DIETARY ADEQUACY FORM WORKSHEET

Client C.B.

Food & Description	Measure	Calorie Kilocalories	Protein Grams	Fat Grams	Carbo- hydrate Grams	Calcium Milligrams	Phosphorus Milligrams	Iron Milligrams	Vitamin A Units	Thiamine Milligrams	Riboflavin Milligrams	Niacin Milligrams	Ascorbic Acid Milligrams	Maximum Milligrams	Vitamin B ₁₂ Micrograms
orange juice	12 oz.														
egg	2														
toast, white	2 sl.														
milk, whole	8 oz.														
bran flakes	3/4c.														
coffee	12 oz.														
bread, wh. wht.	4 sl.														
bologna	4 oz.														
cheese, Amer.	2 oz.														
mayonnaise	1 T.														
potato chips	1 bag														
apple	1 med.														
coffee	12 oz.														
park chop	6 oz.														
potatoes, na.	1 cup														
gravy	1/4c.														
beans, grn.	1 c.														
grn. salad	1 c.														
fr. drag.	1 T.														
fruit cocktail	1 c.														
milk, whole	16 oz.														
butter	2 T.														
sugar	2 T.														
doughnuts	2														
hot chocolate	8 oz.														
beer	24 oz.														
ice cream, van.	14/3c.														
Client totals:		4619	179	216	-	2286	-	28.1	8140	4.0	4.0	30.2	234	-	-
RDA:		2400	56	-	-	800	-	10	5000	1.2	1.4	16	60	-	-

1800 calorie weight reductiondiet
Diet Prescription

F. Diet Prescription

Check "yes" if diet prescription is appropriate.

If inappropriate, check "no" and include supporting data.

Yes x No ___ Biologic To support weight loss of 1 - 2 pounds weekly.Yes x No ___ Environmental Not excessively restrictive; meals eaten in home situation,
packed lunch provides controls on food intake.Yes x No ___ BehavioralYes x No ___ Food Intake Adequate to meet nutritional requirements.☒ 1. Diet prescription is appropriate.☐ 2. Diet prescription should be altered as follows:

G. Status of Data

☒ Necessary data available☐ Additional data indicated:

PLANNING WORKSHEET

Client _____

Date _____

Dietitian _____

I. GOALS AND OBJECTIVES**A. Long-Term Goals****B. Short-Term Objectives****C. Client Values: (Identify)**

1. Positive influence on goal achievement:

2. Negative influence on goal achievement:

D. Approach to be used with client:**E. Goals and Objectives Sequenced in Order of Priority**

PLANNING WORKSHEET (CONT.)

II. CLIENT EDUCATION

A. Basic Objective

B. Strategies for Facilitating Goal Achievement

C. Resources

D. Evaluation criteria for assessing client's understanding

APPENDIX H

POST TEST

INSTRUCTIONS FOR TAKING THE PRE- AND POST TESTS

The data which follow have been gathered on a client and analyzed. To facilitate your review of the data, it has been recorded on the Assessment Worksheet. Read the Preliminary Data Schedule and Assessment Worksheet carefully. These data provide you with the information necessary to generate a nutritional care plan for the client.

Use the Nutritional Care Plan Worksheet to document your plan. Identify the number you feel to be necessary of goals, objectives, strategies, resources, and evaluation criteria listed. Plan to take approximately 15 to 20 minutes to review the data and another 30 minutes to generate your nutritional care plan.

Please do not hesitate to ask should you have a question. Remember, these instructional materials are in the testing stage! I appreciate your cooperation and time.

Student Dietitian _____
Date _____

PRELIMINARY DATA SCHEDULE (from the medical record)

Client's initials L.E. Admission date 2/9/81
Room number 822-1 Physician CALKINS

I. SUBJECTIVE DATA

A. Biologic

Present complaint: LETHARGY, WEAKNESS, LOSS OF WEIGHT

Review of systems: NEGATIVE. HISTORY OF ANEMIA; RESOLVED 8/74.

Previous major illnesses: NO PREVIOUS MAJOR ILLNESSES.

Motor sensory abilities (unconfirmed): ABLE TO CHEW, NO REPORTED HEARING OR VISUAL DIFFICULTIES

Allergies (food, drug, or other): NO KNOWN ALLERGIES.

II. OBJECTIVE DATA

B. Biologic

Age: 58 YRS.

Sex: MALE

Height: 5'8"

Weight: 148 LBS.

Admitting diagnosis: WEIGHT LOSS - UNKNOWN ETIOLOGY

Motor sensory abilities (confirmed):
FULL DENTURES, NO CORRECTIVE VISION, NO HEARING OR NEUROLOGICAL DEFICITS.

Progress of illness since admission: ON ADMISSION, PT. DEMONSTRATED EXTREME FATIGUE / WEAKNESS. REFUSED FOOD. NO COMPLAINTS EXCEPT FOR REQUESTING TO SLEEP FREQUENTLY, REFUSES FOOD, ANOREXIC.

A. Biologic (con't):

Date	Laboratory Tests and Results	Normal	Date	Diagnostic Procedures and Results
2/12/81	FBS 95 mg/100 ml CHOL 154 mg/100 ml TG 89 mg/100 ml Hb 15 mg/100 ml Hct 44.2 % Na 136 mEq. K 4.1 mEq. Cl 100 mEq. Alb 4.2 gm %	70-100 150-200 40-150 13-16 42-50 136-146 4-5 97-106 3.5-5.5	2/12	EKG - no changes from previous EKGs

Medications

Valium - p.r.n.
M.A.M. - 30 cc. QD or p.r.n.

B. Food Intake

Physician's diet orders: GENERAL DIET (HOUSE DIET: ~2400 KCAL)

Food consumption since admission: INITIALLY REFUSED TO EAT, BEGAN TO CONSUME "PART" OF FOOD TRAYS IE. MINIMAL APPETITE.

C. Environmental

Family history: WIFE DECEASED X 2 MO. ; 2 CHILDREN .
NO HISTORY OF DIABETES, CARDIOVASCULAR DISEASE, OR CANCER.

Social history: MARRIED 25 YRS. WIFE DIED SUDDENLY, 2 MO.
AGO. 1 SON LIVES AT HOME PRESENTLY.

Marital status: WIDOWED.

Occupation: RETIRED ; ON PENSION x 5 YRS. FORMERLY : LOGGER AND FARMER

Education: 10TH GRADE

Financial status: ABLE TO SUPPORT FAMILY WITHOUT PUBLIC ASSISTANCE.
WIFE HAD A "GOOD-SIZED" * LIFE INSURANCE POLICY.

Religion: CATHOLIC

Ethnic origin: NO STRONG ETHNIC AFFILIATION.

D. Behavioral

Literacy: ABLE TO WRITE; READ AS EVIDENCED BY A BOOK BY HIS
BED.

Speech barrier? yes no ☒

Language barrier? yes no ☒

If yes for either, describe:

Smoking? yes ☒ Amount: 1 PPD (PACK/PER DAY)
no ☐

Eating behaviors (confirmed): HAS DEFINITE FOOD PREFERENCES EXHIBITED BY HIS SELECTIVENESS IN CHOOSING THE SMALL AMOUNT OF FOOD HE WILL EAT.

E. Additional data

DEATH OF WIFE WAS UNEXPECTED AND A "SHOCK" TO PT.

* QUOTES ARE PTs. WORDS

DIET HISTORY (from the client interview)

Student Dietitian _____

Date _____

I. SUBJECTIVE DATA**A. Biologic**

Weight history: LOST 10# ABOUT 20 YRS. AGO ON A 1200 KCAL DIET FROM HIS PHYSICIAN. HAS MAINTAINED IDEAL BODY WEIGHT OF 155-160# UP UNTIL 2 MO. AGO.

Physical restrictions: NONE.

Food allergies and intolerances: NO KNOWN ALLERGIES. PT. CANNOT TOLERATE "RICH" FOODS WITH HIGH FAT CONTENT.

Chewing and swallowing difficulties: HAS FULL DENTURES, REPORTS SOME SLIPPING OF THE PLATES, THUS DIFFICULTY IN CHEWING MEAT AND RAW VEGETABLES, IE. POOR DENTITION.

Appetite:

Prior to admission (status quo and variations) HAS FALLEN OFF FOR 2 MO.
"FOOD DOESN'T TASTE GOOD"

Since admission (food acceptance) ONLY CONSUMES PART OF FOOD TRAY.
HAS TRIED TO ↑ INTAKE.

B. Food Intake USUAL FOOD INTAKE - L.E.

Hour of day	Foods (description of preparation and service)	Amount
7:30 A.M.	MILK, WHOLE EGG, POACHED TOAST, WHITE LIGHT CREAM OATMEAL, COOKED BUTTER COFFEE SUGAR	8 OZ. 1 1 SLICE 1/4 CUP 1 CUP 1 TSP. 6 OZ. 2 TSP.
12 NOON	POTATO, BAKED CHICKEN, BAKED PEACH, CANNED BUTTER WATER	1/2 MEDIUM 2 1/2 - 3 OZ. 1 WHOLE 1/2 TSP. 12 OZ.
6 P.M.	HAMBURGER, BROILED POTATO, BOILED PEACH, CANNED MILK, WHOLE	3 OZ. 1/2 MEDIUM 1/2 8 OZ.
- NO BETWEEN MEALS SNACKS -		

B. Food Intake (con't):

Food Frequency Summary

Food	Amount (per day &/or wk.)	Food	Amount (per day &/or wk.)
1. Milk (type) <u>WHOLE</u>	<u>2-8 OZ. CUPS</u>	8. Vegetables	<u>2-3 PER WEEK</u>
2. Dairy products	<u>0</u>	Vitamin A	<u>(OCCASSIONAL CK. CARROT)</u>
3. Eggs	<u>1</u>	9. Fruits	<u>2-3 PER WEEK</u>
4. Meat (or fish)	<u>5 1/2 - 6 OZ.</u>	Vitamin C	<u>(ORANGE JUICE - WEEKENDS)</u>
5. Meat substitutes	<u>0</u>	10. Fats	<u>2 1/2 SERVINGS</u>
6. Breads/cereals/grains	<u>3 SERVINGS</u>	11. Alcohol	<u>NONE</u>
7. Potatoes	<u>1 MEDIUM</u>	12. Concentrated sweets	<u>SUGAR : 2 tsp.</u>

C. Environmental

Living conditions: LIVES ON A FARM - LOTS OF SURROUNDING LAND;
LARGE KITCHEN, MODERN CONVENIENT APPLIANCES;
IS RESPONSIBLE FOR PROCURING AND PURCHASING FOOD.

Facilities: ADEQUATE FOOD STORAGE AND PREPARATION FACILITIES.

Financial status/resources: ADEQUATE.

Nutrition knowledge: ONLY WHAT WIFE TOLD HIM; NO FORMAL
NUTRITION EDUCATION.

D. Behavioral

Eating patterns: CONSUMES 3 MEALS PER DAY - "USUALLY"; OCCAS-
SIONALLY "FORGETS" LUNCH; RARELY SNACKS; DOESN'T EAT OUT.

Physical activity: SEDENTARY; SHORT WALK AROUND FARM DAILY.

Attitudes and values (health): ENJOYED BEING AT IDEAL WEIGHT; "FELT
GREAT UP UNTIL 2 MO. AGO"; WAS VERY PHYSICALLY ACTIVE ALSO
UP UNTIL 2 MO. AGO; EATS OUT OF HABIT; MEALS ARE BORING FOR
 Health practices: NO REGULAR PHYSICAL ACTIVITY; DOES NOT PLAN
MENUS (ACCORDING TO CLIENT).

Vitamin and food supplement usage: NONE.

**** WITHOUT HIS WIFE; OCCASSIONALLY FORGETS TO EAT; DISLIKES**
FORMAL MEDICATION REGIMENS IE. WON'T TAKE PILLS.

D. Behavioral (con't):

Prescription and non-prescription substance usage (tobacco, alcohol, laxatives, antacids, medications): SMOKES 1 PPP (CIGARETTES)

NO ALCOHOL

NO OTC MEDICATIONS (OVER THE COUNTER)

Previous diet modifications: 1200 KCAL WEIGHT REDUCTION PER FAMILY PHYSICIAN.

Cultural factors (food symbolism, ethnic and religious practices):

NO CULTURAL AFFILIATION. ENJOYS A VARIETY OF ETHNIC DISHES.

- E. Additional data DISLIKES FOOD PURCHASING AND PREPARATION; 'ITS DIFFICULT';
PT. CLAIMS "FOOD DOESN'T TASTE THE SAME" SINCE HIS
WIFE'S DEATH; DOESN'T LIKE TO TAKE PILLS;
REGULARLY OMITTS TOUGH MEAT & STRING, RAW VEGETABLES
EG. CELERY.

Student Dietitian _____ Date _____

ASSESSMENT
WorksheetClient J. E.
(initials)A. Biologic Data: Indicators of Health
(anthropometric, biochemical, and clinical)HT: 5'8"WT: 148#

Medium body frame

BIOCHEMICAL DATA

FBS 95 (70-100mg/100ml)
 Chol 154 (150-280mg/100ml)
 TG 89 (40-150mg/100ml)
 Hb 15 (13-16mg/100ml)
 Hct 44.2 (42-50%)
 Na 136 (136-146mEq)
 K 4.1 (4-5mEq)
 Cl 100 (97-106mEq)
 Alb 4.2 (3.5-5.5gm%)

☐

No deviations ascertained at this time
 Biochemical data - within normal limits

☒

Deviations requiring food and/or nutrient modification
 Client under ideal body weight of 154 - 160#.
 Weight gain to ideal body weight and stabilization indicated.

B. Environmental Data (personal world: employment, family, community and education)

Employment: Logger - retired on pension.
 Farmer - "Hobby".

Family: Married X 25 years until sudden death of wife 2 months ago.
 2 children, 1 son lives at home. One older brother, alive and well.
 No family history of DM, CVD, Ca.

Education: 10th grade.

Recreation: Walks around farm daily (1/2 hour).
 Sedentary.

Other: Has assumed food procurement and preparation; adequate facilities; dislikes cooking. "Not much experience" since wife did all the food preparation, etc.

☐

No factors influencing dietary status adversely.

☒

Factors influencing dietary status adversely.

Unalterable by client;
 Sudden death of wife.

Alterable by client:

Cooking skills; activity level; weight loss; appetite loss; attitudes towards food and food preparation.

C. Behavioral Data (thoughts, feelings, and actions influencing food intake)

Meals: Sporadic, 3 meals daily on an irregular basis; eats exclusively at home.

Attitudes: Eats out of habit; meal time lacks enjoyment; forgets to eat.

Psychological factors: Poor appetite; recently experienced personal loss.

Physiological factors: Sedentary; poor dentition; weight loss X 2 months; lethargy.

Previous diet modification: History of weight loss/maintenance X 20 years. Has remained at ideal body weight this entire time.

☐

No factors influencing dietary status adversely.

☒

Factors influencing dietary status adversely.

Unalterable by client:

Death of wife

Alterable by client:

Regularized meal schedule; making meals more appetizing/pleasurable; dental check-up; increased physical activity; involve son in food procurement/preparation; im-

- D. Food Intake Summary prove kitchen skills.
On separate page (DIETARY ADEQUACY WORKSHEET)

E. Modification of Food Intake

Check "yes" if appropriate

Check "no" if inappropriate and include supporting data.

Yes ___ No X Food Guide/Standard According to the RDA, calories, calcium, iron, Vitamin A are inadequate in L.E.'s current intake.

Yes X No ___ Diet Prescription Initially

Yes X No ___ Biologic, Environmental, and Behavioral Factors

Food intake should be modified accordingly:
Increase intake to 2400 calorie RDA level for 51+ age group.

Using the Basic Five Food Groups Guidelines :

Meat/Protein: 3 - 3 ounce servings

Vegetables: 3 servings (about 1/2 cup each)

Breads/Cereals: 10 servings

Milk/Dairy: 2 - 8 ounce cups lowfat milk

Fruits: 5 servings (about 1/2 cup each)

Other: 10 fat servings

General Diet (2400 kcal)
Diet Prescription

F. Diet Prescription

Check "yes" if diet prescription is appropriate.

If inappropriate, check "no" and include supporting data.

Yes ☒ No ☐ Biologic

Yes ☒ No ☐ Environmental

Yes ☒ No ☐ Behavioral

Yes ☒ No ☐ Food Intake Initially

☒ 1. Diet prescription is appropriate.
Initially.

☒ 2. Diet prescription should be altered as follows:
Once client has adjusted to current calorie intake, provide for weight gain
by increasing calories.

G. Status of Data

☒ Necessary data available

☐ Additional data indicated:

PLANNING WORKSHEET

Client _____

Date _____

Dietitian _____

I. GOALS AND OBJECTIVESA. Long-Term GoalB. Short-Term ObjectivesC. Client Values: (Identify)

1. Positive influence on goal achievement:

2. Negative influence on goal achievement:

D. Approach to be used with client:E. Goals and Objectives Sequenced in Order of Priority

PLANNING WORKSHEET (CONT.)

II. CLIENT EDUCATION

A. Basic Objective

B. Strategies for Facilitating Goal Achievement

C. Resources

D. Evaluation criteria for assessing client's understanding

APPENDIX I

CURRICULUM FEEDBACK

APPENDIX I

CURRICULUM FEEDBACK - WORKBOOK

Please respond to the following questions. Your input will assist the author in revising the workbook. Your comments are appreciated. Thank-you for your comments.

- 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 practice exercises are:
a) _____ unnecessary b) _____ helpful
- 5) The cartoons are:
a) _____ distracting b) _____ contributory
- 6) Color-coding the workbook:
a) _____ makes it easier to follow b) _____ makes no difference
- 7) The section I enjoyed the most is Section _____.
- 8) The section I had the most difficulty with 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:

CURRICULUM FEEDBACK - WORKBOOK

Please respond to the following questions. Your input will assist the author in revising the workbook. Your comments are appreciated. Thank-you for your comments.

- 1) The length of the workbook is:
 a) _____ too short b) ~~1111~~ 11satisfactory c) 111 too long
- 2) The degree of difficulty of the workbook is:
 a) _____ too easy b) ~~1111~~ 111appropriate c) 1 too difficult
- 3) The process of completing the workbook is:
 a) _____ boring b) ~~1111~~ 111interesting
- 4) The practice exercises are:
 a) _____ unnecessary b) ~~1111~~ 111helpful
- 5) The cartoons are:
 a) _____ distracting b) ~~1111~~ 111contributory
- 6) Color-coding the workbook:
 a) ~~1111~~ 111makes it easier to follow b) _____ makes no difference
- 7) The section I enjoyed the most is Section 3(1), 4(11), 8(111), 9(1), 10(1)
- 8) The section I had the most difficulty with is Section 2(~~1111~~ 1), 3(1), 4(1), 7(111)
- 9) In general, what do you like most about the workbook? (i.e. content, format, practice exercises, examples, etc.) General: "liked the sequence," "excellent," "fun to do"; Content: interesting; informative, useful; Format: "I liked it"; Practice exercises: "could use more," "I liked them"; Examples: good, useful, "lots"; General: "liked the sequence," "excellent workbook," "fun to do."
- 10) In general, what do you like least about the workbook?
The length; "doing a module"; inadequate page referencing; not repetitive enough; difficulty of writing objectives.
- 11) Additional Comments:
Frustrating to get wrong answers; put all lessons on blue paper for ease in reading; wanted to take the module home; "got a lot out of it"; "data should be made available to other 10 girls," "I feel more confident."

4. Additional Comments:

CURRICULUM FEEDBACK

Date of Class: 2/11/81

Class Topic: Nutritional Care Planning--A Process

1. What parts of the presentation were of most value to you?

Systematic approach to setting up the care plan (1)
Entire lecture was beneficial (~~111~~)
Visual aids (11)
Examples (1)
Practical application of plans (11)
Distinguishing goals from objectives (1)

2. Are there areas where more concentration would have been of value to you?

How to write a care plan (11)
More on goals (1)
More examples (11)
Overly concentrated (1)
No, satisfied (111)
Not sure, "will need to try it first" (1)

3. Should the presentation be changed in any way to be more effective?
If so, how?

More visual aids (1)
More examples (1111)
Handouts (1111)
Interact more with class (1)
More practical applications (1)
More time (111)
No (1)

4. Additional Comments:

Interesting
Well organized (111)
Very detailed (11)
Good presentation (11)
Good content (1)
Too long (11)
Satisfactory length (1)

BIBLIOGRAPHY

- Andrew, B. J.: Interviewing and counseling skills. J. Am. Dietet. A. 66: 576-580, 1975.
- Andrews, D. J., and Goodson, L. A.: A comparative analysis of models of instructional design. Journal of Instructional Development 3(4): 2-16, 1980.
- Baird, S. C., and Armstrong, R. V. L.: The A.D.A. role delineation for the field of clinical dietetics. 1. Philosophical overview and historical background. J. Am. Dietet. A. 78: 370-374, 1981.
- Baird, S. C., and Armstrong, R. V. L.: The A.D.A. role delineation for the field of clinical dietetics. 2. Methodology and summary of results. J. Am. Dietet. A. 78: 374-382, 1981.
- Bennion, M.: Clinical Nutrition. New York: Harper and Row, 1979.
- Blitz, P. A., and Derelian, D. V.: Changing dietitians' attitudes toward client counseling. J. Am. Dietet. A. 73: 239, 1978.
- Blommers, P. J., and Forsyth, R. A.: Elementary Statistical Methods in Psychology and Education. Boston: Houghton Mifflin Company, 1977.
- Bloom, B. S., Ed.: Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook I: Cognitive Domain. New York: David McKay Company, Inc., 1956.
- Buckwalter, J. A., Kent, T. H., and Clarke, W. R.: Scholastic ability vs. attitude, time, and performance on programmed instruction. J. Med. Ed. 49: 584-588, 1974.
- Committee on Goals of Education for Dietetics, Dietetic Internship Council. Am. Dietet. A.: Goals of the lifetime education of the dietitian. J. Am. Dietet. A. 54: 91-93, 1969.
- Committee to Develop a Glossary on Terminology for the Association and Profession: Titles, definitions, and responsibilities for the profession of dietetics--1974. J. Am. Dietet. A. 64: 661-665, 1974.
- Craig, D. G.: Guiding the change process in people. J. Am. Dietet. A. 58: 22-25, 1971.

- Cross, K. P.: Accent on Learning. San Francisco: Jossey-Bass, Inc., 1976.
- Danish, S. J.: Developing helping relationships in dietetic counseling. J. Am. Dietet. A. 67: 107-110, 1975.
- Danish, S. J., Ginsberg, M. R., Terrell, A., Hammond, M. K., and Adams, S. O.: The anatomy of a dietetic counseling interview. J. Am. Dietet. A. 75: 626-630, 1979.
- Davis, R. H., Alexander, L. T., and Yelon, S. L.: Learning System Design: An Approach to the Improvement of Instruction. New York: McGraw-Hill, Inc., 1974.
- Diet Therapy Section Committee: Guidelines for diet counseling. J. Am. Dietet. A. 66: 571-575, 1975.
- Donabedian, A.: The quality of medical care. In Williams, S. J., ed.: Issues in Health Services. New York: John Wiley and Sons, 1979, pp. 276-292.
- Ebel, R. L.: Essentials of Educational Measurement. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972.
- Ebel, R. L.: Psychometrika, Vol. 16(4): 411-416, 1951.
- Egan, M. C., and Hallstrom, B. J.: Building nutrition services in comprehensive health care. J. Am. Dietet. A. 61: 491-496, 1972.
- Evans, R. I., and Hall, Y.: Social-psychologic perspective in motivating changes in eating behavior. J. Am. Dietet. A. 72: 378-383, 1978.
- Fiel, N. J., and Ways, P. O.: Development and evaluation of self-instructional materials. J. Med. Ed. 47: 822-824, 1972.
- Forcier, J. I., Kight, M. A., Sheehan, E. T.: Point of view: Acculturation in clinical dietetics. J. Am. Dietet. A. 70: 181-184, 1977.
- Freedman, D., Pisani, R., and Purves, R.: Statistics. New York: W. W. Norton and Company, Inc., 1978.
- Friesen, P. A.: Designing Instruction: A Systematic or "Systems" Approach Using Programmed Instruction as a Model. Santa Monica, Calif.: Miller Publishing, 1973.
- Gifft, H. H., Washbon, M. B., and Harrison, G. G.: Nutrition, Behavior, and Change. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972.
- Gilbert, N.: Statistics. Philadelphia: W. B. Saunders Company, 1976.

- Ginther, J. R.: Educational diagnosis of patients. J. Am. Dietet. A. 59: 560-562, 1971.
- Glanz, K.: Strategies for nutritional counseling. J. Am. Dietet. A. 74: 431-437, 1979.
- Glass, G. V., and Stanley, J. C.: Statistical Methods in Education and Psychology. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970.
- Guley, H. M.: Modular instruction: Implications for dietetic education. Cornell University. Dissertation Abstracts, Vol. 36(10), Section A, 1975, p. 6632.
- Hallahan, I. A.: The dynamics of dietetics. J. Am. Dietet. A. 68: 115-119, 1976.
- Hanchett, E. S.: Community Health Assessment: A Conceptual Tool Kit. New York: John Wiley and Sons, 1979.
- Hart, M.: Competency-based education. J. Am. Dietet. A. 69: 616-620. 1976.
- Hays, W. L.: Statistics for the Social Sciences. 2nd edition. New York: Holt, Rinehart, and Winston, 1973.
- Hiob, P. F.: A self-instructional manual for the systematic development of modules. Unpublished Ph.D. dissertation, Michigan State University, 1978.
- Holcomb, J. D., and Milligan, D. K.: Utilizing self-instructional materials to improve clinical education in the allied health professions. J. Allied Health, Summer, 109-112, 1974.
- Howard, R. B., and Hiebold, N. H.: Nutrition in Clinical Care. New York: McGraw-Hill, 1978.
- Hunt, S. M., Groff, J. L., and Holbrook, J. M.: Nutrition: Principles and Clinical Practice. New York: John Wiley and Sons, 1980.
- Hutter, M. J., Dungy, C. I., Zakus, G. E., Moore, V. J., Ott, J. E., and Favret, A. C.: Interviewing skills: A comprehensive approach to teaching and evaluation. J. Med. Ed. 52: 328-333, 1977.
- Hutton, C. W., and Davidson, S. H.: Self-instructional learning packages as a teaching/learning tool in dietetic education. J. Am. Dietet. A. 75: 678-681, 1979.
- Isaac, S., and Michael, W. B.: Handbook in Research and Evaluation. San Diego, Calif.: EDITS Publishers, 1976.

- Jasmund, J. M. The diet history--A tool and a process: A self-instructional module to facilitate student dietitians' learning to elicit a client's diet history. Unpublished M.S. thesis, Michigan State University, 1980.
- Johnson, D.: The dietitian--a translator of nutritional information. J. Am. Dietet. A. 64: 608-611, 1974.
- Joint Commission on Accreditation of Hospitals. Accreditation Manual for Hospitals. 1976 edition. Chicago: Joint Commission on Accreditation of Hospitals, 1976, pp. 65-68.
- Joint Committee of the Community Nutrition and Diet Therapy Sections: Guidelines for developing dietary counseling services in the community. J. Am. Dietet. A. 55: 343-347, 1969.
- Junkermier, P. A.: Nutritional Care Planning--A Process. Unpublished self-instructional module. Michigan State University, 1980.
- Kiang, M. Y.: Programmed instruction in nutrition for collegiate nursing students. J. Am. Dietet. A. 57: 423-427, 1970.
- Kintzer, F. C.: Approaches to teaching adults. J. Am. Dietet. A. 50: 475-477, 1967.
- Kirchinoff, K. K., and Holzemer, W. L.: Student learning and a computer-assisted instructional program. J. Nurs. Ed. 18(3): 22-30, 1979.
- Kirk, R. E.: Experimental Design: Procedures for the Behavioral Sciences. Belmont, Calif.: Wadsworth Publishing Company, 1968.
- Klaus, D. J.: Instructional Innovation and Individualization. Pittsburgh: American Institute for Research for the Agency for International Development, U.S. Department of State, 1969.
- Kocher, R. E.: Monitoring nutritional care of the long-term patient. I. Policies and systems that support the on-going evaluation of care. J. Am. Dietet. A. 67: 45-46, 1975.
- Krathwohl, D. R., Bloom, B. S., and Masia, B. B.: Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook II: Affective Domain. New York: David McKay Co., Inc., 1964.
- Krause, M. V., and Mahan, L. K.: Food, Nutrition and Diet Therapy. 6th edition. Philadelphia: Saunders, 1979.
- Lindquist, E. F.: Design and Analysis of Experiments in Psychology and Education. Boston: Houghton-Mifflin Company, 1953.

- Little, D. E., and Carnevali, D. L.: Nursing Care Planning. 2nd edition. Philadelphia: J. B. Lippincott Co., 1976.
- Mahoney, M. J., and Caggiula, A. W.: Applying behavioral methods to nutritional counseling. J. Am. Dietet. A. 72: 372-377, 1978.
- Marino, M. A.: Developing and testing a programmed instructional unit on PKU. J. Am. Dietet. A. 76: 29-34, 1980.
- Marson, S. N.: Programmed instruction--panacea or passing gimmick? International Nurs. Rev. 19(2): 126-137, 1972.
- Mason, M., Wenberg, B. G., and Welsch, P. K.: The Dynamics of Clinical Dietetics. New York: John Wiley and Sons, 1977.
- Matthews, L. I.: Principles of interviewing and patient counseling. J. Am. Dietet. A. 50: 469-474, 1967.
- McDaniel, J. M.: Utilizing the nursing process model to teach nutrition and diet therapy. J. Am. Dietet. A. 74: 568-571, 1979.
- Molleson, A.: "Dietan"--A computer-assisted program on anatomy and nutrition. J. Am. Dietet. A. 68: 46-47, 1976.
- Morrison, D. F.: Multivariate Statistical Methods. 2nd edition. New York: McGraw-Hill, 1976.
- Morrissey, J. J.: The application of the problem-oriented medical record to client nutritional care: A self-instructional module for dietetic students. Unpublished M.S. thesis, Michigan State University, 1976.
- Myers, L. B., and Greenwood, S. E.: Use of autotutorial instruction in fundamentals of nursing courses. J. Nurs. Ed. 17(3): 7-13, 1978.
- Nie, N. H., Hull, C. H., Jenkins, J. G., Steinbrenner, K., and Bent, D. H.: Statistical Package for the Social Sciences. New York: McGraw-Hill, Inc., 1975.
- Ohlson, M. A.: Suggestions for research to strengthen learning by patients. J. Am. Dietet. A. 52: 401-404, 1968.
- Ohlson, M. A.: The philosophy of dietary counseling. J. Am. Dietet. A. 63: 13-14, 1973.
- Peck, D., and Benton, R. S.: The introduction of programmed instruction into a gross anatomy course by means of 'unit programming.' J. Med. Ed. 45: 760-769, 1970.

- Peckos, P. S.: Stimulating the patient in self-motivation. J. Am. Dietet. A. 61: 423-425, 1972.
- Pennisi, V. M.: Monitoring the nutritional care of burned patients. J. Am. Dietet. A. 69: 531-533, 1976.
- Pensivy, B. A.: Traditional vs. individualized nursing instruction: Comparison of state board exam scores as a result of these two methods of nursing instruction. J. Nurs. Ed. 16(2): 14-18, 1977.
- Pietrzyk, B. J., Brittin, H. C., and Chamberlain, V. M.: Programmed instruction in institutional purchasing for dietetic students. J. Am. Dietet. A. 73: 520-524, 1978.
- Position paper on the nutrition component of health services delivery systems. J. Am. Dietet. A. 58: 538-540, 1971.
- Pye, O. F., Brooks, C. G., and Winston, M. M.: Developing a program of learning on the fat-controlled diet. J. Am. Dietet. A. 57: 428-431, 1970.
- Reed, F., Collart, M., and Ertel, P.: Computer-assisted instruction for continued learning. Am. J. Nurs. 72: 2035-2039, 1972.
- Roach, F., and Wakefield, L.: Evaluating a self-instructional module in quantity food purchasing. J. Am. Dietet. A. 65: 166-169, 1974.
- Robinette, T. K.: What is health planning? Nursing Outlook: pp. 33-35, January 1970.
- Robinson, C.: Normal and Therapeutic Nutrition. 15th edition. New York: Macmillan and Company, 1977.
- Roth, M. S.: Design your own evaluation tools. AVI. 23(8): 21-24, 1978.
- Schiller, M. R., and Vivian, V. M.: Role of the clinical dietitian. I. Ideal role perceived by dietitians. J. Am. Dietet. A. 65: 284-287, 1974.
- Schiller, M. R., and Vivian, V. M.: Role of the clinical dietitian. II. Ideal role vs. actual role. J. Am. Dietet. A. 65: 287-290, 1974.
- Shapiro, L. R. Streamlining and implementing nutritional assessment: The dietary approach. J. Am. Dietet. A. 75: 230-237, 1979.
- Simon, S. B., Howe, L. W., Kirschenbaum, H.: Values Clarification. New York: Hart Publishing Company, Inc., 1972.

- Slowie, L. A.: Patient learning--segments from case histories. J. Am. Dietet. A. 59: 563-567, 1971.
- Steele, S. M., and Harmon, V. M.: Values Clarification in Nursing. New York: Appleton-Century-Crofts, 1979.
- Stern, F.: How the food clinic contributes to the medical care of the outpatient. J. Am. Dietet. A. 10: 258-271, 1932.
- Stritter, F. T., Burford, H. J., Johnson, S. R., and Talbert, L. M.: Documentation of the effectiveness of self-instructional materials. J. Med. Ed. 48: 1129-1132, 1973.
- Study Commission on Dietetics: The Profession of Dietetics. Chicago: Am. Dietet. Assoc., 1972.
- Tower, J. B., and Vosburgh, P. M.: Development of a rating scale to measure learning in clinical dietetics. I. Theoretical considerations and method of construction. J. Am. Dietet. A. 68: 440-445, 1976.
- Turner, D.: Handbook of Diet Therapy. 5th edition. Chicago: University of Chicago Press, 1970.
- Vickery, C. E., and Boylan, L. M.: Development and evaluation of a new nutritional care plan model. J. Am. Dietet. A. 78: 356-359, 1981.
- Weed, J. E., and Molleson, A. L.: Establishing guidelines for peer review of the clinical dietitian. J. Am. Dietet. A. 70: 157-160, 1977.
- Wiltkopf, B.: Self-instruction for student learning. Am. J. Nurs. 72: 2032-2034, 1972.
- Winborn, A. L., Banaszek, N. K., Freed, B. A., and Kaminski, M. V.: A protocol for nutritional assessment in a community hospital. J. Am. Dietet. A. 78: 129-134, 1981.
- Wylie, J.: Growth process in nutritional counseling. J. Am Dietet. A. 69: 505, 1976.
- Young, C. M.: Teaching the patient means reaching the patient. J. Am. Dietet. A. 33: 52-54, 1957.
- Young, C. M.: The therapeutic dietitian--a challenge for cooperation. J. Am. Dietet. A. 47: 96-103, 1965.
- Zifferblatt, S. M., and Wilbur, C. S.: Dietary counseling: Some realistic expectations and guidelines. J. Am. Dietet. A. 70: 591-595, 1977.

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