AN EXPERIMENT TO IMPROVE WORK HABITS OF A SELECTED GROUP OF STUDENT NURSES THROUGH THE USE OF SELF-APPRAISAL TECHNIQUES

by

Lois C. Torgeson, B.S.

A THESIS

Presented to the Department of Nursing Education
and the Graduate Division of the
University of Oregon Medical School
in partial fulfillment
of the requirements for the degree of
Master of Science

June 1958

APPROVED:

[redacted]

Miss Lucile Gregerson, Associate Professor in Charge of Thesis

[redacted]

Dr. John M. Brookhart, Chairman, Graduate Council

ACKNOWLEDGEMENTS

The writer wishes to express her appreciation for the guidance and encouragement given by Dr. Finley Carpenter and Dr. Walter Sindlinger of the University of Michigan. Dr. Carl Hopkins, Miss Jaqueline Jones and Miss Lucile Gregerson were also very helpful.

This study would not have been possible without the cooperation of Miss Olive Slocum, Assistant Director of the Basic Program, University of Oregon Medical School, Department of Nursing Education. Various faculty members and students participated in the study including Miss June Bredice, Miss Lois Valentine, Miss Leona Smolinski, Miss Ruth Haven, Miss Mae Spencer, Miss Roberta Pollock, Miss Patricia Redlin, Miss Patricia Palmer, Miss Anita Rives, Miss Sue Reichstein, Miss Carolyn Parsons and Miss Ann Packard.

Others who assisted the writer in the construction and validation of the measuring scale were Miss Lura Cation, Miss Roma Griffiths, Miss Dorothea Harth, Mrs. Betty Kemnitz, Miss Arlene Putt, Miss Nancy Sanford, Miss Martha Copeland, Miss Roma Kittlesby, Miss Dorothy Rademacher, Mrs. Barbara Hiatt, Miss Eva Davis, Mrs. Hortensia Dalrymple, Mrs. Marjorie Sidman, Miss Jeanne Hallburg,

Miss Frances Wise, Miss Guhli Olsen and Miss Lorraine Jaisle.

L. T.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

CHAPTER I

INTRODUCING THE PROBLEM

General Description of Problem

Student nurses, as they begin the practical application of the knowledge and skills of nursing learned in the classroom, show marked variation in their ability to plan or organize their activities for optimum benefit to their patients. Although the student may be well-informed about each individual step of patient care, she may perform these procedures so slowly or awkwardly that she is unable to complete all of the required care for her patients. Even if she manages to work rapidly enough to complete her assignment, her work may be characterized by unsafe and unaesthetic short-cuts. She may have expended more energy than is necessary through her ineffective methods and thus become unduly fatigued. Another student may understand how to use her knowledge of the manifestations of a patient's disease condition as a guide for determining specific patient needs and yet not be able to evaluate which of these needs have priority. This student may be tied to a set pattern for administering nursing care. She executes routine nursing measures in a rigid order without regard for identifying those of major importance in the individual

situation.

Although many nurses feel that student nurses' levels of organizational ability are directly proportional to the amount of clinical practice that they have had, it is possible to identify students in the Junior and Senior years whose performance is still characterized by work habits wasteful of time and energy. Use of faulty work habits has serious implications because these students tend to remain so concerned with trying to meet their patients' physical needs proficiently that they have limited time for developing other skills. They may be too busy thinking about what to do next to concentrate on improving their interviewing skills or attempting to identify each patient's more individualized physical and emotional needs. Opportunities to each patients may go unused because of lack of time although the student's work load may not really be excessive. The student with poor organizational ability may even be an unsafe practitioner of nursing when quick action is demanded or when she postpones vital activities in favor of less-important or routine activities.

What assistance can the instructor offer students who experience such difficulties in planning effective care for their patients? How can the student be helped before methods wasteful of time and energy become strongly established habits? Amy Brown(4) suggests that the student

nurse make a brief outline of the care required for each of her patients during the early weeks of the student's clinical experience. This plan may be examined by the instructor and appropriate suggestions offered for its improvement. This author emphasizes that when the student cares for the same groups of patients on successive days, she can gain valuable learning from revising the plan on the basis of experience of the previous day. But upon what basis should the student judge her plan and her work methods? The student may be eager to increase her organizational ability but still not progress under this regimen.

Do students who exhibit deficiencies in organizational ability clearly understand what specific behavior is characteristic of the nurse with good organizational ability? No studies have been done to answer this question, and there is no discussion of this problem in the literature. Personal observation seems to indicate that students do not know exactly where or when they are wasting time and energy or how they are planning inefficiently. When the students change their behavior in order to function more adeptly, they have no clear-cut criteria for evaluating their efforts. The student tends to measure her trial-and-error efforts at improved organization by whether they enable her to complete the assigned amount of nursing care within the allotted time.

Such measurement of the value of behavior changes may be deceptive. The very best work habits will not enable a student to complete an assignment which is too large for her. On the other hand, some of the very fastest short-cuts may violate principles of safe nursing care and be excessively wasteful of energy.

Statement of the Problem

Examination of this situation raises the question of whether students would develop organizational ability more rapidly if they evaluated their activities in terms of specific and valid criteria. This study is designed to determine if the use of a specifically stated guide for evaluating nursing activities will enable the student nurse to exhibit significant and measurable improvement in organizational ability. The specifically stated guide for evaluating nursing activities and the method of presenting it to the student constitutes the independent variable which will be described in detail in a later section.

Definition of Terms

Organizational ability might be defined as all of the complex skills and abilities that together enable the nurse to plan and execute nursing care with maximum benefit to her patients while expending an appropriate amount of time and energy. However, for the purpose of this study, an

attempt will be made to describe and measure only those aspects of organizational ability which are evident in the observable overt behavior of the student. Certainly theoretical knowledge, personality, ability to make judgment and soundness of problem-solving methods are among the factors that enable a student to function more efficiently. The focus of this study will be upon what the student does rather than upon how she feels and what she thinks.

Limitations and Assumptions

Besides limiting this study to identifying observable methods, activities and habits which have an effect upon how rapidly and economically the student can complete nursing care, the study will be further delimited by testing the effectiveness of the independent variable upon only a small group of student nurses in their second quarter at the University of Oregon Medical School, Department of Nursing. The evaluation of changes of organizational ability will be made on the basis of selected observations by a single observer.

Although the quality of nursing care produced is also important in considering the effectiveness of work habits, this study will not attempt to determine in more than a very general way whether or not the care given is of good quality.

Assumptions upon which this study is based include the following:

1. It is possible to separate organizational ability from all of the other skills and abilities that go into administering nursing care and to describe it in terms of specific observable activities or work patterns.
2. From these descriptions a score card can be devised that will validly and reliably measure changes in organizational ability.
3. Observations of activities made and evaluated in terms of this score card will retain validity and reliability despite the subjective factors introduced by the observer.
4. Activities can be identified that are characteristic of the student's usual level of performance although the subjects will be aware of the observation process and observation periods must be limited.
5. The different kinds of experience encountered by the subjects in the area of their clinical assignment will not be decisive factors in determining their growth in organizational ability.
6. Subjects in the experimental group will be

motivated to use the independent variable so that its effect upon organizational ability can be accurately determined.

7. The level of performance of students will be the same on two different hospital units under the supervision of two different clinical instructors.

8. Assistance with organization from sources other than the experimental variables will be randomly dispersed between the two groups of students being compared.

Procedure

To verify the hypothesis that the use of a specifically stated guide for evaluating nursing activities will enable the student nurse to exhibit significant and measurable improvement in organizational ability, the procedure described below will be observed.

Score card. Descriptions of the behavior patterns of student nurses with high and low organizational ability will be obtained from experts. The literature will be searched for further descriptions of performance that indicate level of organizational ability or desirable work patterns. All of these will be used as a basis for planning a score card to measure changes in organizational ability. After refinement and examination for ambiguity, the score card will be validated by a jury of experts and

tested in a trial-run upon a small group of subjects.

Source of data. A work activity analysis will be done on each subject. An appropriate recording form will be developed and the investigator will build up skill in its use during the trial-run until a complete record of the subject's activities can be obtained. Data regarding changes in organizational ability will be obtained by rating the recorded activities with the score card.

Selection of subjects. The six to eight second quarter students assigned to one ward will be selected to form the experimental and control groups. Subjects will be matched in pairs on the basis of as many pertinent factors as possible including age, previous experience in the school of nursing, clinical grade the previous term and level of organizational ability as rated by their instructor. Subjects will be randomly selected for assignment to the experimental and control groups.

Specifically stated guide. From activities and work patterns identified during the development of the score card, a specifically stated guide will be assembled to be used by the experimental subjects as a criterion for evaluating and improving their organization. A similar written guide stated only in very general terms will be developed for use by the control subjects.

Trial-run. Two to four fourth quarter students will

be selected as trial-run subjects. On the basis of evaluation of organization by several previous instructors, two students with high organizational ability and two with low organizational ability will be chosen. The investigator will do a work activity analysis on each student and will evaluate it in the light of the score card without being aware of what the level of the student's previous achievement in organization has been. Results will be compared with the ratings made by previous instructors to see if there is an indication that the score card differentiates between levels of organizational ability.

Experimental procedure. Each subject in both experimental and control groups will be observed continuously by the investigator during one day's period of clinical assignment (approximately five hours). Activities will be recorded throughout this period in the form of a work activity analysis. From these data the subject's organizational ability will be rated by the experimenter on the basis of the score card.

The investigator will then hold thirty minute interviews with all subjects. The experimental subjects will have the work activity analysis reviewed and analyzed using the specifically stated guide. The guide will then be given to them for further use in analyzing and improving their own performance. Control subjects will not have the

work activity analysis nor their organization discussed in detail. They will be given the generally stated guide and be encouraged to use it to improve their organizational ability.

At the end of several weeks, each subject will again be observed and her organizational ability will be rated with the score card. Subjects will again be interviewed to determine what factors they feel have contributed to any change in their ability to organize their work.

Results. Results will be in the form of the subjects' scores on the two measurements of their organizational ability. Further data will also be obtained relative to the amount the subjects used the written guides and their opinion of the value of these devices.

Analysis of Results. The scores of the two groups will be examined to determine what changes in organizational ability occurred between the first and second measurements. The groups will be compared to see if there were any differences in the changes that took place between the experimental and control groups. The t-test will be applied to determine if the observed change in organizational ability for each group and the observed differences between experimental and control groups are significant ones.

Purpose and Justification of Study

The purpose of this study is to discover if a self-evaluative tool can be developed which will help student nurses to develop organizational ability more rapidly. If results from this limited study are favorable, the same procedures could be used in a study involving more subjects. It would be worthwhile to obtain the results when the developed techniques were applied by other instructors of nursing. Further experiments could also be done to determine if students in the Junior and Senior years and in other schools of nursing receive benefit from this method for improving organizational ability.

Beside serving as a pilot study for possible large-scale use of the independent variable, it is anticipated that there may be other benefits gained from this study. It is hoped that a teaching tool can be developed which will be useful to the instructor in diagnosing students' problems. Too often the nursing instructor has rated organizational ability in terms of a general impression or on the basis of a few incomplete criteria following a limited observation of performance. The score card and observational techniques that must be developed to measure the anticipated behavior changes during this experiment may help the instructor to make more valid judgments about this part of the student's performance. In addition, if

this type of self-evaluative device is used successfully by students, other areas of nursing might be discovered where more specific criteria given to the student as a guide would improve their performance.

CHAPTER II

REVIEW OF PERTINENT LITERATURE

Survey of Nursing Literature

A search of the literature does not reveal any related studies in the area of identifying or improving organizational ability in the performance of nursing. However, the problem of how the nursing student should organize her work and how the instructor should help her in this process is one that has been of concern. No author discusses this very comprehensively, hence the material from many sources must be compiled to get a very clear picture of what behavior authorities feel characterizes the nurse who organizes her work well.

Perhaps the first step in planning nursing care is determining the specifications set down by the doctor who is directing medical care. "The nurse must be absolutely clear in her understanding of the medical orders and must keep them constantly before her as a starting point for all care which she is to give."(36) She must also identify the general points of ordinary hygiene which are an important part of her work.(36)

Although the amount of information which the nurse assembles may vary greatly, certainly when the nurse first

cares for the patient, considerable time must be devoted to investigating the patient's social and medical history and sifting it for nursing implications. This knowledge serves to interpret and supplement the procedures ordered by the doctor and to bring into focus the fundamental hygiene procedures so these important procedures may contribute more specifically to the patient's needs.(36)

Wolf suggests that the student nurse read the patient's record as soon as she has received her assignment, concentrating on the admission sheet and his medical and social history.(40)

> The signs and symptoms of disease, which were noted and recorded by the doctor at the time of the patient's admission, and the diagnosis which was made after the physical examination, should give the student some understanding of the patient's disease condition. If she has learned what is normal in the way of body functions and knows the signs of health, she should be able to read the laboratory reports and the results of the various diagnostic tests and get a general idea of how the patient's disease has affected his need for rest, nutrition, water balance, treatment, medication, and nursing care. Here again, she should seek the help of her instructor or refer to the reference books available in the head nurse's station if she does not know the meaning of certain words or abbreviations. . . . When she reads the doctor's orders, she will learn what kind of diet the patient is to have, the type and amount of fluids he is to drink, the medications and treatments he is to receive, whether or not he may have visitors, or whether he must be isolated because of his illness or his need for rest. Review of the nurse's record and the doctor's progress notes should give the student some knowledge of the patient's reaction to his medication and treatment measures.(40)

This author further states that "before she can intelligently plan any aspect of nursing care, she must study the patient and learn as much as she can about him, his background and his disease."(40) This point of view is also shared by Harmer,(17) Smith and Broadhurst.(30)

The student may need to secure further information from nurses who have cared for the patient previously or from the nursing instructor after reading the patient's record.(40) The patient himself must not be overlooked as a valuable source of information.(17,40) As she talks to the patient, she can modify her plan so that the patient's desires, particularly regarding hygienic care, can be met without disrupting her plan or inconveniencing other workers.(23)

Therefore, the next step in planning care may well be a visit to the assigned patients. Montag notes that it is usually wise to visit each of the patients for which the nurse is planning care. The initial visit may be combined with simple duties, such as taking temperatures or passing nourishments and provides an opportunity to greet each person.(23) At this time the nurse should make systematic observations of physical and mental symptoms. These observations "are essential for planning nursing care and should include observation and interpretation of normal as well as abnormal reactions. The nurse must evaluate the various needs of the patient and plan to meet them."(12)

As the plan takes shape, some form of written work plan is recommended by Wolf,(40) Harmer(17) and Taylor.(32) This outline of care helps the student to time her procedures in relation to other treatment and situations important to patients. Otherwise, the student may work so slowly that her activities overlap or interfere with other procedures that are designed to help the patient.

> If the student has a guide with her at all times to remind her that medications are due at certain times, that treatment must be planned in relation to baths and meals, she will be more apt to time her nursing activities correctly and fit them into the patient's total care plan more intelligently.(40)

Montag points out that the evolved plan should utilize all available time and suggests that one patient may be taking his own bath while the nurse gives care to another patient. The plan should provide care for the critically ill patient first. It is particularly important that this patient should receive treatments just before or just after baths and that nursing measures should be grouped so he is not being constantly disturbed. Making the bed while the patient is up is another suggested way of saving time and avoiding inconvenience to the patient.(23)

The plan must also be developed with consideration of what role auxiliary personnel will play in its accomplishment. The time of these personnel must not be wasted by failing to determine the most effective way of using their

assistance. Besides auxilliary personnel, the nurse works with representatives of many professional groups and the patients' families. She must coordinate their efforts and consider their contributions in developing her plan of care.(12,17)

In executing the plan, the aim is to conserve energy as well as time. Suggested methods for accomplishing this include:

> 1. having equipment complete and in good condition;
>
> 2. . . . protecting areas about treatment area so that any wetting or staining of an area is avoided;
>
> 3. having equipment completely arranged for use so that no waste motions are necessary;
>
> 4. keeping surroundings tidy so that it is possible to see what one is doing and where the tools with which one is working are placed and also in order to see that a minimum of time is expended in picking up after the treatment is finished.(30)

Energy can also be saved by using the correct principles of body mechanics in lifting patients. The nurse should not even attempt to lift or move things that are too heavy for her.(30)

As she works, the student must continue to study the patients and the situation. Even the best plan must be modified as conditions change.(17) The nurse must be alert to emergencies and be able to plan effectively under pressure in such a way as to reassure and calm the patient

and his family.(20) An equally important continuing responsibility involves observation. The patient's condition and reaction should be reported to the appropriate persons, usually the doctor or head nurse.(30) When the nurse goes off duty and care is assumed by another, a complete report of the condition and needs of the patients must be given to the second nurse.(23)

As was mentioned in Chapter I, students may be expected to develop skill in organizing their work by planning care, reviewing it with their instructor and revising the plan on the basis of trial use of it.(4) This approach is also recommended by Tracy(36) and Wolf(40) who feel that this is "not only an easy way to ensure the patient safe, individualized nursing care, but it is the best and most economical method yet devised."(40) Wolf does not specify whether or not she considers this method to have similar merit in enabling the student to become skilled in planning independently.

A few additional methods receive mention in the literature as having worth in assisting students to develop organizational ability. The nurse must recognize the patient's needs before a plan can be developed to meet these needs. "Students are helped in developing this ability [to recognize needs] by rounds which the head nurse makes with the student, as the student completes her

assignment of care to patients."(4) Even more may be gained if the instructor spends an entire morning with the student, guiding her in organizing the morning's work so that all patients receive needed care without delay. Opportunity is thus provided for teaching discrimination between essentials and non-essentials. Without such guidance, the student may neglect important nursing care while carrying out less important routines. Lastly, observation of other nurses is said to have some value in helping the student develop those qualities which enable her to perform in an efficient and organized manner.(4)

Survey of Literature from Other Fields

Because this paper is intimately concerned with the learning process and how it may be speeded, some consideration must be given to the theories of learning.

Both the connectionist and field theory of how learning takes place put emphasis upon the importance of the learner being aware of how he is doing. Thorndike and Gates, in explaining one form of the connectionist theory of learning, point out that

> one of the difficulties experienced by all learners, no matter how great their desire for progress, is inability to sense or distinguish the minute reactions which are hit upon and discarded because their value is not realized; many bad ones are retained because their detrimental effects were unsuspected. Herein lies one of the primary functions of the teacher.

> She must observe the pupil's work, discover the favorable reactions--indeed, whenever possible indicate their nature before hand . . . .(33)

Dr. Charles Skinner, also associated with the connectionist school of thought, goes on to point out that such guidance is particularly important in the initial stages of learning as errors become habitual.(29) He agrees with Cronbach that unless the activity provides opportunity to the learner for "evaluating the consequences of trial responses, little learning ensues."(11)

There is much experimental and practical evidence to lend support to these views. Several experiments are reported that indicate that knowledge of results of previous work increases subsequent improvement through practice or trials.(6) Another group of experiments are analyzed by Cook with the conclusion that frequent testing seems to increase the learning, particularly if the student has an immediate and direct knowledge of when and why he is correct.(10)

Proponents of the field theory of learning support a view similar to that of the connectionists for they feel that "analysis of experience is far more significant than any amount of simple repetitive experience."(8) The teacher must participate actively in the learning process through the analysis of the student's efforts. However, while there is value in the teacher's analysis of performance,

it is emphasized that the "teacher's goal is the increasing ability of the learner to understand the task and take over self-analysis and self-guidance."(8)

The value of developing the students' ability to guide themselves is seen in Shaw and Crumpton's report of experimental evidence that leads them to state that "improvement in a skill may be developed chiefly by placing the responsibility for improvement on the pupils."(28) This same idea is enlarged upon by Clara Brown when she states that

> . . . a great deal of school instruction is not very effective and it never will be until students understand clearly the goals toward which they are working; until they accept these goals as worth-while, desire to attain them, and are provided with tools for evaluating their progress toward them.(5)

The foregoing discussion seems to indicate that constant evaluation of students' efforts is needed if learning is to proceed most effectively without uneconomical trial-and-error attempts. Amy Brown applies this idea to nursing when she states that improvement of nursing performance

> requires early identification of the points at which performance is done satisfactorily and unsatisfactorily. The student may make such an evaluation by referring to a list of standards by which the procedure may be judged or to a rating scale. . . . After each attempt to execute the skilled behavior pattern, the student gauges the success of her performance and adapts her responses in the next trial in the light of this evaluation.

> As she tries to make each performance conform more and more closely to the standard, the goal itself becomes more explicit, and this clarification, in turn, facilitates the modification of subsequent trials.(4)

As suggested here, various rating scales have been developed to measure and assist in the improvement of the nursing student's performance. However, in the area of organization these guides are far too generally stated to be useful to the student in modifying her responses.(20,30)

Many fields have made attempts to solve the problem of how to provide students with immediate and specific information regarding their progress. In home economics, for instance, a need has been recognized for diagnostic instruments to help teachers locate weaknesses and plan appropriate remedial work to improve understandings and skills. Experts in this field believe that students learn best when they understand goals clearly, have an explicit standard for achievement and are given opportunity to measure the progress they are making. Application of these beliefs has led to devices such as the Minnesota Check List for Food Preparation and Serving which has proven valuable in increasing students' learnings in the field of home economics.(5) Hatcher(18) reports experimental evidence to indicate that self-appraisal techniques are also effective as teaching techniques in areas such as sewing and posture

Despite some recognition of the value of these techniques in home economics, greater progress has been made in their use in certain other fields, particularly in reading and arithmetic at the elementary level.(5) Self-evaluative and self-testing devices have also been developed for use in teacher education.(37) Tyler describes a device for determining the nature of the learner's difficulties that is a test of skill in using a microscope. This device could also be used by the learner in self-diagnosis and self-improvement.(38)

The trades and industry have developed many teaching tools that involve a testing of achievement. Some of these take the form of performance tests such as the one developed by Tyler(38) in the use of the microscope. Ryans and Norman state that this type of test, "provides a direct and unequivocal indication of satisfactory or unsatisfactory performance and also stimulates the student to try to improve his skill."(27) They were used most effectively during World War II to improve instruction and learning in such areas as training of military technical specialists.(19)

Performance tests may take the form of work sample tests including those where a clear-cut distinction between the rightness or wrongness of the execution of the skill is possible and those which must depend upon the judgment of

observers for evaluation and scoring. Mechanical assembly tests might fall into the first category while demonstration of proficiency in automobile driving would have to be subjectively evaluated.(27)

Although subjective judgment of performance in process may tend to be unreliable,

> it is highly desirable to measure actual operation, or performance in process, in many cases. The final product of performance may appear to be satisfactory, but the operations or procedures employed may have been unsatisfactory, even to the extent of creating a hazard to personnel or equipment. A taxi driver, for example, may successfully and speedily negotiate a route through traffic, but at the same time constitute a problem for other drivers and pedestrians along the way. In such an instance, some attempts must be made to measure performance in process.(27)

The measurement of the quality of performance in process usually is largely subjective and consists of ratings of behavior made by competent judges using an evaluating scale for assigning value to the way different steps of the procedure were performed. An example of this form of guide would be the test for ability to saw to a line as described by Proffiett, Ericson and Newkirk.(26)

Many other examples of performance tests and similar rating scales could be given from the industrial field. The importance of such techniques is underscored by Tiffin when he says that

> new employees will improve very slowly--if, indeed, they improve at all--unless they are provided with systemic and accurate information on the quality of their work. Provision for furnishing new employees with definite knowledge of results should be an integral part of every training program.(54)

Another approach to improving performance, also developed in industry is work simplification. This is a term used to indicate a way of improving work output with a minimum output of capital expenditure.(41) Various types of time and motion studies are used to determine preferred ways of doing the work. The time study most applicable to the problem of organization of nursing activities seems to be the work activity analysis. This is a "chronological record, usually accompanied by a summary tabulation of the nature of the activities performed, work units produced, and the time spent at each activity by an individual performing a variety of tasks."(24)

The work activity analysis is usually done by a separate observer, but a record by the person doing the work also has value. It is made by keeping a chronological record of tasks performed at the time spent on each. The record can then be analyzed in terms of some kind of check list. The analysis may reveal a need to assign some function to another worker, a need for better organization or sequence of tasks performed, or a need to study intensively parts of the total task.(24)

Basic principles of work simplification have been developed which may be applied to many fields including department store work, surgery, farm work and battle activities. These principles have been successfully applied to housework, too, by Gilbreth, Thomas and Clymer.(15) Their discussion of simplification of housework begins with a statement of the basic principles. These same principles as stated by Mundel suggest that the worker:

> 1. eliminate all possible steps; 2. combine steps; 3. shorten steps; 4. place in best sequence; 5. make each step as economical as possible. . .; 6. try to have both hands doing the same thing at the same time or balance the work of the two hands; 7. try to avoid the use of the hands for holding; 8. keep the work in the normal work area; 9. relieve the hands of work whenever possible; 10. eliminate as many therbligs [motions] or as much of a therblig as possible; 11. arrange the therbligs in the most convenient order; 12. combine therbligs when possible. . . .(24)

It is pointed out that much time and energy may be spent in the get-ready and clean up stage of a task. Also, a fall in output may accompany failure to take properly spaced rest periods. A moderate, steady pace is emphasized as a further means of preventing fatigue. Rythmic, circular motions are also recommended because they take less energy than straight, sharp ones. Momentum is indicated as a help in saving energy if you let it work for you.(15)

The homemaker is further advised to

> Think of your home as a series of work centers. Look at each one and think of the things you do there, and ask yourself, "Is the work place arranged for the best possible work method? What can I do to cut down or combine operations, transportation, inspections? How can I eliminate delay?"
>
> When you are doing jobs with the hands and fingers, think of the therbligs. Ask yourself, "What can I do so that one hand doesn't simply hold while the other works? How can I place things so I won't have to search? How can I cut down transport empty?"(15)

Much of this material could easily be applied to the activities of the nurse as well as to the homemaker. Gilbreth has discussed its use in nursing.(13,14) She sees no reason why the techniques of work simplification would not prove very helpful in this field, and some use has been made of them in nursing. An example is the study conducted by Wright where application of the principles of motion economy resulted in saving of time and energy in nursing service.(41) There are probably still additional ways this approach could be employed to improve utilization of time and energy in nursing.

CHAPTER III

DESCRIPTION OF THE EXPERIMENT AND THE RESULTS

Development of the Score Card

The first step in preparing for the experiment was to develop some form of measuring instrument to record changes in organizational ability in the experimental and control subjects. The form of measuring instrument finally decided upon was a score card.

A score card calls attention to various aspects of an object or situation to see that nothing is overlooked as does a check list. However, the score card provides for evaluation of more aspects of the situation than a check list, and a definite number of points are allotted to each item.(16) These tools--score cards, check lists and rating scales--are based upon the assumptions that better judgment can be secured on the situation by considering one aspect at a time and that a general value can be approximated by a summation of the value of the parts. The elements of the score card usually are built of both very detailed and very broad statements to which value must be rather arbitrarily assigned in arriving at the general value of the whole situation or object.(16)

Although Good, Barr and Scates[16] point out that it would be too cumbersome and expensive of time and effort to develop an ideal instrument, these authors believe instruments such as score cards which involve direct judgment can be useful in evaluating such things as observed behavior. Symonds specifically recommends the use of rating scales and such similar devices for eliminating bias in evaluating the student nurse's clinical achievement.[31]

Whitehall indicates that in developing a rating form, traits or worker characteristics to be compared must be carefully selected. This author suggests starting with a job analysis because in the check list system "each statement must be closely related to a particular job or job group."[39] To obtain some idea of the important traits, the experimenter closely observed the performance of four student nurses in an effort to identify behavior that specifically influenced their organization of nursing care.

Following a step used in other studies[9] to obtain traits for a check list or score card, a group of experts were asked to list the behavior they thought characteristic of student nurses with good and with poor organizational ability. Replies were obtained from six nursing instructors and one head nurse, all of whom had had

experience in observing and evaluating the clinical performance of student nurses. Members of this group were associated with four different schools of nursing in the mid-western and eastern part of this country. These experienced nurses had supervised different levels of student nurses. Some had observed students at the beginning of their clinical experience, but instructors experienced in observing students during their Junior and Senior years were also represented.

The literature in nursing and industry was also searched. As was indicated in Chapter II, many behavior patterns were described which seemed to have a relationship to organizational ability. Using these descriptions from the literature plus behavior traits gathered from observations and from the group of experts, a score card was fashioned. This took the form of 15 basic principles obtained from the literature under which were arranged 114 items descriptive of behavior indicating application or violation of the principle.

The principles used stated that the student nurse with good organizational ability: 1. surveys the situation and determines what needs to be done;(17,23,40) 2. informs herself adequately before beginning care;(36) 3. makes and follows a workable plan;(17,32,40) 4. does first things first;(4) 5. assembles equipment efficiently in an

appropriate work area;(30) 6. uses work methods that conserve energy and motion;(15,24,30) 7. makes good use of her time;(23) 8. simplifies activities;(15,24) 9. finishes what she starts;(15) 10. works with others;(12,17) 11. keeps herself informed;(17) 12. communicates effectively;(23,30) 13. establishes good relationships with staff and patients;(12,17,23) 14. promotes confidence and trust;(20) 15. evaluates her plan and replans as she works.(17)

Directions for the use of the score card were developed which called for evaluating each point in terms of whether this kind of activity was seldom observed, observed much of the time or observed in almost all instances. It was hoped that this would give a more definite measure of these described activities than terms such as average, little or fair which are often applied to traits being rated by similar devices.(22)

Examination of the score card revealed that not all of the described behavior traits were of equal importance. As their true value could not be determined, no attempt was made to weight them. Benge reports that there is statistical evidence suggesting "that arbitrary weightings are not superior to the elimination of weightings entirely."(3)

An effort was made to evaluate the score card in the light of criteria suggested for evaluating rating

instruments. The items were examined to see if they indicated general rather than specific methods and that these methods represented universally superior habits. Adkins indicates that care on these points prevents a worker from being penalized for revising rules to suit special requirements as he gains in experience.(1) A further selection of traits or behavior patterns was made on the basis of importance to success and whether the trait was specific and sufficiently different from others so that there would be little overlapping.(3) The items were also evaluated to determine if the described behavior would be observable.(21)

This evaluation of the score card resulted in deletion and revision of many of the items. The score card was also carefully read for ambiguity by two experienced nurses, and the items were re-worded until the meaning was clear to these readers. Up to this point, the score card had gone through six revisions.

The score card was then reviewed by a jury of experts. Clara Brown(5) indicates that jury rating is desirable in the development of devices such as score cards and rating scales. She emphasizes that the judges must be competent to judge in the area and that the recording technique must be carefully selected. To satisfy these requirements, seven nursing instructors, associated with five schools of

nursing were chosen. All of these individuals had been responsible for observing and evaluating student nurses' performances on the clinical services. It seemed reasonable to assume that all would have given consideration to organizational ability of students and would have definite opinions as to the behavior patterns characteristic of the student who organizes nursing care effectively.

A recording technique was developed which directed the jury members to evaluate each item separately and to decide if the described behavior pattern was a factor in determining organizational ability. A form, with columns headed strongly agree, moderately agree, strongly disagree, or do not know was provided for recording their opinion. They were further asked to indicate if each item was clearly stated and unambiguous in meaning. Space was provided for comment, and respondents were urged to explain their reasons for checking the strongly disagree column or for stating that an item lacked clarity.

When replies of the jury were compiled, it was found that all of the members strongly agreed that 19 of the items described behavior that was a factor in determining organizational ability. Agreement was less unanimous on the other items, and 13 of these were identified as being very important in organizing nursing care by less than half of the jury members. As there were no items with which a

majority of the experts strongly disagreed, these 13 items identified as less important were evaluated and were omitted or rewritten. The comments given by the experts were very helpful in revising these and other items where there was confusion as to meaning. The form, thus re-drafted through the suggestions of the jury, was used in the trial-run which will be discussed later in this chapter.

Development of Device for Obtaining Data

Symonds states that "the evaluation of the less tangible skills of nursing must be based on direct observation of performance" and indicates that the judgment of the level of achievement will be more accurate if some objective record of performance can be secured.(31) It was decided, therefore, to use direct observation in the form of a work activity analysis to obtain a record of the subject's performance. This record of activities could then be rated with the use of the score card. The activities listed in the score card could serve to define the specific things that would be looked for during the observation period as recommended by Good, Barr and Scates.(16)

Jersild and Meigs(21) suggest the use of abbreviation and shorthand in recording results. A list of some possible abbreviations was developed which seemed workable.

The recording form finally used consisted of five by seven cards with space for indicating the subject's activities from minute to minute. Because a separate card was prepared for each half hour period of observation, sufficient room was provided for a shorthand account of all observations without making the form conspicuous or awkward. This technique seemed to provide for the immediate recording of behavior and the number of instances of this behavior as is desirable in any scientific observation of behavior.(21)

Scientific observation is also characteristically systematic so that one must choose the length, number and interval of observations with care.(16) Although "there is some evidence that a greater number of short periods is better than a smaller number of long periods,"(16) the work sampling technique did not seem appropriate in this instance. Because organizational ability is based on how the nurse plans and executes all of her assigned duties during her hours on the ward, it was decided to observe each subject's performance during all of her hours of duty on one day. This avoids the possibility of having the observer "come upon a sequence of activities that is already underway, forsake it before it is concluded and thus miss important features."(21)

Scientific observations must be made by an expert.(21) The investigator had had previous practice in observing

clinical performance of student nurses and had gained some skill in analyzing and evaluating their achievement. Ideally, more than one independent worker should observe and classify the behavior that is being measured. Agreement can then be calculated in terms of percents.(21) However, as these observations had to be conducted on the hospital unit, often at the patient's bedside, it was not felt that there would be room for two observers. Extra persons in the environment might distract the patient and the subject so much that the behavior observed would not be typical.

This raises the question of how much the observer's presence will influence the subject's behavior. The hospital environment does not lend itself to concealing the observer or hiding the fact that observations are being recorded. Although instances have been reported

> in which children's behavior seems to have been influenced, at least for a time, by the observer's presence, and a teacher or parent whose practices are being observed would be less than human if he were not somewhat affected, . . . the passage of time here has a tranquillizing effect.(21)

Jersild and Meigs feel that

> whatever the observer's effect may be, it is not likely to be so pronounced in the long run that the records fail to show individual differences. As time passes habitual practices and interactions between individuals in the group come to the fore, and even the first of a series of records may reveal large individual differences in types of behavior that the observed individual might especially desire to display or conceal, which prove in later observations to be characteristic.(21)

Development of Specifically and Generally Stated Guides

The items from the refined score card were rephrased into a check list form that would be useful to the student nurse in evaluating her own performance relative to her organization of nursing care. The resulting form, titled A Guide for Improving Organization is reproduced in Appendix A.

The ideas of the specifically stated guide were grouped into several broad statements and titled Organization Analysis Check List (see Appendix B). An attempt was made to limit these statements to the kind of general questions often asked by the nursing instructor in trying to help the student improve her organization. This additional form was developed so that both experimental and control subjects could be given a written guide. It was felt that being given a device for the purpose of improving their organization might be a motivating factor that could cause improvement whether or not the device itself had value.

Description of Trial-run of Experiment

A group of six fourth quarter student nurses receiving experience on a surgical ward was chosen as the population from which trial-run subjects would be selected. This group was selected because they were not too much more advanced

than the second quarter students to be used during the actual experiment. There was, also, little likelihood of contact between the trial-run and experimental groups because the involved students were assigned to different hospital wards and lived in separate dormitories.

The four previous evaluations of the clinical achievements of these students were examined, and the comments of their former instructors regarding their organization were compiled. The descriptions of the six students' organizational abilities, identified only by numbers, were submitted to the investigator. A student whose performance seemed characterized by high organizational ability and one whose ability to organize her work was limited were chosen by the investigator. The investigator then used these two students as trial-run subjects without knowing which had shown high and which low organizational ability in the past.

The investigator interviewed the clinical instructor to obtain her cooperation in planning the subjects' assignments during the period of observation. The instructor was lead to believe that the investigator was doing a study to determine the kinds of activities performed by student nurses and to determine the value of these tasks, as learning experiences. The instructor was asked to provide average-sized assignments that would be

comparable as to difficulty and amount of work for the two subjects when being observed. An interview guide, A Guide for Interviewing Instructor, incorporating these points was developed to be used in interpreting the study to the involved instructors during the experiment (see Appendix C).

The two subjects were interviewed briefly before the experimenter attempted to observe their performance. Discussion followed the outline of an interview guide. The subjects were lead to believe that the purpose of the study was to determine the kind of activities usually performed by student nurses. As the subjects observed must be at ease if the observed behavior is to be characteristic of their usual performance,(31) an attempt was made to gain rapport. The subjects were assured that no report of observations would be given to the regular instructor. The investigator also allowed time for questions and accepted expressions of concern about quality of performance as natural. It was repeatedly emphasized that the investigator was interested in the actual activities rather than the quality of nursing care. The questions asked by the students and their suggestions following the observation period were incorporated into the final form of the Guide for Initial Interview with Subjects (see Appendix D).

The investigator did a work activity analysis on each subject. One subject had four assigned patients during her

four hours on the ward while the other subject had only two patients during the same period of time. However, because of differences in the acuteness of illness of the patients and the treatments ordered for each, the assignments seemed quite comparable. The investigator experienced no difficulty in getting a complete and readable record of the students' activities or in remaining an observer rather than a participant in the environment. The student was observed closely, and the investigator was actually present in the patient's unit while nursing care was being given. Other personnel on the ward soon lost interest when they were told that a time study was being done. Patients evidenced little curiosity although no explanation was made to them. Remarks made by the patients indicated that they accepted the investigator as a nursing instructor assisting the student.

Following the observation period, each trial-run subject was given a thirty minute interview using the guide developed for use with experimental subjects. Their work activity analysis was reviewed with them pointing out good and poor practice relating to organization. They were shown the Guide for Improving Organization, and it was used as a guide in discussing the implications of their time study. A copy of this guide was not given to them. Both subjects were very interested to find out what the investigator had

noticed about their performance. The subjects indicated that they had not been aware of some characteristics of their work pattern apparent in the time study.

At the end of the interview, the subjects stated that they felt fortunate to have been chosen for the observation as the information gained about their performance was valuable. One individual wondered why regular instructors did not do time studies on the students because "they evaluate you, but they don't really see what you do."

The two subjects felt that they performed on the same level as usual despite being observed. Both subjects said they felt a little uneasy during the first hour of observation, but after that they were too busy to worry about being watched. One subject commented that she would have liked to inform the observer when faced with a new procedure because she became uneasy knowing that her performance would not be efficient.

On the basis of information and experience gained during these two interviews, the final forms of the Guide for Interviewing Experimental Subjects (see Appendix E) and the Guide for Interviewing Control Subjects (see Appendix F) were developed. It will be noted that these guides were designed to indicate to the subjects that the main purpose of the interviews was to obtain the subjects' opinions regarding the learning value of their experiences.

Discussion of the subject's organization was planned to be brought in casually after these initial questions regarding her activities had been covered and the replies carefully recorded.

The work activity analysis on each subject was transcribed following the observation period. The resulting record was rated with the score card. It was found that data were obtained to answer most of the questions posed on the score card. Twenty-two of the items did not prove observable and were omitted in arriving at the total scores of 190 and 245 for the two subjects. The high score was received by the individual whose organization had previously been rated as high. The score of 190 was the rating received by the subject whose previous instructors had found her deficient in organizational ability.

Further Refinement of Score Card

The score card was again evaluated following its use during the trial-run. Some items that proved impossible to evaluate by observation alone were omitted. During the trial-observations several items could not be answered because of the lack of data. These were not omitted because it was felt that the right circumstances and diligent observation might enable the investigator to evaluate these very important aspects of the subject's

behavior.

A week following the scoring, the investigator rescored the trial-run subjects using the original data from the work activity analyses. This technique measures the worker's own consistency. Item by item comparisons of the analyses were then made. There was agreement on most items, but the process resulted in removal of some further ambiguities and refinement of definitions of terms.(21) With some minor re-wording of items and with the omissions indicated in the previous paragraph, the score card titled Score Card for Evaluating Organization (see Appendix G) was prepared for use. It consisted of 105 items grouped under the 15 principles initially chosen from the literature.

Selection of Subjects

Second quarter students from the Basic Program of the Department of Nursing Education, University of Oregon Medical School, were chosen to serve as the population for the experiment. Second quarter students were selected because at this stage it would be possible to obtain subjects whose previous clinical experience had been gained on the same hospital unit under the direction of the same instructor. It was also felt that use of the independent variable might be most appropriate with young students who had not developed definite work habits and who needed guidance in forming desirable work patterns.

From the approximately forty students in the second quarter, a group of seven students was selected to serve as subjects for the experiment. This particular group was chosen because they would have six weeks of clinical experience on a surgical ward followed by five weeks on a medical ward in the same hospital. As the two wards have much the same physical lay-out and patient load, this provided an opportunity to allow sufficient time between the first and second observation for the occurrence of changes in behavior. Because the students had been assigned to the group alphabetically, there was reason to expect that the variables in the students would be randomly dispersed among the groups into which the forty students were subdivided.

The students chosen to participate in the experiment had all completed their five terms of pre-professional courses and had just finished their first quarter in the professional part of their program. The whole previous college program of these students was quite similar because the required courses left little time for electives. Their clinical experience, thus far, consisted of 24 hours spent on the same surgical ward unit where they were observed at the beginning of the experiment. They had also spent approximately two hours per week throughout the previous quarter in the laboratory practice of nursing procedures.

One student had worked previously in a hospital, so it was decided to exclude her from the experimental group. The six remaining students formed a rather homogenous group. They were all female and twenty years old. To minimize further the chance of obtaining experimental differences due to differences between the experimental and control groups, it seemed desirable to match the subjects as the group was predetermined and quite small.(4) Their grade for clinical experience the previous term, their organizational ability as rated by their previous instructor, and their composite score on the National League for Nursing Pre-Nursing and Guidance Examination were selected as appropriate factors for matching. The results from this examination were chosen because this testing device is designed to provide an estimate of success in a basic program of nursing. It consists of an intelligence test, reading speed and comprehension test and achievement tests in the area of mathematics, natural sciences, history and social studies.(7)

All of the subjects received "B" as a clinical grade the previous quarter and were rated as having average organizational ability by their instructor, so the subjects were matched according to their National League for Nursing Pre-Nursing and Guidance Examination composite scores as can be seen in Table I.

TABLE I

COMPOSITE SCORES OF SUBJECTS ON NATIONAL LEAGUE FOR NURSING PRE-NURSING AND GUIDANCE EXAMINATION

Subject Pairs	Scores Control Subjects	Scores Experimental Subjects
1	159	162
2	116	135
3	95	95

At this time, the subjects in the three matched pairs were not distinguished as to which would be a control and which an experimental subject. When subjects were assigned to groups on the basis of chance, those listed in the second column of Table I became the experimental subjects.

Description of the Experiment

Preparing Instructor and Subjects

The first step in preparing for the experiment was to approach the instructor responsible for the subject's experiences on the hospital unit where they were presently assigned. Covering the points in the Guide for Interviewing Instructor (Appendix C), the instructor was informed that the purpose of the observations would be to determine what

activities the students performed during their clinical experience. Her cooperation was asked in making assignments that would be comparable during the observation. It was agreed that at this time an average-sized assignment for the observed subjects would consist of about three convalescent patients to be cared for during a period of assignment from seven in the morning to twelve noon. The instructor was asked to treat the subjects being observed the same as the other students under her supervision.

The investigator met with the seven students assigned to the ward a few days before the experimental period began. In the conference the points outlined in the Guide for Initial Interview with Subjects (Appendix D) were discussed with the students. They were told that the purpose of the study would be to determine what duties took up the student nurse's time and how valuable these activities were for learning. The observational techniques were described in some detail. When the discussion was opened for questions, many of the students expressed some concern that their regular instructor might be shown the time records or be informed about the quality of their performance. The investigator assured them that no information would be given to the clinical instructor and that the time studies would be shared only with the individual students themselves.

Control of Variables

As indicated by Clara Brown,(5) the control of variables in this type of experiment is a particularly difficult and important task. It is possible, when the experimental factor is the method of instruction, to reduce the amount of error due to variables by exposing the experimental and control subjects to the same teacher, for the same length of time and in an identical environment. As has been stated previously, all subjects would receive instruction from the same instructors while being exposed to the same general ward environment.

No attempt was made to control the help with organization students might receive from other sources such as the instructor, graduate nurses, older student or each other. It would be impossible to control all of these sources of assistance. The independent variable was really being tested for value in addition to the usual methods of improving organization available to both the experimental and control groups.

The size and kind of assignments were the factors most amenable to control. These factors would have a great influence upon how well the subject would be able to organize her work. Because the students were becoming able to do more things for their patients, it was decided to give the subjects assignments which would actually be larger

during the second observation but would represent average-sized assignments at the time this observation was made. Other controls on the assignment would be choosing patients located in one room which would be approximately the same distance from the service rooms. At least some of the patients chosen would be new to the student assigned to care for them.

Although other environmental factors could not be controlled, it might be pointed out that the students at this point in their experience were under the close supervision of the instructor. They were affected relatively little by stresses on the ward that did not directly involve their assigned patients. As a further safeguard against chance variables in the environment or the subject, it was decided that any situation thought to affect the subject's performance such as illness, gross error on her part, or an atypical assignment would necessitate delaying or re-doing the work activity analysis.

First Observation

The first observations were begun two weeks after the start of the term. They covered a three week period on the days when the subjects had clinical practice from seven in the morning to twelve noon. The first observation was made on the one student not included in the matched pairs. This gave the investigator an additional opportunity for practice

and accustomed the ward personnel to the process.

The subjects were informed the day before that the observations would be made and were given opportunity for questions. They were reminded that the investigator would not give advice or assistance. After the first observation, the subjects expressed concern because patients thought that the investigator was "checking" on the student being followed. They were instructed that, if asked, they could tell the patients that the investigator was doing some kind of special study. This seemed to relieve the subjects' anxieties although the patients seemed to continue to place the investigator in the instructor's role. As has been mentioned, the six subjects were matched into three pairs. The specific pairs to be observed each week were selected by the instructor while the individual subject to be observed each day was determined by chance.

During the observations, the investigator remained in the role of an observer. She did not reply to comments made by the subjects although direct remarks made by the patients were given brief responses. The subjects soon became apparently quite relaxed and a pleasant feeling developed between the investigator and the subject. There were no unusual happenings during the observation periods that seemed to necessitate the rescheduling of the observation.

The assignments varied somewhat in size depending on

the acuteness of illness of the selected patients. For instance, when being observed, one subject might have three convalescent patients assigned and another subject two moderately-ill patients. It was possible to have assigned patients located in the same room except during one observation on a control subject. All patients chosen for assignment during the experiment were in the three rooms located at the end of the ward corridor and were about an equal distance from the service rooms. Providing that each subject be assigned at least one new patient proved to be more difficult as the students had cared for most of the available patients at some time. Two subjects in the control group had some new patients while only one individual in the experimental group cared for patients with whom she was unfamiliar.

At the beginning of the observations, the students were not required to administer medications to their assigned patients. This responsibility was added toward the end of the observation period. One experimental and one control subject were observed when the administration of medications was a part of their duties. However, as the subjects had only one or two medications and their assignments were slightly smaller to allow for this extra task, this was not thought to make their over-all experience markedly different from other subjects.

Two ward conferences were scheduled from ten-thirty to eleven-thirty on two mornings when control subjects were being observed. Again, the instructor gave these individuals somewhat less demanding assignments. It was noted that all observed subjects tried to complete their assigned duties by ten-thirty in order to have time for a rest period, hence spending an hour in ward conference did not seem to change the manner in which subjects organized their work.

Despite these adjustments to meet changing circumstances, the regular instructor expressed the opinion that the assignments given subjects during the observation periods were equally demanding.

Scoring Performance. Following the observations, the work activity analysis for each subject was transcribed. Using this information, the Score Card for Evaluating Organization was completed. To insure that the scoring would be reliable, when there was any doubt as to value to be assigned, a record was kept of the specific activity and the score given it to be referred to as the other score cards were completed. More than two levels of performance could not be differentiated for some items, so a notation was made to judge only whether this activity was seldom observed or observed in almost all instances. This record helped to insure the accuracy of scoring which is so

important if the score card is to have any value.(5) As it became obvious that data had not been obtained to complete all items on all subjects, no attempt was made to arrive at a total score at this time.

Subjects were assigned to experimental and control groups on the basis of chance at this time. The unmatched student was treated the same as the control subjects as it was felt to be preferable for the entire group to feel that they were participating in the study.

Interviews. Interviews were held with all subjects. These averaged thirty minutes in length for the experimental subjects and twenty minutes for those in the control group. The control subjects were questioned about their activities, and their responses were recorded carefully so that they would continue to think that a study of activities was the main purpose of the experiment (see Guide for Interviewing Control Subjects, Appendix F). These students were shown their work activity analyses. This was not discussed in detail, but the investigator indicated the number of times they had washed their hands and how much of the total time they spent in direct contact with their patients. The control subjects then drew (on a provided floor plan of the unit) a flow chart of their motion path between seven and eight-thirty in the morning as the investigator dictated

the data from the work activity analysis. They were given opportunity to ask questions, but none of the control subjects could think of any. At this point all papers were put away and the investigator casually questioned the subject about her organization. The Organization Analysis Check List was presented as something that the investigator had prepared which might or might not be helpful. The control subject was asked to use it and determine if it had any value. The investigator suggested that a report of their opinion could be given on the second observation.

Interviews for the experimental subjects then followed the same pattern (see Guide for Interviewing Experimental Subjects, Appendix E), until the point where the work activity analysis was discussed. With these subjects the investigator went through the entire time study pointing out behavior that might decisively affect organization. Subjects expressed surprise at some of the findings, indicating that they had not been aware of such behavior. Other comments brought the response that the investigator was mentioning very characteristic behavior of which they were quite aware. The Guide for Improving Organization was presented to these subjects. The device was also advanced very tentatively as something that might help. The investigator indicated that an honest report of its value was desired at the time of the second observation.

All of the subjects indicated that they felt that theirs was an average-sized assignment during the observation, quite typical of what they usually did. They indicated that they had performed on the same level despite being observed, although one girl commented that she made her bed corners with more care.

One experimental subject was not at all bothered by the observation. The other two experimental subjects were aware of the observation process, and one of these individuals felt uneasy for the first hour or so. The other subject was aware of being watched during the whole period. In the control group, two subjects said they were not concerned about being observed while one subject was aware of the process for the first hour.

All subjects were still trying to improve their organization. When asked how they were attempting to upgrade their performance, five subjects indicated that they were trying to save unnecessary trips in and out of the patient's unit. One of these individuals mentioned that she hoped to increase her ability to organize by planning exactly what needed to be done. Only one subject could advance more than one measure for improving organization. This subject, a member of the control group, indicated that she was trying to stagger her tasks so that no time would be wasted by needless delays.

Although the subjects did not bring this up in the interviews, the instructor reported that three out of the six subjects had asked her if the observations had been used in describing their clinical performance. The instructor assured them that she had received no information.

Second Observation

The second observations were made on a medical ward of 35 patients whose physical set-up was similar to the 35-patient surgical ward where previous observations were made. The instructor received the same interpretation of the study as the previous instructor. It was decided that an average-sized assignment at this stage of the student's development would include three moderately-ill patients. The subjects were individually informed that the second observations would take place. They had no questions or apparent anxieties at this time.

The students had been on the new ward three weeks when the second observations were begun. These were made approximately six weeks following the first observations and extended over a period of three weeks.

Although the order of observations was decided by chance, Table II shows that the experimental group averaged 40 days between observations while the control group was approximately the same with an average of 39 days between the first and second observations.

TABLE II

TIME BETWEEN FIRST AND SECOND OBSERVATION AND LENGTH OF EXPOSURE TO EXPERIMENTAL VARIABLES OF EXPERIMENTAL AND CONTROL GROUPS

Subject Pairs	Days Between Observations		Days Exposure to Experimental Variables	
	Experimental Group	Control Group	Experimental Group	Control Group
1	47	41	39	36
2	40	36	34	30
3	35	40	30	35
Average	40	39	34	34

The second column of Table II indicates the time that elapsed between the subjects being given the written guides during the interview and the second observation of their performance. It can be seen that although there was individual variation, the groups each averaged 34 days exposure to the experimental variables.

The observation periods went very much as planned. All subjects had three moderately-ill patients assigned in one of two adjacently located rooms on the ward. They all were given patients for which they had not cared previously. The only obviously different factor in the subjects' assignments was that two individuals in the experimental group did not

administer medications to their patients. However, when this was not a part of their assignments, they were given slightly more difficult patients for which to care. One observation period was delayed because the subject was not feeling well although she was able to report for duty.

Final Scoring. Following the observation period, the work activity analysis was again transcribed, and score cards were completed. The key was referred to when questions arose as to what value had been assigned to certain specific behavior on the first scoring. It was found necessary to omit 15 items because these activities had not been observed on all subjects. The omitted items are starred on the Score Card for Evaluating Organization as reproduced in Appendix G. The final scores were arrived at by obtaining the sum of the values attached to each.

Questionnaire. Although a second interview had been planned with the experimental and control subjects, it was felt that in face-to-face contact they might find it difficult to give their opinion honestly if they found the written guides valueless. A questionnaire was developed and administered to experimental and control subjects (see Final Questionnaire, Appendix H).

A question regarding the subjects' feelings during the second observation was included in this questionnaire. It is interesting that the experimental and control groups had

almost opposite reactions to those they expressed following the first observation. None of the experimental group said she was bothered by the observation. This feeling was shared by only one of the control group. Of the other two control subjects, one was very aware of the observation process for the first hour or two, while the other individual stated that she was uneasy throughout the whole period.

On the first observation, no subject felt that her level of performance was influenced by the observational process. Respondents from the experimental group continued to have this opinion about their performance during the second observation. Two control subjects commented that they performed differently at some time during the period than they would have if alone. The other subject could not evaluate this point.

Final Interview. At the time the questionnaires were given to the experimental and control subjects, they were told that the investigator would review their work activity analyses with them if they so desired. All of the subjects appeared interested in seeing their time studies and took the initiative in arranging a conference with the investigator for this purpose.

Results

Results of Scoring

The total scores earned by the subjects in the experimental and control groups are depicted in Table III. It will be noted that two of the experimental subjects made higher scores while one experimental subject earned a lower score on the second measurement. The trend among the control subjects seems to be toward a lower score on the second than on the first measurement although one subject made a slightly higher score the second time.

TABLE III

COMPARISON OF SCORES OF TWO MEASUREMENTS OF ORGANIZATIONAL ABILITY OF MATCHED PAIRS OF EXPERIMENTAL AND CONTROL SUBJECTS

Subject Pairs	Score				Change		Difference Between Groups
	First Measurement		Second Measurement				
	Experimental	Control	Experimental	Control	Experimental	Control	
1	218	190	246	166	+ 28	- 24	
2	223	228	209	213	- 14	- 15	
3	196	206	210	211	+ 14	+ 5	
Mean	212	208	222	197	+ 9	- 11	+ 20
95% Confidence Interval					- 44 to + 62	- 48 to + 26	- 22 to + 62
t					0.73	1.3	1.3
P					> 0.25	> 0.25	0.25

The observed mean change for the two groups shows the experimental group gaining 9 points in organizational ability while the average for the control group was a decrease of 11 points. The average change of the experimental group was therefore 20 points greater than that of the control group.

Significance of differences. The measured change in the organizational ability of the experimental and control groups was tested for significance by applying the t-test. Assuming that there is no real difference between the groups on the trait being measured, calculating the t-value tells how many times out of a hundred a difference as large as was obtained could have happened by chance alone. The mean of the between-measurement differences for the three subjects is divided by the standard error of that difference. The farther the observed mean is from the zero hypothesis mean, as measured in these standard error units, the less likely is the null hypothesis to be true.

For instance, if t is calculated for an experiment with three subjects, a t of 4.30 indicates that there are only five chances out of one hundred that such a difference could be due to chance. If the t equalled 9.92 (the 1 percent level of significance) the difference observed could be accepted as real with 99 percent confidence.(35)

When the t-test was applied to the mean change of the experimental and control groups, a t of 0.73 was obtained for the experimental group while that of the control group was 1.3. For the change to be considered statistically significant at the 5 percent level, t would have to exceed 4.30.

When the t-test was applied to the difference between

the groups, t equalled 1.3 which was not large enough for significance at even the 5 percent level. Therefore, the null hypothesis could not be rejected and observed differences between the groups must be attributed to chance.

Table III shows confidence intervals for the mean change in experimental and control groups and the difference between these groups. Establishment of a confidence interval gives a range within which the true mean falls with a given probability. For instance, the 95 percent confidence limits calculated for the experimental group are minus 44 to plus 62. We may say that we are 95 percent confident that the true mean lies somewhere between these limits. It can be seen that the intervals calculated for all of the observed changes extend over the zero point. The true mean could therefore be zero, so the null hypothesis cannot be rejected.(25) Besides indicating that this experiment failed to detect significant differences, the confidence intervals give an indication of what results might be obtained with a larger experiment. Thus, for the experimental group, an average change as great as minus 44 or plus 62 would be possible. One might consider a repetition and enlargement of the experiment since such a finding would be of considerable interest.

Response to questionnaire. In response to the Final Questionnaire the entire group of subjects indicated that they felt their organization was now better than when it was first observed. Control and experimental subjects attributed this improvement to more ward practice while the experimental group also cited increased knowledge of disease conditions, helpful suggestions, and the Guide for Improving Organization as being instrumental in stimulating their growth in this area.

Both groups had found the written guides helpful except one control respondent who did not know if the guide was useful or not. All subjects indicated that they used their guides several times. Control subjects, in trying to identify how the Organizational Analysis Check List helped them, said that the guide assisted them in analyzing their day's work and made them more aware of organization. Experimental subjects seemed to comment a bit more specifically regarding the value of the Guide for Improving Organization. Subjects stated that this guide "was detailed enough to be helpful for review," "reminded me to check myself," and "helped me in planning and organizing my time."

Although only the experimental group actually looked through their whole work activity analyses, both groups were asked if they found the analysis of their time study

helpful. All subjects replied to this question in the affirmative. Members of the experimental group went on to explain that this analysis pointed out ways of saving time and energy. One subject also commented that it "made me take time to analyze myself." Control subjects, whose only analysis of the time study lay in doing a flow chart, indicated that this was valuable in that it made them realize how many unnecessary trips they often made in administering care to patients.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

The observed changes in organizational ability of six selected subjects from the second quarter students in the Basic Program, Department of Nursing Education, University of Oregon Medical School, were not statistically significant. There was no difference, either, between the experimental and control groups that could not be explained on the basis of chance variation. Therefore, the hypothesis that the use of a specifically stated guide for evaluating nursing activities would enable the student nurse to exhibit significant and measurable improvement in organizational ability has not been confirmed. This conclusion is further strengthened by the fact that respondents from both experimental and control groups said they found the written guides and the analysis of the time study helpful. These subjects were not given the opportunity to indicate how valuable they thought the techniques. However, experimental and control groups did not express radically different feelings about these devices although the guide and the discussion of the work activity analysis were intentionally quite perfunctory for the control subjects. Of course, all subjects used the written guides only

"several times". The experimental group may have failed to use the independent variable enough for it to have any effect.

The hypothesis posed in the study was not substantiated, but the data revealed some interesting trends which might with a larger experiment have been significant. Some changes in the organization ability could be expected at the end of six weeks of clinical experience. However, neither group appeared to show a significant gain attributable to practice. The subjects themselves identified additional clinical experience as being important in enabling them to improve their organization, but there is nothing in the results to support this view. It may be that the Score Care for Evaluating Organization was not sensitive enough to measure the rather subtle changes that might be present at the end of this short period. On the other hand, the investigator could not identify specific improvements in the over-all organizational ability of the subjects although she was aware of apparently marked growth in their ability to solve problems, observe symptoms and respond to patients' needs.

The experimental group showed a small average gain in organizational ability while control subjects generally organized their work slightly less proficiently after six weeks' practice. These fluctuations in score probably do

not represent a real change in organizational ability. However, it is interesting to speculate if the observer bias affected the outcomes on the second scoring. The lower score earned by the control group on the second observation might also be connected to this group's expressions of anxiety about the observation process while the experimental group felt more secure than previously. Differences in how the students felt about the observations could have affected the subjects' levels of performance. Also, all subjects had unfamiliar patients on the second observation. This might have made all students less likely to evidence an increased ability to organize due to practice. One could also question whether the score card penalized the subjects for the kind of short-cut modifications of basic rules that might be expected of more expert performance. Despite these factors, the results suggest the possibility that the organizational ability of these student nurses near the beginning of their ward experience did not change markedly during a period of six weeks.

This experiment did not clearly define the value of the Score Card for Evaluating Organization. However, the investigator found it useful in directing her attention to the different aspects in the organization of nursing care. It was surprising to note, for example, that the subject who

gave an impression of being very disorganized and careless might actually rate very high when it came to eliminating unnecessary steps and conserving energy. Others who seemed to be careful and conscientious actually wasted much time and energy in unnecessary motions. The score card seemed to increase the objectivity of these observations. Thus, it might have some value to the nursing instructor in diagnosing students' difficulties in organizing their work on the hospital wards.

The work activity analysis gave a great deal of information about the student's performance and problems in administering nursing care. The students themselves seemed to feel that the technique had value, but the observations produced some anxiety in students and the expenditure of time and energy on the part of the observer was great. A more economical and practical way to obtain the same data might be to combine shorter, carefully chosen, periods of continuous observation with a motion study of specific procedures. Flanagan's critical incident technique, which has been proposed for use in nursing, might also have value.(2) For instance, the quick planning demanded of a nurse in an emergency situation should be a good indication of her ability to plan. During the work activity analyses, many common incidents were identified where such quick action was essential.

This writer feels that the problem of measuring and improving organizational ability in nursing requires further study. The inability of students in this study to describe readily more than one or two ways of improving their planning dramatized this need. Future investigation might profitably include:

1. revision and refinement of the Score Card for Evaluating Organization for trial use by instructors in nursing as an evaluative technique.
2. investigation of methods of measuring organizational ability accurately and economically, perhaps by combining direct observation and rating of performance with the critical incident technique.
3. revision of the Guide for Improving Organization to a form that might stimulate more student use.
4. testing and validation of such procedures by experimental techniques similar to those reported in this study, but necessarily on a somewhat larger scale with

stricter control of observer bias and environmental variables.

BIBLIOGRAPHY

1. Adkins, Dorothy. Construction and Analysis of Achievement Tests; Development of Written and Performance Tests of Achievement for Predicting Job Performance of Public Personnel. Washington 25, D.C.: Government Printing Office, 1948.

2. Bailey, June. "The Critical Incident Technique in Identifying Behavioral Criteria of Professional Nursing Effectiveness." Nursing Research, 5:52-64, October 1956.

3. Benge, Eugene. Job Evaluation and Merit Rating. New York: National Foremen's Institute, Inc., 1941.

4. Brown, Amy. Clinical Instruction. Philadelphia: W. B. Saunders Company, 1949.

5. Brown, Clara M. Evaluation and Investigation in Home Economics. New York: F. S. Crofts and Company, 1941.

6. Brown, Francis J. "Knowledge of Results as an Incentive in School Room Practice." Journal of Educational Psychology, 23:532-552, October 1932.

7. Buros, Oscar. The Third Mental Measurements Yearbook. New Brunswick: Rutgers University Press, 1949.

8. Burton, William H. The Guidance of Learning Activities. New York: D. Appleton-Century-Crofts, Inc., 1952.

9. Charters, W. W. and Waples, Douglas. The Commonwealth Teacher-Training Study. Chicago: University of Chicago Press, 1929.

10. Cook, Walter W. Educational Measurement. Washington, D.C.: American Council of Education, 1951.

11. Cronbach, Lee J. Educational Psychology. New York: Harcourt, Brace and Company, 1954.

12. Fuerst, Elinor and Wolff, Laverne. Fundamentals of Nursing. Philadelphia: J. B. Lippincott Company, 1956.

13. Gilbreth, Lillian. "Fatigue as It Effects Nursing." The American Journal of Nursing, 35:25-28, January 1935.

14. Gilbreth, Lillian. "Management Engineering and Nursing." The American Journal of Nursing, 50:780-781, December 1950.

15. Gilbreth, Lillian, Thomas, Orpha and Clymer, Eleanor. Management in the Home. New York: Dodd, Mead and Company, 1955.

16. Good, Carter, Barr, A. S. and Scates, Donald. The Methodology of Educational Research. New York: Appleton-Century-Crofts, Inc., 1935.

17. Harmer, Bertha. Textbook of the Principles and Practice of Nursing. New York: The MacMillan Company, 1955.

18. Hatcher, Hazel M. Evaluation Techniques as Effective Teaching Techniques in Home Economics. State College: Pennsylvania State College, School of Home Economics, 1951.

19. Henneman, Richard H. "The Development of Proficiency Measures for Military Technical Specialists." American Psychologist, 3:305, July 1948.

20. Jensen, Deborah M. "A Method of Grading Students on the Ward." The American Journal of Nursing, 32:316-321, March 1932.

21. Jersild, A. T. and Meigs, M. F. "Direct Observation as a Research Method." Review of Education Research, 9:472-482, December 1939.

22. Jordan, A. M. Measurement in Education. New York: McGraw-Hill Book Company, Inc., 1953.

23. Montag, Mildred and Filson, Margaret. Nursing Arts. Philadelphia: W. B. Saunders Company, 1948.

24. Mundel, Marvin E. Motion and Time Study, Principles and Practice. Second Edition. New York: Prentice-Hall, Inc., 1955.

25. Ostle, Bernard. Statistics in Research. Ames, Iowa: The Iowa State College Press, 1954.

26. Proffiett, M. M., Ericson, E. E. and Newkirk, L. V. "The Measurement of Understanding in Industrial Arts." The Measurement of Understanding. Forty-fifth Yearbook of the National Society for the Study of Education, Part I. Chicago: National Society for the Study of Education, 1946.

27. Ryans, David G. and Fredricksen, Norman. Educational Measurement. Washington, D.C.: American Council of Education, 1951.

28. Shaw, Lena and Crumpton, Claudia E. "The Attitude of the Child in Matters of Skill." Elementary School Journal, 30:218-222, November 1929.

29. Skinner, Charles E. Educational Psychology. Third Edition. New York: Prentice-Hall, Inc., 1936.

30. Smith, Martha and Broadhurst, Jean. An Introduction to the Principles of Nursing Care. Philadelphia: J. B. Lippincott Company, 1937.

31. Symonds, Percival. "Eliminating Bias in Evaluating Students' Achievement." The American Journal of Nursing, 52:610, May 1952.

32. Taylor, Anna M. Ward Teaching. Philadelphia: J. B. Lippincott Company, 1941.

33. Thorndike, Edward L. and Gates, Arthur I. Elementary Principles of Education. New York: The MacMillan Company, 1930.

34. Tiffin, Joseph. Industrial Psychology. New York: Prentice-Hall, Inc., 1944.

35. Townsend, John C. Introduction to Experimental Method. New York: McGraw-Hill Book Company, Inc., 1953.

36. Tracy, Margaret A. Nursing an Art and a Science. St. Louis: The C. V. Mosby Company, 1942.

37. Trayer, Maurice E. "Self-evaluation in Teacher Education." Journal of Educational Research, 35:528-543, March 1942.

38. Tyler, Ralph W. "A Test of Skill in Using a Microscope." Educational Research Bulletin, 9:493-6, November 19, 1930.

39. Whitehall, Arthur. Personnel Relations. New York: McGraw-Hill Book Company, Inc., 1955.

40. Wolf, Lulu K. Nursing. New York: D. Appleton-Century-Crofts Company, 1947.

41. Wright, Marion J. Improvement of Patient Care--A Study at Harper Hospital. New York: G. P. Putnam's Sons, 1954.

APPENDIX A

A GUIDE FOR IMPROVING ORGANIZATION

I. Did I survey the situation and determine what needed to be done?

Did I:

A. visit assigned patients before beginning care?
B. evaluate needs and condition of assigned patients?
   Examples: 1. make important observations such as condition of dressings, respirations and color, voiding, etc.
   2. determine kind of hair, nail, mouth, skin care, etc., needed.
   3. determine amount of linen needed for care.
   4. determine how much patient can and should do for himself.
   5. determine if any care needed at once.
C. check the unit for routine and special equipment needed for immediate care?
D. determine function of equipment?

II. Did I inform myself adequately before beginning care?

Did I:

A. read recent nurses' notes, graphic sheets on all assigned patients?
B. read doctor's impressions and progress notes on each newly assigned patient?
C. spend my time reading only these important sections of the patients' charts?
D. go through charts with some pattern?
E. get all information needed from chart at one time?
F. read cardex cards on assigned patients?
G. check medication cards in a safe and methodical manner?
H. obtain all information needed from the cardex at one time?
I. retain information given in report regarding my patients?

J. obtain additional information needed from nursing personnel at time of report?
K. clarify my understanding of principles of nursing care with instructor or nursing personnel?

III. Did I make and follow a workable plan?

Did I:

A. determine the sequence of my nursing activities?
B. include all activities necessary for the welfare and comfort of my patients that could be anticipated?
C. make time allowances that proved realistic?
D. plan individualized care for each patient rather than doing all familiar basic procedures first?
E. follow my original plan unless circumstances changed?
F. divide my time so that all patients received a fair share of my attention according to their needs?
G. plan so that treatments and medications, where time was important, were administered when ordered?
H. plan so that treatments and medications, where time was not important, were administered when convenient to patient and nurse?
I. dovetail activities so that avoidable delays did not occur?
J. make some form of work sheet that
    1. was relatively neat and readable?
    2. grouped information regarding each individual patient?
    3. provided space for recording observations and results of treatment?
    4. included important information obtained from charts, cardex, reports and observations?
K. allow myself enough time so that I was not rushed at the end of the morning?
L. complete the assignment in the allotted time?

IV. Did I do first things first?

Did I:

A. meet the immediate needs of patients on my visit by:

1. leaving the patient safe and with the appearance of comfort and satisfaction?
2. removing excess equipment from the unit?
3. leaving the unit neat?

B. start with major activities, i.e., those activities that at the moment contributed the most toward the patients' safety and welfare?

C. delay major activities only for important reasons?

D. give care to sickest patient or one most needing attention first?

E. report observations that required immediate consideration at once?

F. delay reporting observations that did not require immediate attention until regular time of report?

V. Did I assemble equipment efficiently in an appropriate work area?

Did I:

A. find equipment easily by:
1. determining what was wanted and how it would be used before beginning search?
2. going directly to area where routine equipment is kept?
3. asking where unfamiliar equipment might be obtained rather than searching aimlessly?

B. assemble appropriate equipment by:
1. anticipating all equipment needs?
2. obtaining the most effective equipment for each task?

C. bring all needed equipment to work area at once if possible?

D. assemble all equipment before beginning when possible?

E. obtain all equipment from one place at one time when possible?

F. use available labor-saving devices such as trays and carts to transport equipment?

G. choose a work area:
1. near needed equipment?
2. that provided enough space for task?
3. where task could be accomplished quickly and easily?

H. arrange work area efficiently by:
1. eliminating unnecessary or used equipment from work area?
2. clearing work space?

3. placing equipment within easy reach?
4. working at a smooth, steady pace?

VI. Did I use work methods that conserve energy and motion?

Did I:

A. sit down when appropriate to the activity?
B. avoid unnecessary lifting, stooping and reaching?
C. use good body mechanics in lifting, turning, assisting patients and in handling and transporting equipment?
   Examples: 1. using leg muscles for lifting and pushing heavy objects.
   2. squatting rather than stooping when working in low areas.
   3. keeping back straight when lifting, turning and reaching.
D. keep work in the normal work area?
E. conserve motion by:
   1. using circular rhythmic motions?
   2. using as few motions as possible?
   3. working at a smooth, steady pace?
F. take short, spaced rest periods?

VII. Did I make good use of my time?

Did I:

A. use time of delays for other short-term activity?
B. carry out procedures in a normal length of time unless there was an unavoidable or logical reason for being slower?
C. adjust speed to situation without sacrificing quality?
D. perform sequence of activities at a moderate, steady pace?

VIII. Did I simplify my activities?

Did I:

A. omit unnecessary activities or steps such as unnecessary handling of equipment?
B. carry out the steps of a procedure or activity in the most efficient sequence?
C. plan trips out of the work area to accomplish several tasks in the same direction?
D. remove excess equipment from the work area when making trips to get needed items?

E. go to each area in sequence without retracing steps?
F. administer care, treatment and medications for each patient at one time when possible?
G. continue to work while carrying on a conversation with the patient?
H. allow myself time for quality patient care before giving assistance to other workers?

IX. Did I finish what I started?

Did I:

A. complete each task when possible before moving to another?
B. complete task at earliest opportunity when interrupted by other vital activities?
C. have relatively few activities underway at one time?
D. clean up equipment and leave ready for use?

X. Did I work with others?

Did I:

A. obtain assistance when it would make activities easier and faster for me and my patients?
B. recognize my limitations and:
    1. try to accomplish only tasks that are my responsibility and for which I am qualified?
    2. seek guidance and assistance when necessary?
C. know and fulfill my responsibilities?
D. report my observations to the appropriate person?
E. share work space and equipment with other workers?

XI. Did I keep myself informed?

Did I:

A. go directly to the available person best able to give information within lines of authority?
B. seek solutions only to the problems I hadn't the information to solve?
C. get information from procedure books, reference books and other personnel when necessary?
D. seek needed information as soon as possible?

XII. Did I communicate effectively?

Did I:

A. obtain information needed for planning nursing care without delay?
B. terminate conversations gracefully when necessary?
C. give clear, concise and orderly reports?

XIII. Did I establish good relationships with staff and patients?

Did I:

A. communicate plans to fellow workers clearly, concisely and appropriately?
B. plan so other personnel helping me were not delayed?
C. volunteer to help others when I had time?
D. refuse patients' requests gracefully when necessary?
E. encourage patients to participate in planning their care?
F. explain my plan to the patient clearly, concisely and appropriately?
G. take time to listen to patients and staff?
H. take time to meet requests of patients and staff when possible?

XIV. Did I promote confidence and trust?

Did I:

A. act upon my own judgment when I had adequate facts and experience to base it on?
B. check information and activities with others only when necessary?
C. look and sound unworried and unhesitant?
D. act quickly and logically in an emergency situation?

XV. Did I evaluate my plan and replan as I worked?

Did I:

A. change, supplement or rearrange plan to suit changing circumstances?
B. attack major problems, plan, assemble equipment and clean up in an orderly fashion in an emergency

situation?

C. omit procedures or activities only with good reason?

D. use only short-cut methods that were safe, aesthetic and really time-saving?

APPENDIX B

ORGANIZATION ANALYSIS CHECK LIST

I. Personal Reactions

A. Did I remain calm and confident?
B. Did I appear relaxed and unhurried?
C. Did I take time to stop and think when faced with a problem?

II. The Plan

A. Did I make a definite plan before beginning?
B. Did I follow the original plan? If not, why?
C. Did any unforeseen events or circumstances interfere with my original plan? How?
D. Could I have anticipated any of these unplanned events or circumstances and have incorporated them into the original plan?
E. Did I make changes in my original plan to meet changing circumstances? Were these wise and carefully thought-out changes?
F. Did I omit any activities called for in my original plan? Was this necessary? Were these measures that could be safely omitted?
G. Did I perform additional unplanned activities? Could I have identified these activities and have included them in the original plan?
H. Was I able to complete my assignment without being rushed? If not, why was my plan unworkable?

III. Saving Time

A. Did I put the time available to the best use?
B. Did I work too slowly or too fast?

IV. Saving Energy

A. Did I save myself all possible steps?
B. Were there easier and faster ways I could have performed procedures?

V. Replanning

A. What are the weaknesses of my organization?
B. What are the strengths of my organization?
C. In what specific ways can I plan to change my behavior and activities in order to improve my organization?

APPENDIX C

GUIDE FOR INTERVIEWING INSTRUCTOR

Project : I am studying the various activities carried on by student nurses during an average-sized assignment to patient care. I would like your cooperation in working with some of the students under your supervision.

Purpose : I hope to discover just what activities a student nurse performs in connection with an average-sized assignment and to determine which of these activities provide the best learning opportunities.

Procedure : I will do a work activity analysis on the chosen students during one morning's work. This is a technique used in industry to determine what activities are performed by a given person. I will observe the student's activities as unobtrusively as possible and record, by symbols, what tasks they perform and how long is devoted to each one.

Explanation: The students would be informed that this information was confidential and would not influence their grade. When the study is completed, I will give a report of the results to all who contributed to the study.

Questions : Are there any questions?

Assignments: I will contact you ahead to let you know the mornings when the observations will be made. The assignments should be of the same size for all subjects when being observed. The patients assigned to subjects should be comparable as to acuteness of illness, and these assigned patients must be located in one room which is approximately the same distance from service rooms on all observations.

APPENDIX D

GUIDE FOR INITIAL INTERVIEW WITH SUBJECTS

Project	:	I am studying the various activities carried on by student nurses as a part of my work toward a master's degree. Miss Slocum has given me permission to study your group.
Purpose	:	To discover just what activities a student nurse performs in connection with an average-sized assignment and to determine which of these activities provide the best learning opportunities.
Procedure	:	I will be doing a work activity analysis during one morning's work. This is a technique used in industry to determine what activities are performed by a given person. I will observe your activities as unobtrusively as possible and record, by symbols, what tasks you perform and how long is devoted to each one.
Consequences:		This information will be for my personal use, and you will not be identified by name in any written report of this study. It will have no effect on your grade. In addition to the observation period, I will want to talk to you afterward to get your observations about your activities. When the study is completed, I will give a report of the results to all who contributed to the study.
Questions	:	Are there any questions?
Arrangements:		I will let you know the day ahead when this observation will be made. You may ask additional questions at that time. Your instructor will plan an assignment for you that is about average in size and difficulty.

APPENDIX E

GUIDE FOR INTERVIEWING EXPERIMENTAL SUBJECTS

Questions :

1. Was the observation conducted on a morning when you feel your activities were typical of those you usually perform? Why?
2. What activities did you feel provided the best learning opportunities? Why?
3. Did you feel uneasy during the observation period? How long did you feel this way?
4. Did you feel that you performed differently during the observation period than you would have if alone?

Time Study : Here is a copy of your time study. It is interesting to note that you washed your hands _____ times and spent _____ minutes in direct contact with your patients. If you would like to chart your path on this diagram of the floor plan of the ward while I read off your trips, you can make a flow chart to show your motion path between 7 a.m. and 8:30 a.m. Here are some other flow charts for comparison.

Questions :

5. Are there any questions about your time study?
6. Are you still trying to improve your organization?
7. What have you done in the past to develop better planning and work habits? Anything else?

Guide : You might find this written guide (Organization Analysis Check List) helpful in improving your organization. Would you try it and see if it seems to have value? Please do not share it with others as it is in a rough form.

Future
Observations: When you move to the medical ward, I would like to do another work activity analysis to see how you spend your time on another clinical unit.

APPENDIX F

GUIDE FOR INTERVIEWING CONTROL SUBJECTS

Questions :

1. Was the observation conducted on a morning when you feel your activities were typical of those you usually perform? Why?
2. What activities did you feel provided the best learning opportunities? Why?
3. Did you feel uneasy during the observation period? How long did you feel this way?
4. Did you feel that you performed differently during the observation period than you would have if alone?
5. Are you still trying to improve your organization?
6. What have you done in the past to develop better planning and work habits? Anything else?

Time Study : Here is a copy of your time study. I will go over it, and perhaps we can identify the strengths and weaknesses of your usual organizational pattern.

Questions :

7. Are there any questions about your time study?

Guide : You might find this written guide (Guide for Improving Organization) helpful in improving your organization. Would you try it and see if it seems to have value? Please do not share it with others as it is in a rough form.

Future Observations: When you move to the medical ward, I would like to do another work activity analysis to see how you spend your time on another clinical unit.

APPENDIX G

SCORE CARD FOR EVALUATING ORGANIZATION

Scoring: The student's score will be arrived at by determining, for each separate criterion, which of the following categories is most descriptive of her performance.

1
This kind of activity is seldom observed.

2
This kind of activity is observed much of the time.

3
This kind of activity is observed in almost all instances.

		Score
I.	How does she show that she surveys the situation and determines what needs to be done?	
	Does she:	
	A. visit all assigned patients before beginning care?	1 2 3
	B. evaluate needs and condition of assigned patients?	1 2 3
	C. check the unit for routine and special equipment needed for immediate care?	1 2 3
	* D. determine function of equipment?	1 2 3
		Total
II.	How does she show that she informs herself adequately before beginning care?	
	Does she:	

		Score
A.	read graphic sheets and recent nurses' notes on charts of assigned patient?	1 2 3
* B.	read doctor's impressions and progress notes on each newly assigned patient?	1 2 3
C.	spend her time reading only these important sections of the patients' charts?	1 2 3
D.	go through charts with some pattern?	1 2 3
E.	get all information needed from charts at one time?	1 2 3
F.	read cardex cards on assigned patients?	1 2 3
* G.	check medication cards in a safe and methodical manner?	1 2 3
H.	obtain all information needed from the cardex at one time?	1 2 3
* I.	retain information given in report regarding her patients?	1 2 3

Total

III. How does she show that she <u>makes and follows a workable plan</u>?

Does she:

A.	determine the sequence of her nursing activities?	1 2 3
B.	include all activities necessary for the welfare and comfort of the patient that can be anticipated?	1 2 3
C.	plan individualized care for each patient rather than doing all familiar basic procedures first?	1 2 3
D.	follow her original plan unless circumstances change?	1 2 3
E.	divide her time so that all patients receive a fair share of her attention according to their needs?	1 2 3
* F.	plan so that treatments and medications, where time is important, are administered when ordered?	1 2 3
* G.	plan so that treatments and medications, where time is not important, are administered when convenient to patient and nurse?	1 2 3

		Score
H.	dovetail activities so that avoidable delays do not occur?	1 2 3
I.	make some form of work sheet that:	
	1. is relatively neat and readable?	1 2 3
	2. groups information regarding each individual patient?	1 2 3
	3. provides space for recording observations and results of treatments?	1 2 3
	4. includes important information obtained from charts, cardex, reports and observations?	1 2 3
J.	allow herself enough time so that she is not rushed at the end of the morning?	1 2 3
K.	complete the assignment in the allotted time?	1 2 3
		Total

IV. How does she show that she <u>does first things first</u>?

Does she:

A.	meet the immediate needs of patients on her visit by:	
	1. leaving the patients safe and with the appearance of comfort and satisfaction?	1 2 3
	2. removing excess equipment from unit?	1 2 3
	3. leaving unit neat?	1 2 3
B.	start with major activities, i.e., those that at the time contribute most to the safety, welfare and comfort of her patients?	1 2 3
C.	delay major activities only for important reasons?	1 2 3
D.	give care to sickest patient or one most needing attention first?	1 2 3
E.	report observations that require immediate consideration at once?	1 2 3
F.	delay reporting observations that do not require immediate consideration until regular time of report?	1 2 3
		Total

Score

V. How does she show that she assembles equipment efficiently in an appropriate work area?

Does she:

A. find equipment easily by:
   1. determining what is wanted and how it will be used before beginning search? 1 2 3
   2. going directly to area where routine equipment is kept? 1 2 3
   * 3. asking where unfamiliar equipment may be obtained? 1 2 3

B. assemble appropriate equipment by:
   1. anticipating all equipment needs? 1 2 3
   2. obtaining the most effective equipment for each task? 1 2 3

C. bring all needed equipment to work area at once if possible? 1 2 3

D. assemble all equipment before beginning if possible? 1 2 3

E. obtain all equipment from one place at one time when possible? 1 2 3

F. use available labor-saving devices such as trays and carts to transport equipment? 1 2 3

G. choose a work area:
   1. near needed equipment? 1 2 3
   2. that provides enough space for task? 1 2 3
   3. where task can be accomplished quickly and easily? 1 2 3

H. arrange work area efficiently by:
   1. eliminating unnecessary or used equipment from work area? 1 2 3
   2. clearing work space? 1 2 3
   3. placing equipment within easy reach? 1 2 3
   4. arranging equipment in order of use? 1 2 3

Total

VI. How does she show that she uses work methods that conserve energy and motion?

Does she:

		Score
A.	sit down when appropriate to the activity?	1 2 3
B.	avoid unnecessary lifting, stooping, reaching?	1 2 3
C.	use good body mechanics in lifting, turning, assisting patients, and in handling and transporting equipment?	1 2 3
D.	keep work in the normal work area?	1 2 3
E.	conserve motions by:	
	1. using circular, rhythmic motions?	1 2 3
	2. using as few motions as possible?	1 2 3
	3. working at a smooth, steady pace?	1 2 3
	Total	

VII. How does she show that she <u>makes good use of her time</u>?

Does she:

A.	use time of delays for other short-term activity?	1 2 3
B.	carry out procedures in a normal length of time unless there is an avoidable or logical reason for being slower?	1 2 3
C.	adjust speed to situation without sacrificing quality?	1 2 3
D.	perform sequence of activities at a moderate, steady pace?	1 2 3
E.	take short, spaced rest periods?	1 2 3
	Total	

VIII. How does she show that she <u>simplifies activities</u>?

Does she:

A.	omit unnecessary activities or steps?	1 2 3
B.	carry out the steps of a procedure or activity in the	

		Score
	most efficient sequence?	1 2 3
C.	plan trips out of the work area to accomplish several tasks in the same direction?	1 2 3
D.	remove excess equipment from the work area when making trips to get needed items?	1 2 3
E.	go to each area in sequence without retracing steps?	1 2 3
F.	administer care, treatment and medications for each patient at one time when possible?	1 2 3
G.	continue to work while carrying on a conversation with the patient?	1 2 3
H.	allow herself time for quality patient care before giving assistance to other workers?	1 2 3
		Total

IX. How does she show that she finishes what she starts?

Does she:

A.	complete each task when possible before moving to another?	1 2 3
B.	complete task at earliest opportunity when interrupted by other vital activities?	1 2 3
C.	have relatively few activities underway at one time?	1 2 3
D.	clean up equipment and leave ready for use?	1 2 3
		Total

X. How does she show that she works with others?

Does she:

*	A.	obtain assistance when it will make activities easier and faster for her and patients?	1 2 3
	B.	recognize her limitations and:	
		1. try to accomplish only tasks that are her responsibility	

Score

and for which she is qualified? 1 2 3

2. seek guidance and assistance when necessary? 1 2 3

C. know and fulfill her responsibilities? 1 2 3

D. report her observations to the appropriate person? 1 2 3

E. share work space and equipment with other workers? 1 2 3

Total

XI. How does she show that she knows herself informed?

Does she:

A. go directly to the available person best able to give information within lines of authority? 1 2 3

B. seek solutions only to the problems she hasn't the information to solve? 1 2 3

C. get information from procedure books, reference books and other personnel when necessary? 1 2 3

D. seek needed information as soon as possible? 1 2 3

Total

XII. How does she show that she communicates effectively?

Does she:

A. obtain needed information from patient and staff without delay? 1 2 3

B. terminate conversations gracefully when necessary? 1 2 3

C. give clear, concise and orderly reports? 1 2 3

Total

Score

XIII. How does she show that she is establishing good relationships with staff and patients?

Does she:

			Score
*	A.	communicate plans to fellow workers clearly, concisely and appropriately?	1 2 3
*	B.	plan so other personnel helping her are not delayed?	1 2 3
*	C.	volunteer to help others when she has time?	1 2 3
*	D.	refuse patients' requests gracefully when necessary?	1 2 3
	E.	encourage patients to participate in planning their care?	1 2 3
	F.	explain her plan to the patient clearly, concisely and appropriately?	1 2 3
	G.	maintain a leadership role in relationships with the patient?	1 2 3
	H.	take time to listen to patients and staff?	1 2 3
	I.	take time to meet requests of patients and staff when possible?	1 2 3
			Total

XIV. How does she show that she promotes confidence and trust?

Does she:

	A.	act upon her own judgment when she has adequate facts and experience to base it on?	1 2 3
	B.	check information and activities with others only when necessary?	1 2 3
	C.	look and sound unworried and unhesitant?	1 2 3
*	D.	act quickly and logically in an emergency situation?	1 2 3
			Total

Score

XV. How does she show that she evaluates her plan and replans as she works?

Does she:

A. change, supplement or rearrange plan to suit changing circumstances? 1 2 3

* B. attack major problems, plan, assemble equipment and clean up in an orderly fashion in an emergency situation? 1 2 3

C. omit procedures or activities only with good reason? 1 2 3

D. use only short-cut methods that are safe, aesthetic and time-saving? 1 2 3

Total

Grand Total _____

APPENDIX H

FINAL QUESTIONNAIRE

1. a. Do you feel your organization has improved over what it was when I first observed your performance?

Yes ____
No ____
Do not know ____

b. If you feel that your organization is better, to what do you attribute this improvement?

2. a. Did you find the written guide helpful?

Yes ____
No ____
Do not know ____

b. How was it helpful?

c. How much did you use it?

Almost daily ____
Many times ____
Several times ____
Once ____
None ____

3. Did you feel uneasy at any time during the second observation?

No ____
First hour or two ____
Whole period ____

4. Did you feel that you performed differently during the observation period than you would have if alone?

Yes ____
No ____
Do not know ____

5. a. Did you find the analysis of your time study helpful?

Yes ____
No ____
Do not know ____

b. How did it help you?