THE OPINIONS OF 277 STUDENT NURSES AND
46 INSTRUCTORS REGARDING THE USE OF
PROGRAMMED INSTRUCTION
IN NURSING

by

Marcella Cate RN B.S.

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APPROVED:

‾‾
(Associate Professor in Charge of Thesis)

‾‾
(Chairman, Graduate Council)

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m.s.c.

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CHAPTER I

INTRODUCTION

In their recent report, [23] the Surgeon General's Consultant

Group on Nursing indicated that there is now an urgent need for more

nurses. This need will not be easily met for a number of reasons.

First of all, this present shortage of nurses is coupled with an

equally, and in the long run a more alarming, shortage of teachers

of nursing. There is also to be dealt with the results of modern re-

search, an unprecedented expansion of knowledge in the field of nurs-

ing which creates a constant pressure to include more information in

an already overcrowded curriculum in order to develop in the students

more advanced skills for, and a greater understanding of, their chosen

profession. At the same time, there is increased pressure to

reduce the time required to turn out more and better prepared gradu-

ate nurses.

Educators in nursing are all too aware of this nearly impossible

task before them. They must teach more to more students in less

time than less has been taught to fewer students in the past. The

advent of programmed instruction in nearly every field of learning may offer a practical solution to this seemingly overwhelming problem. But, since the kind and amount of her students' educational experience must be a primary concern of every teacher, it is necessary to evaluate all new methods of teaching as they develop in order to apply them with skill and understanding. Estelle Gallegly states:

> Programmed instruction represents a new break through in learning methodology. Because of the need to cover so much material in an increasingly limited time, yet provide for individualized assistance to develop student potential, such an instructional approach is particularly suited for nursing education. [8]

Yet, Kalus has written:

> . . . because of the novelty of the technique and its potential impact on education more predictions are made as to its potential than facts are collected as to its capabilities . . . [10]

Therefore, it would seem appropriate to evaluate this educational tool that there may be better understanding of the educational needs of the student and the contribution, if any, programmed instruction can make to the field of nursing education.

1. Statement of the Problem

Marie Seedor published the first programmed instruction for student nurses in 1963. [19] In the past three years more and more educators in nursing have been writing, testing and using programmed

materials in the teaching of student nurses.[9, 11, 21] In a recent survey of those nursing schools using programmed materials it was discovered that twenty-seven of the one hundred twenty-four schools surveyed were using programmed materials. Seventy-two percent of those schools surveyed which were not using programmed materials at the time indicated that they planned to do so in the future.[3]

The subject of programmed instruction for student nurses is complex. Programmed instruction has been cast and miscast by educators in the role of both hero and villain. It has been said that when proponents of a method translate their reported successes with auto-instructional devices in carefully selected learning conditions into a panacea which will remedy all educational problems and remove all educational pressures, the attitude thus engendered precludes intelligent inquiry into what resources are most effective for which learners in what kinds of learning situations.[10]

Many factors affect the use of programmed instruction. Some of these factors may be classified as primarily organizational in that they involve cost, curriculum changes, necessary consultations for the writing of programs, and the processes for the testing of new programs. Although these factors are important, they fall outside the scope of this study. Other factors may be classified as pedagogic in that they relate primarily to the individual learner, the instructor, and the learning process. Among these factors, those which may be of import are the course objectives best met by programmed instruction,

the boredom factor, the method of making assignments, those areas in which programmed materials have been used, and the reactions of both students and teachers to programmed materials.

2. Purpose of Study

The purpose of this study is to determine the opinions held by instructors and students regarding the applicability of programmed instruction in schools of nursing.

This study was designed:

1. to identify student opinions and reactions to programmed instruction,

2. to determine how programmed instruction is being used in schools of nursing,

3. to determine the areas of needed change, as expressed by the nurse instructors, in the present programmed materials being used in schools of nursing.

With the application of research methods and objective evaluation, hopefully the answers to the following questions will become evident.

1. How is programmed instruction being used in schools of nursing?

2. How are assignments in programmed materials being made?

3. How are the students reacting to programmed instruction?

4. In which areas of nursing is programmed instruction most applicable?

3. Limitations

This study was limited through the following means:

1. Information was obtained through the use of a questionnaire submitted to 46 instructors in the state of Washington. The schools were Baccalaureate Degree, Diploma, Associate Degree, and Practical Nurse schools listed by the National League for Nursing, approved in 1965.

2. No effort was made to enumerate differences in the students and faculty of the various schools except as they were manifested in the data collected.

3. No attempt was made to evaluate the ability of programmed instruction to teach: rather a concerted effort was made to find out if it is used and if it can be effectively used in schools of nursing.

4. The findings of this study were limited to these schools of nursing and to these instructors and students at this point in time. It was anticipated that as a result of the study other facts of interest would be discovered.

5. This study was limited to data obtained by means of a questionnaire submitted to instructors and students in selected schools of nursing in the state of Washington.

4. Assumptions

The assumptions which affected the approach, method, and recommendations were that:

1. The instructors in these schools of nursing were aware of programmed learning as a method of teaching.

2. The instructors were able to define the knowledge, understandings, skills, and appreciations that resulted from that part of the unit or course taught by programmed instruction.

3. The instructors in schools of nursing have an understanding of the principles of learning.

4. Since the aim of any method of teaching is the student behavior change, the quality of student behavior change would be an appropriate criterion for the evaluation of programmed instruction as a teaching tool.

5. The most salient observations could be made by knowledgeable nursing instructors, thus these observations could be of inestimable value in assessing the true merit of programmed instruction.

6. The cooperation of the students and faculty would be elicited.

7. A tool could be devised which would be both valid and reliable for purposes of this study.

5. Significance of the Problem

The findings of this study may be of value to nurse educators who have accepted responsibility for the development of curricula, evaluation of teaching methods, and the selection of learning materials

for student nurses. The problem is important to the field of nursing and to a recognized need for the alleviation of nursing shortages. It is important to all schools of nursing, the aim of which is to produce capable nurses. Thus, the problem dealt with here is important to the health and welfare of the general public.

The systematic study of the problem, that is the delineation of the areas of study appropriate to this method, coupled with the opinions and evaluations of instructors and students, will contribute to the future effective use and writing of needed programs in the field of nursing.

6. Procedure

Source of data. -- The primary source of data consisted of responses of 277 student nurses and 46 instructors to a mailed questionnaire. The secondary source of data was the literature and related studies that were reviewed.

Procedure used in the collection of data. --

1. The literature was searched for references related to the use of programmed instruction in schools of nursing, expressions of opinions of those instructors using programmed instruction, student's reactions to this method of instruction, and the adjustments that were felt to be necessary for an

effective use of programmed material.

2. A statement of the problem and the purposes of the study was formulated.

3. Two questionnaires were constructed: one for students, the other for instructors. Each item was presented in such a way as to elicit information that contributed toward the achievement of the purposes of the study. (Appendix A)

4. The population for the pilot study was selected from schools of nursing in Oregon.

5. Arrangements were made to conduct a pilot study, which is described as follows:

    a. Five instructors and seventeen students were selected from two schools of nursing in Portland, Oregon.

    b. The two pilot schools had the following characteristics. Both institutions had used programmed instruction in the teaching of student nurses. One school conducted a collegiate program leading to a Baccalaureate degree; the other was a diploma school conducted by a hospital.

    c. The questionnaires were administered.

    d. Responses were tabulated and necessary revisions were made in the tool.

    e. These data were not included in the final study.

6. A letter explaining the purpose of the study and a self-addressed, stamped postcard requesting information pertaining to the use of programmed materials was mailed to all of the Directors of Schools of Nursing in Washington. The letter's authenticity was verified by a post script from the thesis adviser. (Appendix B)

7. Thirty-eight letters were mailed; no response was received from eleven schools. Of the 19 schools which expressed a willingness to participate, one school stated that the use of programmed material had been too limited to insure the honesty of student responses.

8. Eight schools were selected in these categories: two Practical nurse schools, two Associate Degree schools, three Diploma, and one Baccalaureate Degree school.

9. Upon receipt of an indication of willingness to participate, a schedule for visiting selected schools was made.

10. The questionnaires were distributed to selected students and faculty.

11. Returns were tabulated (Master tabulation Appendix C) and subjected to statistical analysis by Data Processing.

12. The study was summarized. Conclusions were drawn from these results and recommendations were made for further study.

7. Overview of Study

1. Chapter One:

This chapter includes a description of the general problem, a statement of the purpose of this study, and a statement of the significance of the problem.

2. Chapter Two:

This chapter consists of a review of the literature and related studies.

3. Chapter Three:

The method and steps of the study are described in detail in this chapter. Findings are described and illustrated in appropriate tables. An interpretation of the findings is offered, based on appropriate statistical evidence.

4. Chapter Four:

A summary of the study is made, conclusions are drawn, and recommendations for further study are offered.

CHAPTER II

REVIEW OF THE LITERATURE AND RELATED STUDIES

1. Introduction

During the last few years, programmed instruction has under-
gone rather intensive study, examination, and testing as an educa-
tional instrument. The number of articles and books related to this
subject is overwhelming. Therefore, the literature was searched for
data specifically related to the purposes of this study, namely: the
opinions held by instructors and students regarding programmed
instruction, the changes needed as expressed by these instructors,
and how programmed instruction is being used in schools of nursing.

A recent business survey, reported in Dun's Review (1964)
entitled "Programmed Learning: Return to Reality," discusses the
disappointment of industry with teaching machines and programmed
textbooks as a potential market, but also describes how programmed
materials, essentially programmed textbooks, have been beneficial
in industrial training. Also noted was the fact that fewer papers with
programmed instruction in their titles are now presented at profes-
sional meetings than were a few years ago. [25]

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A literature study made at about the same time, 1964, by Crosby at the Catholic University, Washington, D. C., enumerated nine articles on programmed instruction that had appeared in American nursing periodicals to that date: two in 1961, four in 1963, and three in 1964. [6] Since that review by Crosby, McDonald's article, "New Dimensions in Health Education," was published in 1964. [12] Four articles were published in 1965, and three were published in 1966.

The Washington State Nurses' convention held in Seattle in 1966 conducted a full day workshop on Programmed Instruction. The Western Interstate Commission for Higher Education published in 1964 a report of a workshop on new teaching techniques for nursing faculty which included abstracts of 19 projects utilizing programmed instruction. At the national meeting of the American Nurses Association held in San Francisco in 1966, Programmed Instruction was a subject of study. All of this attention to programmed instruction does not seem to concur with Buckley and Taber's view that programmed instruction is returning to the laboratory; at least that return is not taking place in nursing schools.

The increasing number of studies, workshops, and articles reported in the nursing literature of America attests to the fact that more and more schools of nursing are employing programmed instruction. For example, the first survey of programmed instruction in

schools of nursing was reported by Evelyn Revels at the first annual
convention of the National Society for Programmed Instruction in
1962.[16] Her survey was a nation-wide sampling of 1,084 schools
in which Baccalaureate, Associate Degree, and Diploma schools of
nursing were included. Of the 885 questionnaires returned, only five,
six percent, indicated that they were using any kind of programmed
material.[16]

In January, 1965, the schools of nursing, as designated by the
accredited list of the National League for Nursing, were again sur-
veyed. Of the 124 schools in the survey, 94 responded. The total
number of schools of nursing using programmed materials was 27,
twenty-eight percent of the respondents.[3]

The feelings and reactions of nursing students to programmed
instruction, while not the primary purpose of investigation, have been
included in many of the studies. The first formal report on the use of
programmed instruction in nursing schools appeared in May, 1963,
when Marie Seedor published the conclusions drawn from a study in
the experimental use of a programmed unit on Asepsis in two com-
munity colleges in New York state. When the students (N75) completed
the programmed unit, they were asked to respond to a questionnaire
related to their reactions to this method of teaching.

To the question, "If you had a choice, in learning
the material on asepsis, what method of instruction
would you select?". . . A majority of the students
checked programmed instruction.

When asked if they thought that the new teaching
method, programmed instruction, was interesting
or uninteresting, over 90 percent of the students
checked interesting and very interesting.

Marie Seedor concluded that students were satisfied with the teaching

method. She further stated, "There is some evidence that the

instructors who used it were satisfied with the new teaching

method."[19]

Genevive Burcham, using Marie Seedor's programmed text

"Introduction to Asepsis" with 28 sophomore student nurses at

Montana State College, found that one of the problems encountered

in the project ". . . was that the students were not motivated to study

the assigned work for which there would be no grade, so therefore,

did not take the time to study the home assignments . . ."[4]

Marilyn J. Hanna et al.'s study at the University of New

Mexico reported on nursing students' reaction to this same Seedor

programmed text. Students participating in the study numbered

seventy-two: including 27 sophomores, 19 juniors, and 26 seniors in

the Baccalaureate program. The conclusions drawn from the data on

students' reactions included the following:

> . . . . Student comment was roughly divided equally
> between favorable and non-favorable comments.
> Teachers felt that while the text could be improved,
> it is worth using on the sophomore and junior level.
> They would not recommend using it as a review for
> senior students unless the clinical area provides
> opportunity for practice. [9]

Stewart, of the University of Washington, would seem to concur.

From her use of Chapter II, section III, of this same programmed

text with fifteen junior student nurses in the Baccalaureate program,

she concluded that "most students were quite enthusiastic although

they indicated that the material would have been more useful to them

at the beginning of the junior year." [22]

These five studies evaluated student reactions to the same pro-

grammed text. Pluckhan, at the University of Colorado, tested the

effectiveness of the General Relationship Improvement Program

developed by the Human Development Institute, Inc. of Atlanta,

Georgia. Pluckhan, using the student questionnaire based on the

Holland-Skinner Program rating scale as a model, concluded that

the twenty-seven student nurses' attitudes were quite favorable.

> . . . all students (27) believed the content of the
> program was worthwhile, about two-thirds (16)
> believed they were able to learn more with the
> program, and the majority (26) found working
> with a partner was very helpful. [14]

2. Review of Related Studies

Arlen Quan, M. D., of the University of Oregon Medical School

and using the same program as Puckhan, conducted a study in the fall

of 1963. Eighty-two dental students and 40 medical students partici-

pated in his study. The students were paired for the term at random

and were expected to complete one session of the program either

during the class time assigned or during the week prior to class.

Each student was expected to turn in a weekly log discussing his

reactions to the material in the program and the effect on himself

and his relationships to others in his daily life. Role playing,

general discussion, and demonstration of on going interpersonal

processes occurred when feasible during the class hour when the

time was not used to work with the program. The impressions of

this author included the following statement:

> A minority of students was antagonistic to the
> program for a variety of reasons, including the
> seemingly simple and uncomplicated principles
> involved and their repetitiveness. This was
> most often noted during the early sessions, but
> such student attitudes tended to become more
> favorable as experience with the program in-
> creased . . . . (15)

Student reactions to programmed instruction was the subject

of a study done by Howard Roth at Neward State College and reported

in Programs, Teachers and Machines (1964). In this study, one in-

structor assigned the book version of the Holland and Skinner program,

The Analysis of Behavior, to two groups of students. One group

consisted of a class of 24 undergraduate freshmen in a general

psychology course; the second group was composed of a class of 26

students in a graduate advanced educational psychology course.

Written responses were obtained from the students at the termination

of these courses concerning their feelings and impressions with re-

gard to this material. Roth reports two general student reactions to

the program from his class of undergraduates.

> Twenty-two students reported that they were
> initially interested in their work on this mate-
> rial, but that soon . . . tired of the method and
> ended up by disliking it. Two students reported
> that they liked the work when they began and
> also when they finished, and no dislike for the
> method developed. Seven students mentioned
> that though they disliked this method, they did
> learn the information presented in the program.

Roth observed that without constant insistance that work continue on

the program students tended to stop work and that right answer re-

inforcement did not seem to be potent enough to insure steady, self-

initiated work. Roth further observed that feelings and attitudes of

distaste and disinterest hampered the effectiveness of the program.

The graduate students developed feelings about the mechanized, non-

thought provoking, anti-insightful nature of this form of instruction.

In both cases it was found necessary to encourage and direct the

students to continue working on the program. [17]

Much has been written about the concepts of learning that are

fundamental to programmed instruction. Among these are the

concepts of linear learning, bite-size steps, immediate reinforce-
ment, and errorless learning. "Paradoxically, the principle sources
of boredom in programmed instruction are the very characteristics
that make them effective as materials for automated self-instruc-
tion." [1]

Taba delineates four guidelines for helping students combat
those conditions which are inherent to programmed instruction. (1)
Whenever a student experiences difficulty with any part of the program,
the program is at fault, not the student. Therefore, the help the stu-
dent receives should be free of any accusations of carelessness, lazi-
ness, or inattentiveness on the part of the student. (2) Programmed
instruction is an individualized study situation in which occasion for
social interaction is minimized. Opportunities for social interaction
ought to be provided . . . . (3) The difficulty a student experiences
with a particular frame may involve meanings and relationships unan-
ticipated by the programmer. The help the student needs would con-
sist of clarification of the programer's line of reasoning, or in the
case of related words, the teacher must help the student see the subtle
distinction between such words. (4) Since the students work at their
own rate of learning, different students in the same class will be at
widely ranging points in the program at any given time. There-
fore, the instructor must have a thorough knowledge of the

entire content of the program. [24]

Identification of the adjustments that appear to contribute to an effective use of programmed learning materials was the purpose of a state and nation-wide survey conducted by the Pennsylvania Department of Public Instruction under the sponsorship of the United States Office of Education, Title VII grant.

Four hundred and three persons were questioned in the course of the survey. [1] Of these persons, 89 were individuals throughout the nation who were well-informed in the use of programmed learning material. The remaining respondents were Pennsylvania educators who had used programmed learning materials during the 1962-63 school year with a minimum of 20 students.

Some of the general conclusions reached as a result of the survey were:

> . . . ninety-seven percent of the administrators and eighty-five percent of the teachers were recommending continued use of programmed instruction.
>
> Approximately two-thirds of the teachers have been using programmed instruction for regular instruction, and one-fourth of the teachers have been using programmed instruction for enrichment.
>
> . . . schools are introducing some method of minimal student coverage rather than permitting complete self-pacing by all students.

. . . Inservice programs prior to the introduc-
tion of programmed instruction are essential for
its successful use.

. . . It is essential for a teacher to work through
a program prior to having students work with these
programmed instructional materials.

. . . The objectives of instruction are not changed
because of programmed instruction.

It was further noted that the teachers and administrators held

specific attitudes concerning programmed materials. For example, pro-

grammed instruction provides a saving of class time. Students do

not select a greater number of individual study projects in conjunc-

tion with programmed instruction. Students generally achieve more

than they did when they were taught by conventional instruction. The

retention of knowledge is equal to, or greater than, retention through

conventional instruction. Programmed instruction does as well as

conventional instruction in providing interaction between teacher and

student but not as well in providing interaction among students.

In reporting this survey Archer and Sanzotta recommended that

. . . students be permitted to complete program-
med instructional materials during the scheduled
class periods with the teacher supplementing the
materials by teacher-led discussions and related
educational learning experiences. However this
does not preclude students from using these mate-
rials at home as well as in school.

. . . Teachers should have group discussions
and demonstrations whenever it is possible to

provide additional educational learning experiences
beyond that which programmed instructional mate-
rials alone can contribute.[1]

3. Summary

This review of the related literature has attempted to give a

background for the study of programmed instruction in schools of

nursing. In view of the recent growth of programmed instruction in

schools of nursing, the literature on the extent of application, student

and teacher reactions, and the adaptations needed in the use of pro-

grammed instruction, have been presented in this chapter.

There are some studies, reported in the literature, that evalu-

ate the specific programs used in schools of nursing, but studies of

students' reactions and instructors' attitudes were not found. Quan,

Steward, Pluckhan, Burcham, et al. agree that student reactions

to programmed instruction is an important factor in the effective use

of this teaching method.

There has been little published about the problems encountered

by the nursing instructor using programmed instruction. The one

related study did conclude that the proper application of this tool is

the nidus of effective self-instructional learning.

Other approaches to programmed instruction that have received

notice in the literature include comparative studies, overt and covert

responses, spontaneous recovery effect, computer programmer,

problem solving, and patient teaching.

Chapter II has reviewed the related literature. The findings of

the study are presented in Chapter III.

CHAPTER III

REPORT OF THE STUDY

1. Introduction

Purpose of the study. -- This descriptive study was undertaken

to determine the opinions held by instructors and students regarding

the applicability of programmed instruction in schools of nursing.

The study was designed: (1) to identify student opinions and reactions

to programmed instruction, (2) to determine how programmed instruc-

tion is being used in schools of nursing, and (3) to determine the areas

of needed change, as seen by the nurse instructors, in the program-

med materials currently being used in schools of nursing. The need

for this type of study has been noted by Roth, Mosel, and Pluck-

han,[13, 14, 17] among others, who have suggested that knowledge

of students' and instructors' reactions to programmed instruction

would improve teaching effectiveness and could be gained from a

careful exploration and evaluation of the use and place of program-

med instruction in the curriculum.

Development of the tool. -- After a review of the literature, two

separate questionnaires were developed, one for students, the other

for instructors (Appendix A). Part I of the questionnaire for students included general information and an identification of the independent variables relevant to students. Part II of the questionnaire for students was composed of six statements pertaining to the students' own conclusions concerning the value and effect of programmed instruction to and on the learning process. Part III of the questionnaire for students was composed of four statements designed to determine the student's tolerance of the boredom factor inherent in programmed material. Part IV of the students' questionnaire consisted of two open-end questions designed to elicit the students' general reaction, and the reasons for this reaction, to the programmed materials used.

The questionnaire for instructors included general information such as questions relevant to the school, position, clinical area, type of school, and kind of programmed instruction used. Questions 10 through 13 relate to method of assignments, scope of materials, area of nursing, and the objectives the instructors felt were met through the use of programmed materials. Questions 14 through 16 were open-end questions designed to elicit the instructor's reaction to, and suggestions for, the use of programmed materials in the teaching of nursing.

A preliminary draft of the questionnaires was developed and

presented to experienced professional persons for their constructive criticism. Their comments lead to the next draft.

Pilot study. -- The questionnaires were then administered to a group of students and their instructors in a Baccalaureate school of nursing and a Diploma school of nursing in the state of Oregon to determine whether or not the questionnaires were readily understandable. The purpose of the study and the questionnaires was explained. Upon completion of the questionnaires, the participants were asked if they had difficulty in answering any of the questions. All called for revisions were made. The questionnaires were again reviewed by a group of experienced nurses. The final drafts were carefully scrutinized to ascertain if each item were related to the purposes of the study. The questionnaires as printed are in Appendix A.

The findings of the pilot study were such that could be categorized and used as a basis for the formulation of certain conclusions.

No data obtained in the pilot study were included in this final study.

Selection of schools. -- The schools of nursing used in the study were selected on the basis of the following criteria:

1. The students in these schools of nursing had used programmed instruction in their study of nursing.

2. At least one instructor in the school had used programmed instruction in her teaching of nursing.

3. The schools indicated a willingness to participate in this study.

4. The school was listed by the National League for Nursing as having been accredited for the year of 1965.

5. The school was located in the state of Washington.

Procedure for collecting data. -- A letter explaining the purpose of the study and a self-addressed post card requesting information pertaining to the use of programmed instruction were mailed to 38 Directors of the Schools of Nursing. (Sample of this correspondence may be found in Appendix B.)

Selection of participating schools. -- Eight of the nineteen schools which were willing to participate met the criteria. It is not known whether any of the other nineteen would also have met the criteria. Since the eight selected represented all four types of schools and involved 277 student participants, no further attempt was made to involve more schools. Upon receiving an indication of their willingness to participate in the study and of their having used programmed materials, a schedule for the administration of the questionnaires in selected schools was made.

The method of administering the questionnaires to the participants varied. Some of the Directors of the schools elected to administer the questionnaires themselves. Other schools included in the

study were visited and the questionnaires administered by the investigator.

2. Findings of the Study

General information. -- Information concerning the opinions of student nurses in eight Washington schools of nursing is presented in the same sequence as were items in the questionnaire. The questionnaires were administered in the eight selected schools of nursing to 277 students. The data were tabulated according to the types of school of nursing, and master tabulation sheets were prepared (Appendix C). The students who have used programmed instruction were classified according to the year in study and type of school attended. This variable included 51 students in the Practical Nursing programs, 88 students in the Associate Degree programs, 97 students in the Diploma programs, and 41 students in the Baccalaureate programs. The information derived from items one and two is shown in Table 1.

Table 1. Distribution of 277 Student Nurses According to Type of Schools Attended and Year of Enrollment

Type of School	Year of Enrollment				
	First	Second	Third	Fourth	Total
(1)	(2)	(3)	(4)	(5)	(6)
Practical Nursing . .	51				51
Associate Degree . . .	57	26	5		88
Diploma	75	16	6		97
Baccalaureate			19	22	41
Total	183	42	30	22	277

Item 3 sought information as to the use of programmed materials. This item was unanimously answered in the affirmative by the 277 students. The items had been included because it was not known if all students in the selected schools would have used programmed materials.

Part II consisted of items 4 through 9 concerned with the students' indication of how they were benefited by programmed instruction. The directions to the students read "The following six statements pertain to your evaluation of programmed instruction." Actually the students did not evaluate except by agreeing with those statements which showed how their learning processes were affected. Practical nurse, associate degree and diploma schools students placed "Helped to Learn Facts" in the first place; the baccalaureate degree candidates placed "Aids memorization" in the first place. This later item had high appeal also to all of the other respondents regardless of the type of school. The baccalaureate degree students gave little credit to programmed instruction as a means of improving grades. All of the respondents placed "Motivated to read more" at the bottom of their choice. The range of responses for the 51 practical nurse students was between 23 and 44; for the 88 associate degree students, 28 and

75; the 97 diploma students' responses ranged between 19 and 81; the

41 baccalaureate degree students gave responses between two and 31.

There was a sum total of 908 responses. Table 2 shows the frequency

of response for items four through nine as expressed by the 277 stu-

dents in the four types of programs.

Table 2. Frequency of Responses Given by 277 Students in the Four
Types of Schools of Nursing

Statements from items 4 through 9	Practical N 51	Associate N 88	Diploma N 97	Bacca- laureate N 41	Total N 277
(1)	(2)	(3)	(4)	(5)	(6)
4 Saves study time .	35	64	53	24	176
5 Improves test grades	36	43	38	8	125
6 Helped to learn facts	43	75	81	27	226
7 Aids memoriza- tion	44	70	69	31	214
8 Motivated to read more	23	29	19	2	73
9 Increased depth of study	29	28	27	10	94
Total responses .	220	309	287	102	908

Part III of the questionnaire for students was composed of four

statements designed to determine the students' tolerance of the bore-

dom factor inherent in the programmed material. The students were

instructed to check the statement which most nearly corresponded to

the amount of the last programmed assignment completed. Although

the items were related to the element of boredom, no mention of such

was made. The literature repeatedly made mention of boredom as

being detrimental to the effectiveness of programmed instruction.

The rationale of students who did not complete assignments was that

they were bored. Hence the amount of assignment completed appears

to be related to the degree of tolerance of boredom. [24] It might be

inferred that the participants in this study either were highly interested

or were motivated by some other means to fulfill the assignment.

Boredom could either be lacking or be highly tolerated. The distri-

bution of responses is shown in Table 3.

Table 3. Distribution of Responses Given by 277 Students in Four
Types of Nursing Programs According to the Amount of
Programmed Material Assignment Completed

Amount of Material Finished	Practical N 51	Associate N 88	Diploma N 97	Bacca-laureate N 41	Total N 277
(1)	(2)	(3)	(4)	(5)	(6)
All of the material	29	74	62	31	196
More than half of the material . . .	7	8	28	6	49
More than one-fourth of the material	1	1	7	4	13
Less than one-fourth of the material		1			1
Did not respond . .	14	4			18
Total	51	88	97	41	277

Items 14 and 15 were used to match the student, course taught by programmed instruction, and the instructor who made the assignments. To assure anonymity, each of the eight schools was given a letter, each instructor a number. Since these findings are used to match some of the responses derived from the questionnaire for instructors, the data will be reported later.

Part IV of the students' questionnaire consisted of two open-end questions. The information obtained through each question has been identified, analyzed, and presented separately. Disparities between student reactions and reasons given for these reactions have been noted. The open-end questions sought the students' individual expressions of reaction to programmed instruction and their reasons for same. Their comments seem to fall into four categories: positive, positive with some reservations, negative and unable to judge. In contrast to the reports in the literature, this study found that the majority of responses for students in each of the four types of schools were positive or positive with reservations. Only 31 made negative responses, and thirteen others said their experience was too limited to enable them to be specific in their judgment. In view of the frequent

comments in the literature about the students' boredom and other
unfavorable reactions to programmed instruction and particularly
students in senior year, the findings of this study show contradictory
data. It would take further study to determine the reasons for these
differences. The distribution of responses to item 16 are show in
Table 4.

Table 4. Distribution of Responses Expressing the Reaction of 277
Students According to Year of Study

Category of Reaction	First Year N 183	Second Year N 42	Third Year N 30	Fourth Year N 22	Total N 277
(1)	(2)	(3)	(4)	(5)	(6)
Positive	130	34	23	10	197
Positive with reservations . . .	31	3	5	3	42
Negative	11	5	2	7	25
Unable to judge . . .	11			2	13
Total	183	42	30	22	277

The students' comments in response to items 16 and 17 are
included in Appendix C, raw data. Sample responses are cited here
verbatum.

"Positive" Responses from LPN Students

I liked it real well, a person can't help but learn
with it. This has helped me to better understand

and learn the material in this course.

Excellent method for learning the material presented. The repetition was particularly helpful.

"Positive" Responses from Associate Degree Students

. . . that I really liked it and would like to use it in all my classes. I found it much easier to learn, and I did not become tired while reading.

I like it all right. Studying went faster and it was made more interesting so, the thought of reading it wasn't dreaded.

"Positive" Responses from Diploma Students

Favorable: made studying easier, quicker and least frustrating because this makes learning easier, quicker and less confusion--which helps when you have heavy study loads.

It is a good idea. One is carried into deep material gradually, making sure you understand the simpler concepts before giving the complex. With review questions, it doesn't require the discipline that ordinary study does.

I enjoyed it and I wish more courses were available to us . . . . that I feel that it leaves out the unnecessary facts.

"Positive" Responses from Baccalaureate Students

I enjoyed this method of study and felt it was one of the most efficient methods of learning. (1) It requires less time. (2) It provides a constant challenge. (3) It concentrates the material down to the important facts.

I found it simplified and enjoyed this type of studying. Easier to understand. Could study through subject faster. A fun way to learn.

It is a great way to learn. I was able to retain the material longer and it seemed easier to learn.

"Positive with Reservation" Responses
from LPN Students

It is good but you can get real lazy about it. It is easy not to do it because the answers are right there to peek at. I had never used it before. I liked it because of repetition, but it was too easy to look at the answers.

It was helpful but was some contradiction with own book. It was easier to learn with all the repetition--

"Positive with Reservation" Responses
from Associate Degree Students

I think it depends on what the material is covering. The programmed material on interpersonal relationships wasn't especially helpful, but the one on drugs was.

. . . it was good but some of it seemed more like questions out of a doctor's book. Some of the RN's felt the same as we did.

"Positive with Reservations" Responses
from Diploma Students

A well used idea--providing the instructor is capable of supplementing the material. Instead of asking the teacher constantly--you were able to work it out on your own.

Seems to be an easier way of learning but some questions were a little ridiculous.

Favorable, but sometimes dull and almost too
repetitious and time consuming. They help when
needed, but are not always needed.

"Positive with Reservations" Responses
from Baccalaureate Students

An affirmative one, but I can only compare it with
math type problems. Saved study time, very easy
to outline and follow, but it can easily become a
crutch and remove needed motivation for deeper
study.

It is worth while in subjects where only set facts
are expected to be learned. It does not motivate
further study. It is difficult to review certain phases
without going through the whole lesson.

"Negative" Responses from Associate
Degree Students

I found it harder to remember the equivalents by
program study.

"Negative" Responses from
Diploma Students

More application via the instructor in application
of math is needed. I still believe mathematics
must be taught by the instructor for a better re-
taining of the material.

This type of study didn't motivate me. I really
didn't study, just picked out the proper word or
statement in the paragraph. I feel that I retain
more when I read and outline the answer I am
trying to retain.

Negative--there is room for improvement. It
seems very impersonal and mechanical but does
seem to get some material across.

"Negative" Responses from
Baccalaureate Students

I don't like it. I usually find it hard to find time to
do this sort of thing in my spare time--that was
when we were supposed to do it--on our own in
spare time.

Neg.--Busy Work. Most of it is written out longer
than necessary. Keeps breaking into middle of a
concept to ask questions--I don't know, just didn't
seem worthwhile.

I feel the instruction moved too slowly--much
repetition--too much reading. Boring.
I am a slow reader. I feel I receive more stimu-
lation for learning from lectures and instructors
and then doing outside reading on my own.

The second questionnaire was designed for instructors. There
were 46 respondents. The findings will be presented in the order
elicited. The first item requested the name of the school of nursing
where employed. This information was used for identifying the school
when comparing student-teacher responses. Each school was assigned
an identifying letter and each faculty member a number in order to
assure anonymity.

Although it was anticipated that only faculty responsible for
direct instruction of students would respond, there were two directors,
an assistant director and a supervisor of student health service nurse
categorized themselves as functioning in the area of medical-
surgical instruction, hence they have been included. The other

director and the associate director referred to their area of function solely as administration, but they completed the questionnaire and had apparently had experience with programmed instruction; accordingly, they, too, have been included. These findings are shown in Table 5.

Table 5. Distribution of 46 Instructors According to Title of Position and Areas in Which They Function

	Area of Function			
Title	Medical-Surgical Nursing	Other Clinical Nursing	Admini-stration	Total
(1)	(2)	(3)	(4)	(5)
Director	1		1	2
Associate Director . . .		1	1	2
Assistant Professor . .	3			3
Instructor	33	5		38
Coordinator.	1			1
Total	38	6	2	46

Part II of the questionnaire for instructors consisted of two questions relative to the type of school and the use of programmed material in the teaching of nursing. Scrutiny of the responses showed that seventeen of the 46 respondents had actually used programmed instruction materials. Further scrutiny showed that such materials had been used by faculty in all four types of schools, with the

preponderance in the associate degree and diploma programs.

Table 6 shows the number of respondents who have used programmed

instruction and type of school in which employed.

Table 6. Responses of 46 Faculty from Four Types of Nursing
Schools Regarding Their Use of Programmed Instruction
Materials

Use of Programmed Instruction Materials	Practical N 7	Associate N 9	Diploma N 25	Bacca- laureate N 5	Total N 46
(1)	(2)	(3)	(4)	(5)	(6)
Yes	2	7	6	2	17
No	5	2	19	3	29

The remainder of the questionnaire, with the exception of the

final question, number 16, deals with the use of programmed instruc-

tional materials. Only those respondents who have indicated use of

programmed material will be included in this discussion.

The kind of programmed materials used by these 17 instructors

was identified. It was found that each type was used. The practical

nurse schools used both linear and branching; the associate degree

programs reported the largest variety of types and had the most

instructors who used programmed instruction materials. The diploma

school faculty used linear, branching and mixed materials, but the

baccalaureate school faculty reported using only branching and some

other form. This information is shown in Table 7.

Table 7. The Kind of Programmed Instruction Selected by 17 Instructors in Four Types of Schools of Nursing

Kind of Programmed Instruction	Practical N 2	Associate N 7	Diploma N 6	Bacca-laureate N 2	Total N 17
(1)	(2)	(3)	(4)	(5)	(6)
Linear		1	2		3
Branching		3	2	1	6
Mixed.	2	1	2		5
Other		2		1	3

The majority of the instructors used commercially prepared

materials. Eleven of the seventeen instructors indicated commercial-

ly prepared materials were used as opposed to teacher-prepared texts,

and four instructors stated that they used both teacher and commer-

cially prepared programmed instructional materials. Table 8 shows

the kind of programmed text selected by the instructors in the four

types of schools.

Table 8. The Source of Programmed Instruction Materials Used by
17 Instructors in Four Types of Schools

Source of Material	Practical N 2	Associate N 7	Diploma N 6	Bacca-laureate N 2	Total N 17
(1)	(2)	(3)	(4)	(5)	(6)
Teacher prepared		2			2
Commercially prepared	2	4	3	2	11
Both		1	3		4

Item 8 pertained to the part of the curriculum in which programmed materials were used. The instructors indicated the following areas: Preclinical anatomy course, nursing fundamentals, Junior Interpersonal Relations, and Senior leadership. Item 9 requested the titles of the programs used and the source of the program. The two instructors of the Practical Nurse program indicated that they had used The Human Body and Its Functions by Encyclopedia Britannica Press. The instructors of the Associate Degree programs reported that they had used programmed materials as follows: Introduction to Asepsis by Marie Seedor, Drugs and Solutions by Weaver, and H.D.I. by The Human Development Institute. The instructors of Diploma programs utilized Mathematics of Drugs and Solutions (author's name not given), H.D.I., and articles taken from The American Journal of Nursing on "Pain," "Shock," and "Anxiety." The instructors of the Baccalaureate program used Drugs and Solutions, H.D.I. (no authors given), and articles from The American Journal of Nursing on "Pain,"

"Anxiety," and "Supervision."

The review of the literature revealed that programmed materials should be utilized during the scheduled class period with the teacher supplementing the materials by teacher-led discussions and related educational learning experiences.[1] Taba reasoned "that it seemed logical to divide programmed lessons into manageable units and to give the student some indication of the time he was to spend on each segment of the program."[24] Taba further stated that even though programming employs self-pacing, the burden of responsibility for student learning is on the program and the instructional technology used.[24] Archer recommended that students be required to attain a minimum acceptable score on a unit test before being permitted to move on to the next unit in a programmed course.[1]

In view of these recommendations and findings, item ten was constructed to ascertain the method of making assignments used by instructors in schools of nursing. The general question, "How do you make assignments?" was asked. Under this item the instructors were asked to check one of the following as the best indicator of their method: listing by content, by chapter, as independent study, as review, over 100 frames, and under 100 frames. It is important to note that the most frequently checked indicator was "by independent study" which was selected by thirteen instructors. Several instructors indicated that they used more than one method in assigning

programmed materials. Table 9 delineates the methods of making

assignments in programmed materials used by instructors in the four

types of schools covered by this study.

Table 9. The Method of Assignments of Programmed Instruction
Used by Seventeen Instructors in Four Types of Schools of
Nursing

Method of Making Assignments	Practical N 2	Associate N 7	Diploma N 6	Bacca- laureate N 2	Total N 17
(1)	(2)	(3)	(4)	(5)	(6)
By content		1	1	2	4
By chapter		1	2	1	4
As independent study	1	8	3	1	13
As review.			1		1
Over 100 frames .					
Less than 100 frames	1			1	2

In response to item eleven in the questionnaire, only two of the

seventeen instructors indicated that the entire course had been taught

by programmed instruction. This would seem to indicate that the

majority, fifteen, of the instructors had used supplementary materials

in their teaching.

Item 12 in the questionnaire for instructors was composed of

seven statements designed to determine the areas in which programmed

instruction was used. The statements were: (a) basic science, (b) ethics, (c) history of nursing, (d) medical-surgical, (e) pediatrics, (f) psychiatry, (g) other. These statements were apparently insufficiently discriminating in that eight of the seventeen instructors who responded to the item selected "other" and also indicated areas such as "Fundamentals," "Leadership," and "Pharmacology." The total number of selections made was twenty. "Basic Science" was selected four times. "Ethics" was not selected. "History of Nursing" was not selected. "Medical-Surgical" was selected six times. "Pediatrics" was not selected. "Psychiatry" was selected once. Table 10 delineates the rank order of areas in which programmed instruction was used by seventeen instructors.

Table 10. The Rank Order of Areas Selected by Seventeen Instructors of Use of Programmed Materials

Areas in Which Programmed Material Was Used (1)	Number of Instructors' Responses N 20 (2)
Ethics	0
History of Nursing	0
Pediatrics	0
Leadership	1
Psychiatry	1
Pharmacology	2
Basic Science	4
Fundamentals	6
Medical-Surgical	6

The proponents of programmed learning tend to stress the value of specific objectives stated in behavioral terms.[13] Archer has stated that the objectives of instruction are not changed because of programmed instruction, merely better understood.[1] The instructors in the four types of nursing schools were requested to select the course objective (or objectives) they felt were best met by programmed instruction from the five standard statements of objectives: (a) acquisition of knowledge, (b) development of understanding, (c) development of skills, (d) development of appreciations, (e) other. Twenty-seven responses were made by the seventeen instructors. Eight instructors selected two objectives, and one instructor selected three objectives. "Acquisition of knowledge" was selected twelve times as the objective best met by programmed instruction. "Development of understanding" was selected by eleven instructors. "Development of skills" was selected by three. Table 11 indicates the selections made by seventeen instructors of the objectives best met by programmed instruction.

Table 11. Selections of Seventeen Instructors in Four Types of
Schools of Nursing of Objectives Best Met by Program-
med Instruction

Objectives	Type of School of Nursing				
	Practical N 2	Associate N 7	Diploma N 6	Bacca- laureate N 2	Total N 17
(1)	(2)	(3)	(4)	(5)	(6)
Acquire knowledge	1	5	4	2	12
Develop under- standing	1	4	4	2	11
Develop skills . .		3			3
Develop appreci- ations			1		1
Other					
Total responses	2	12	9	4	27

A purpose of the study was to determine the limitations of
programmed instruction as expressed by instructors in nursing.
Open-end item 14 was constructed to elicit this information. The
seventeen respondents to this item indicated twenty-one responses
which fell into seven categories: Length of program, insufficient
instructors' guides, limited areas, stereotyped, impersonal, diffi-
cult to evaluate, and none. Three instructors indicated "length of
program" as the major limitation of programmed instruction. Three
expressed the need for better instructors' guides. Two expressed the
need for more programs in more areas of nursing. Three instructors
stated that programmed instruction limited creativity. Three respon-
dents felt that programmed instruction was too impersonal a method
of learning. Six found evaluation difficult. And, one indicated no

limitations. Table 12 delineates the limitations of programmed

instruction materials as expressed by the seventeen instructors in

nursing contacted in the course of this study.

Table 12. Limitations of Programmed Instruction Materials as
Expressed by Seventeen Instructors in Four Types of
Schools of Nursing

Category of Limitation	Practical N 2	Associate N 7	Diploma N 6	Bacca-laureate N 2	Total N 17
(1)	(2)	(3)	(4)	(5)	(6)
Difficult to evaluate		3	2	1	6
Length of program		1	2		3
Impersonal		3			3
Stereotyped	1		1	1	3
Instructors' guides		2		1	3
Limited areas . . .	1		1		2
None			1		1

The instructors' comments in response to item 14 are included

in Appendix C, raw data. Sample responses are cited verbatum

here:

Limitations Expressed by Instructors

I tended to forget it since it was assigned for in-
dependent study; found the students capable of
independent study did well; the others too "forgot"
it.

Ability to accurately assess learning.

Difficult to review or re-read without taking entire program again. Lack of individualism in instruction. Boring for some.

Difficult to use it as a later reference. Must depend upon students to achieve understanding desired and to have read the program--no guarantee assignment carried out except discussion and testing.

Too time consuming for individual preparation. Too few texts and articles are available.

Creativity and expression are limited.

Item 15 of the questionnaire for instructors asked the question, "What are your suggestions for changes in the present programmed materials for nursing education?" Analysis of the data revealed that six instructors did not respond to the item. Three instructors stated that they had no suggestions. Three wished to see programmed materials in other areas and medical-surgical and history of nursing. Two instructors stated that instructors' guides would be helpful. Two instructors thought shorter programs were needed. One wished to see programmed material correlated closely with text books. Table 13 shows the summary of these findings.

Table 13. Summary of Suggestions Made by Seventeen Instructors in
Four Types of Schools Relevant to Programmed Material

Suggested Changes	Practical N 2	Associate N 7	Diploma N 6	Bacca- laureate N 2	Total N 17
(1)	(2)	(3)	(4)	(5)	(6)
Correlated with text	1				1
Shorter		1		1	2
Instructors' guide			1	1	2
None		4	2		6
Did not respond . .		4	2		6

Item 16 of the questionnaire, "Why do you not use programmed material in the teaching of nursing?" was addressed to those instructors who had not used programmed materials. Of the twenty-nine instructors who had not used programmed instruction, twelve stated that they did not know enough about the method. This would seem to agree with the results of the study done by Archer and Sanzotta in that their respondents recognized a need for inservice programs for faculty prior to the use of programmed instruction materials.[1] The next largest category of comments revealed that programmed materials are not available in all areas. Four instructors stated that programmed materials were not readily available in their teaching areas. Three instructors' comments did not lend themselves to categorization and therefore are quoted verbatum below:

> None available in my area. Also, for this level
> of students and limited time, can sometimes
> cover material in less time, also I'm not sure
> how some students would respond to this type of

teaching because (1) they learn from group dis-
cussions, exchange ideas, etc., (2) some can
learn as well in less time by other methods.

I have not been convinced of its value unless a
limited time element presents itself. I feel
strongly that first year students, suddenly em-
bracing such new, uncomfortable and complex
activities, require time for discussions, clari-
fication, and exploration on a very individualized,
personal level. Even technical skills involve a
great deal on anything but "technical" aspects.

The bulk of the material consists of manual skills
and dexterity plus intra-personal relationships
which would be difficult to program. Students at
this level of preparation have many questions and
anxieties which require more supportive and ex-
ploration of subject matter than a programmed
approach could supply.

Table 14 delineates the distribution of the comments of the twenty-

nine instructors who had not used programmed materials.

Table 14. Reasons Given by Twenty-nine Instructors for Not Having
Used Programmed Instruction

Categories of Comments	Number of Instructors
(1)	(2)
Unfamiliar with the method	12
None available in teaching area	13
Other	2
No response	2
Total	29

Two tables have been constructed to combine some of the data from both the student and the faculty questionnaires. As has been previously mentioned, each school has been designated by a letter. Table 15 shows the type of school and the number of student and faculty participants.

Table 15. Number of Students and Faculty Respondents from Each School of Nursing

Respondents	School of Nursing								
	A	B	C	D	E	G	H	I	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Students .	42	43	19	25	28	26	53	41	277
Faculty .	3	5	1	5	2	17	9	5	46

Item 6, "helped me to learn facts," and item 7, "aids memorization," were most frequently indicated as benefits of programmed instruction by students. Their teachers indicated that programmed instruction contributed to the achievement of two main objectives, "acquires knowledge" and "develops understanding." Table 16 combines this information according to the number of responses from each school of nursing.

Table 16. Number of Student Responses to Items Six and Seven in Students' Questionnaire and the Number of Instructors' Responses to the Two Most Frequently Selected Objectives Per School of Nursing

Responses	Schools of Nursing								
	A	B	C	D	E	G	H	I	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Students									
Learn facts	36	39	20	25	28	16	44	27	226
Memoriza-tion . . .	34	36	13	16	15	24	45	31	214
Faculty									
Acquires knowledge	2	3	1	1		2	2	2	12
Develops under-standing .	1	3			1	2	2	2	11

To recapitulate, this study was designed to ascertain the opinions held by instructors and students regarding the use of programmed instruction in schools of nursing. The findings of this study yielded the data sought. In a number of instances, these findings are contrary to the literature. According to the instructors' comments, programmed instruction tends to reduce student-teacher interaction. This is contrary to the statement made by Archer[1] that "programmed instruction does as well as conventional instruction in providing interaction between teacher and students but not as well in providing

interaction among students." Taba[24] states that the principle sources of boredom in programmed instruction are the very characteristics which make it effective. She further states that the instructor must demonstrate to the students the importance of working conscientiously through the program.

In that the majority of the students surveyed in this study were assigned programmed instruction as independent study, and because the majority of these students completed all of those materials assigned, the findings of this study are not consistant with those in the literature.

CHAPTER IV

SUMMARY OF THE STUDY

1. Purpose of the Study

The purpose of this study was to determine the opinions held by instructors and students, regarding the applicability of programmed instruction in schools of nursing.

This study was designed:

1. to identify student opinions and reactions to programmed instruction.

2. to determine how programmed instruction is being used in schools of nursing.

3. to determine the areas of needed change, as expressed by instructors in nursing, of the present programmed materials being used in schools of nursing.

2. Procedure of the Study

A survey of the literature indicated a need for an evaluation of the newer innovations in education. Toward this end, two questionnaires were prepared. These questionnaires were constructed to

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elicit information relevant to the purposes of the study. The questionnaires were administered to 277 student nurses and forty-six instructors in eight schools of nursing in the state of Washington.

It was found that:

1. Most students felt that programmed materials helped them to learn facts, to memorize and to save study time.

2. Most of the students completed all of the materials assigned.

3. Most of the students indicated positive reactions to programmed instruction.

4. The highest number of students using programmed materials were from the Diploma schools.

5. The largest number of negative reactions to programmed instruction was expressed by fourth-year Baccalaureate students.

6. The programmed material selected for use by the instructors in schools of nursing was predominantly commercially prepared.

7. Most of the instructors assigned programmed material as independent study.

8. Most instructors indicated that the objectives best met by programmed instruction were "acquisition of knowledge"

and "development of understanding."

9. The predominant limitations of programmed instruction as expressed by the nurse educators were the length of programmed materials, too few publications, insufficient instructors' guides, and inability to know if students are doing the assignments.

10. Most instructors who had not used the method indicated that they did not know enough about programmed instruction to use it.

3. Conclusions

Since the number of participating schools was small, conclusions can apply only to the eight schools and the students and faculty who participated. The findings lead to the following conclusions:

1. On the basis of the findings of the study, the reactions of the students seem to indicate that they objected to using their own time to work on programmed materials.

2. The instructors objected to the fact that they could not be sure that the students were consistently working on the assignments.

3. Since the majority of the instructors selected "independent study" as their method of making assignments, it is inferred that programmed instruction is being used in schools of

nursing contrary to recommendations for its use in the literature.

4. Despite the rather wide-spread use of programmed instruction in fields of general education, it does not appear that much material is yet available for use in schools of nursing.

5. The faculty did not appear to feel secure in the use of programmed instruction. Even those who used it expressed reservations.

4. Recommendations for Further Studies

Based on the findings of this study, it is recommended that the following studies be made:

1. A similar study that includes a group of students predominantly senior students.

2. A controlled study using designated programmed texts. One group of students would use the programmed instruction plus the usual reference material. A second group would use only the usual reference material. If evaluations show contrasts, the findings should be significant.

3. A survey of available programmed material for nurses.

4. A study of the need for inservice or continuing education for faculty relative to the use of programmed instruction and other newer teaching methods.

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APPENDICES

APPENDIX A

QUESTIONNAIRES

QUESTIONNAIRE FOR INSTRUCTORS

This is a study of the opinions of the instructors in schools of nursing regarding programmed material. I am convinced that the most salient observations and evaluations of this teaching tool can be made by knowledgeable nursing instructors. Therefore I have listed questions pertaining to the kind of programmed materials, the course or courses in which programmed material was used, and how the assignments were made.

Your response to this questionnaire shall be anonymous. Your time and effort in completing this questionnaire are appreciated.

Please note the following definitions pertinent to this questionnaire.

Programmed instruction: the presentation of arranged material to be learned in series of small steps designed to lead the student through self-instruction.

Frame: that portion of the item in which appears the stimulus to which the student must respond.

Linear: a program in which the learner regardless of his response, or its correctness, proceeds through the sequence of items in an exact, pre-determined order.

Branching: the provisions in a program sequences for varying the presentation of subsequent items to a student, based on his responses to the preceding items.

QUESTIONNAIRE FOR INSTRUCTORS

DIRECTIONS

Please complete the following statements.

1. Name of nursing school where employed_____

    _____

2. Title of the position now held _____

    _____

3. Clinical area _____

DIRECTIONS

Please check the appropriate blank which
applies to you in answering the following
questions.

4. Type of school in which employed?

    a. Practical nursing   _____

    b. Associate Degree   _____

    c. Diploma   _____

    d. Baccalaureate Degree   _____

5. Have you used programmed material in teaching of nursing?

    a. Yes   _____

    b. No   _____

DIRECTIONS

If programmed material is not used, omit
all items until number 16.

6. Kind of programmed material used

    a. Linear   _____

    b. Branching   _____

    c. Mixed   _____

    d. Other (please specify)   _____

7. Is the programmed material teacher or commercially prepared?

    a. Teacher   _____

    b. Commercially   _____

    c. Both   _____

8. In what part of the curriculum is programmed material used?

    _____

9. Title of program used _____

    Source _____

10. How do you make student assignments?

    a. by content   _____

    b. by chapter   _____

    c. as independent study   _____

    d. as review   _____

    e. over 100 frames   _____

    f. less than 100 frames   _____

11. Is the entire course taught by programmed instruction?

    a. yes   _____

    b. no   _____

12. In which area do you use programmed materials?

    a. Basic Sciences   _____

    b. Ethics   _____

    c. History of Nursing   _____

    e. Med-Surg   _____

    f. Pediatrics   _____

    g. Psychiatry   _____

    h. Other (please specify)   _____

13. Which course objective (or objectives) did you feel were best met by programmed instruction?

    a. Acquisition of knowledge   _____

    b. Development of understanding   _____

    c. Development of skills   _____

    d. Development of appreciations   _____

    e. Other (please specify)   _____

_____

14. What are the major limitations of programmed instruction?

_____

_____

_____

15. What are your suggestions for changes in the present programmed materials for nursing education?

_____

_____

_____

16. Why do you not use programmed material in the teaching of nursing? _____

_____

_____

Thank you for participating in this study.

                             Marcella Cate

QUESTIONNAIRE FOR STUDENTS

This is a study of the opinions of students in schools of nursing regarding programmed material. Since more and more schools of nursing are showing interest in this form of instruction it is very important to know the reactions of students who have used program-med instruction.

Your response to this questionnaire shall be anonymous. Please do not sign this paper. Your time and effort spent in participating in this study are appreciated.

QUESTIONNAIRE FOR STUDENTS

PART I

1. Please check the appropriate blank which applies to you in answering the following questions.

2. Please do <u>not</u> sign the completed questionnaire.

1. I am a student in the
   a. first year   —————
   b. second year   —————
   c. third year   —————
   d. fourth year   —————

2. Type of school
   a. Practical Nursing   —————
   b. Associate Degree   —————
   c. Diploma   —————
   d. Baccalaureate Degree   —————

3. I have used programmed material in the study of nursing
   a. yes   —————
   b. no   —————

PART II
DIRECTIONS

1. The following six statements pertain to your evaluation of programmed instruction. Please read the statements carefully and indicate the statements with which you agree.

4. Programmed instruction saved study time   —————

5. Programmed instruction improved my test grades   —————

6. Programmed instruction helped me to learn facts   —————

7. Programmed instruction made remembering the material easier   —————

8. Programmed instruction motivated me to read more related material   —————

9. Programmed instruction increased depth of study   —————

PART III
DIRECTIONS

1. Please check the statement which most nearly corresponds with how much of the last programmed material assignment you completed.

2. Please check only one statement.

10. I finished all of the assigned material _____

11. I finished more than half of the assigned material _____

12. I finished more than one-fourth of the assigned material _____

13. I finished less than one-fourth of the assigned material _____

PART IV
DIRECTIONS

1. Please complete the following statements

14. Name of school of nursing_____

15. Name of the course (or courses) in which programmed material was used _____

   _____

16. My reaction to programmed material is_____

   _____

   _____

17. The reasons for my reaction to programmed material are:

   _____

   _____

   _____

Thank you for participating in this study.

Marcella Cate

APPENDIX B

CORRESPONDENCE

2211 East 16th Street
Vancouver, Wash.
March 29, 1966

Dear

In partial fulfillment of requirements for a Master of Science

degree at the University of Oregon School of Nursing, I am under-

taking a study of the use of programmed materials in schools of

nursing. Your staff and your students are invited to participate. It

will involve completing a simple questionnaire. A self-addressed

post card is enclosed for your convenience in indicating your willing-

ness to assist with the study. A mutually satisfactory date will be

arranged for coming to your school to administer the questionnaire

which can be completed in fifteen minutes.

Upon completion of the study, copies of the report will be

placed in the library at the University of Oregon Medical School.

Yours sincerely,

(Signed) Marcella Cate

Marcella Cate is a regularly enrolled graduate student at the Uni-

versity of Oregon School of Nursing. Any assistance you can offer

Mrs. Cate will be greatly appreciated.

(Signed) Lucile Gregerson
Thesis Adviser

Dear Mrs. Cate,

We would be happy to participate in your study _____.
We are unable to participate in your study _____.
We have used programmed materials _____.
We have not used programmed materials _____.
We will need _____ questionnaires for instructors and
_____ questionnaires for students.
The most satisfactory day for administering the ques-
tionnaire would be a Monday_____ Tuesday_____
Wednesday_____ Thursday_____ Friday_____.

Yours sincerely,

APPENDIX C

MASTER TABULATION

Student No.	Student Responses to Items 1 through 16															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	b	c	a	x	x	x	x		x		x			H	Psy	≠
2.	b	c	a			x	x		x		x			H	III	≠
3.	b	c	a	x	x	x	x				x			H	III	≠
4.	b	c	a	x		x	x				x			H	III	≠
5.	b	c	a			x		x	x		x			H	III	≠
6.	b	c	a	x		x	x		x		x			H	III	≠
7.	b	c	a		x	x					x			H	III	≠
8.	b	c	a	x		x	x		x	x				H	III	≠
9.	b	c	a		x	x	x		x	x				H	III	≠
10.	b	c	a			x	x	x	x	x				H	III	≠
11.	b	c	a	x		x	x				x			H	III	≠
12.	b	c	a		x	x	x				x			H	III	≠
13.	b	c	a		x	x	x				x			H	Ma.	≠
14.	b	c	a	x	x	x	x					x			H	III	?
15.	b	c	a		x	x	x			x				H	III	?
16.	a	c	a								x			H	Ma.	?
17.	a	c	a	x	x	x	x						x	H	Ma.	?
18.	a	c	a			x	x				x			H	Ma.	?
19.	a	c	a		x		x				x			H	Ma.	?
20.	a	c	a	x		x	x				x			H	Ma.	?
21.	a	c	a			x	x				x			H	Ma.	?
22.	a	c	a			x			x					H	Ma.	?
23.	a	c	a	x			x						x	H	P.	?
24.	a	c	a		x	x	x			x				H	P.	?
25.	a	c	a			x	x				x			H	Ma.	≠
26.	a	c	a	x		x	x		x	x				H	P.	≠
27.	a	c	a	x		x	x				x			H	P.	≠
28.	a	c	a			x			x	x				H	BP	≠
29.	a	c	a	x	x	x	x			x				H	P.	≠
30.	a	c	a		x	x				x				H	Ma.	≠
31.	a/b	c	a	x		x	x			x				H	Ma.	≠
32.	a	c	a			x	x			x				H	Ma.	≠
33.	a	c	a	x	x	x	x			x				H	P.	≠
34.	a	c	a		x	x	x					x		H	P.	≠
35.	a	c	a	x		x	x				x			H	Ma.	≠
36.	a	c	a			x	x				x			H	Ma.	≠
37.	a	c	a	x								x		H	Ma.	≠
38.	a	c	a		x	x	x		x	x				H	Ma.	≠
39.	a	c	a			x				x				H	P.	≠
40.	a	c	a	x	x	x	x				x			H	P.	≠
41.	a	c	a	x	x	x	x			x				H	P.	≠
42.	a	c	a	x		x	x			x				H	Ma.	≠
43.	b	c	a	x	x	x		x	x	x				H	III	≠
44.	a	c	a	x	x	x	x			x	x	x		H	Ma.	≠
45.	a	c	a	x	x	x	x				x	x		H	P.	≠
46.	a	c	a			x	x				x			H	Ma.	–
47.	a	c	a								x			H	Ma.	–
48.	a	c	a	x		x					x			H	P.	–
49.	a	c	a	x		x					x			H	P.	–
50.	a	c	a								x			H	Ma.	–

H   indicates school
P.   indicates Pharmacology
Ma.   indicates mathematics
III   indicates Nursing III
Psy.   indicates Psych.
≠   indicates "positive" category
?   indicates "positive with reservations" category
–   indicates "negative" category

Student No.	Student Responses to Items 1 through 16															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
51.	a	c	a			x			x	x				H	Fun.	?
52.	a	c	a				x			x				H	Ma.	≠
53.	a	c	a			x				x				H	Ma.	-
54.	a	c	a	x	x					x				G	P.	-
55.	a	c	a			x		x	x		x			G	P.	-
56.	a	c	a	x						x				G	P.	-
57.	a	c	a	x	x	x	x			x				G	P.	?
58.	a	c	a	x	x	x	x				x			G	P.	?
59.	a	c	a		x	x			x	x				G	P.	?
60.	a	c	a							x				G	P.	?
61.	a	c	a	x		x				x				G	P.	?
62.	a	c	a	x					x	x				G	P.	?
63.	a	c	a	x	x	x	x				x			G	P.	≠
64.	a	c	a	x							x			G	P.	≠
65.	a	c	a			x		x		x				G	P.	≠
66.	a	c	a		x	x	x			x				G	P.	≠
67.	a	c	a		x		x			x				G	P.	≠
68.	a	c	a	x	x		x		x	x				G	P.	≠
69.	a	c	a		x	x	x			x				G	P.	≠
70.	a	c	a			x			x	x				G	P.	≠
71.	a	c	a		x	x	x			x				G	P.	≠
72.	a	c	a			x			x	x				G	P.	≠
73.	a	c	a	x	x	x			x	x				G	P.	≠
74.	a	c	a	x	x	x	x			x				G	P.	≠
75.	a	c	a	x	x		x			x				G	P.	≠
76.	a	c	a		x		x			x				G	P.	≠
77.	a	c	a	x		x	x			x				G	P.	≠
78.	a	c	a	x		x	x		x	x				G	P.	≠
79.	a	c	a	x		x	x			x				G	P.	≠
80.	a	a	a	x	x	x	x	x						C	PN	≠
81.	a	a	a	x	x	x	x	x?	x	x				C	PN	≠
82.	a	a	a	x	x	x	x	x	x		x			C	PN	≠
83.	a	a	a	x	x	x	x		x					C	PN	≠
84.	a	a	a	x		x		x	x					C	PN	≠
85.	a	a	a	x	x	x	x							C	PN	≠
86.	a	a	a	x	x	x	x	x	x	x				C	PN	≠
87.	a	a	a	x	x	x	x		x					C		≠
88.	a	a	a	x		x	x		x					C	PN	@
89.	a	a	a	x	x	x	x		x					C	PN	@
90.	a	a	a	x	x	x	x	x	x					C	PN	@
91.	a	a	a	x		x		x						C	PN	@
92.	a	a	a	x	x	x	x	x		x				C	PN	@
93.	c	b/c	a			x	x	x						C		@
94.	a	a	a	x	x	x	x		x	x				C	PN	@
95.	a	a	a	x	x	x	x	x	x	x				C	PN	@
96.	a	a	a	x	x	x	x	x	x	x				C	PN	@
97.	a	a	a	x		x	x	x	x					C	PN	@
98.	a	a	a	x		x	x	x	x					C	PN	@
99.	a	a	a	x	x	x	x	x	x					C	PN	@
100.	a	a	a		x	x				x				D	AP	-

H, G and C	indicate school of nursing
P.	indicates Pharmacology
Ma.	indicates Mathematics
Fun.	indicates Fundamentals
PN	indicates Practical Nursing
AP	indicates Anatomy and Physiology
-	indicates "negative" category
≠	indicates "positive" category
?	indicates "positive with reservations" category
@	indicates "unable to judge"

Student No.	Student Responses to Items 1 through 16															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
101.	a	a	a						x	x				D	AP	?
102.	a	a	a	x			x			x				D	AP	?
103.	a	a	a	x	x	x	x		x		x			D	AP	?
104.	a	a	a	x		x	x			x				D	AP	?
105.	a	a	a		x		x				x			D	AP	?
106.	a	a	a		x		x				x			D	AP	?
107.	a	a	a			x	x					x		D	AP	?
108.	a	a	a	x	x	x	x							D	AP	?
109.	a	a	a		x	x	x		x	x				D	PN	∤
110.	a	a	a	x	x	x	x	x	x	x				D	PN	∤
111.	a	a	a			x				x				D	AP	∤
112.	a	a	a	x	x	x	x		x	x				D	AP	∤
113.	a	a	a	x	x	x	x	x	x	x				D	AP	∤
114.	a	a	a			x					x			D	AP	∤
115.	a	a	a		x	x	x		x	x				D	AP	∤
116.	a	a	a	x	x	x	x	x	x	x				D	PN	∤
117.	a	a	a	x	x	x	x	x						D	PN	∤
118.	a	a	a			x	x			x				D	PN	∤
119.	a	a	a	x			x				x			D	PN	∤
120.	a	a	a	x		x	x			x				D	PN	∤
121.	a	a	a	x				x						D	AP	∤
122.	a	a	a	x	x		x	x	x					D	PN	∤
123.	a	a	a		x	x	x	x	x	x				D	PN	∤
124.	a	a	a		x		x			x				D	PN	∤
125.	a	a	a	x	x	x				x				D	AP	∤
126.	a	a	a		x	x	x		x	x				D	AP	∤
127.	a	a				x	x		x	x				D	AP	∤
128.	a	a	a		x	x	x	x	x	x				D	PN	∤
129.	a	a	a		x	x	x			x				D	AP	∤
130.	a	a	a	x	x	x	x			x				D	AP	∤
131.	a	a	a	x	x	x	x	x	x	x				D	AP	∤
132.	a	a	a		x					x				D	AP	∤
133.	a	b	a	x	x	x	x	x	x	x				A	Fun.	∤
134.	a	b	a	x	x	x	x			x				A	Fun.	∤
135.	a	b	a	x	x	x	x			x				A	Ma.	∤
136.	a	b	a		x					x				A	Ma.	∤
137.	a	b	a	x		x	x			x				A	Fun.	∤
138.	a	b	a	x			x			x				A	Fun.	∤
139.	a	b	a	x		x	x			x				A	Ma.	∤
140.	a	b	a	x		x	x			x				A	Ma.	∤
141.	a	b	a	x	x	x	x			x				A	Ma.	∤
142.	a	b	a	x		x	x				x			A	Ma.	∤
143.	a	b	a	x		x	x		x	x				A	Ma.	∤
144.	a	b	a	x						x				A	Ma.	∤
145.	a	b	a	x		x	x	x	x		x			A	Ma.	∤
146.	a	b	a	x		x	x			x				A	Ma.	∤
147.	a	b	a	x	x		x			x				A	Ma.	∤
148.	a	b	a	x		x	x			x				A	Ma.	∤
149.	a	b	a	x	x	x	x			x				A	Fun.	∤
150.	a	b	a	x		x	x			x				A	Ma.	∤

A, C and D	indicated schools of nursing
PN	indicates Practical Nursing
AP	indicates Anatomy and Physiology
Ma.	indicates Mathematics for Nurses
Fun.	indicates Fundamentals of Nursing
∤	indicates "positive" category
?	indicates "positive with reservation" category

Student No.	Student Responses to Items 1 through 16															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
151.	a	b	a	x		x	x			x				A	Ma.	≠
152.	a	b	a	x		x	x			x				A	Ma.	≠
153.	a	b	a	x	x	x	x	x	x	x				A	Fun.	≠
154.	a	b	a	x	x	x	x		x	x				A	Fun.	≠
155.	a	b	a		x	x	x			x				A	Fun.	≠
156.	a	b	a	x	x	x	x			x				A	Ma.	≠
157.	a	b	a		x	x				x				A	Fun.	?
158.	a	b	a	x	x	x	x			x				A	Fun.	?
159.	a	b	a	x	x	x	x			x				A	Ma.	?
160.	a	b	a			x		x		x				A	Fun.	≠
161.	a	b	a			x	x			x				A	Fun.	≠
162.	a	b	a	x		x	x		x	x				A	Fun.	≠
163.	b	b	a	x	x	x	x	x	x	x				A	Fun.	≠
164.	b/c	b	a	x		x	x			x				A	Fun.	≠
165.	c	b	a	x		x				x				A	Fun.	≠
166.	b	b	a	x		x	x			x				A	Fun.	≠
167.	b	b	a		x	x	x				x			A	Fun.	≠
168.	b	b	a	x	x	x	x			x				A	Fun.	≠
169.	a	b	a		x	x	x		x	x				A	Ma.	≠
170.	b	b	a			x							x	A	Ma.	-
171.	b	b	a		x	x	x			x				A	Fun.	-
172.	b	b	a	x						x				A	Fun.	-
173.	b	b		x	x	x	x			x				A	Fun.	?
174.	b	b	a			x			x	x				A	Fun.	?
175.	a	b	a	x	x	x	x		x	x		x		B	Fun.	≠
176.	a	b	a			x	x		x			x		B	Fun.	≠
177.	a	b	a	x	x	x	x					x		B	Fun.	≠
178.	a	b	a	x	x	x		x	x			x		B	Fun.	≠
179.	a	b	a	x	x	x	x		x	x				B	Ma.	≠
180.	a	b	a	x		x	x			x				B	Fun.	≠
181.	a	b	a	x	x	x	x			x				B	Fun.	≠
182.	a	b	a	x		x	x	x		x				B	Fun.	≠
183.	a	b	a			x	x		x	x				B	Fun.	≠
184.		b	a			x				x				B	Fun.	≠
185.	a	b	a	x	x	x	x		x	x				B	Fun.	≠
186.	a	b	a	x	x	x	x			x				B	Fun.	≠
187.	a	b	a	x	x	x	x			x				B	Fun.	≠
188.	a	b	a	x	x	x	x	x	x	x				B	Fun.	≠
189.	a	b	a	x		x	x			x				B	Fun.	≠
190.	a	b	a	x		x	x			x				B	Fun.	≠
191.	a	b	a	x		x	x		x	x				B	Ma.	≠
192.	a	b	a	x		x	x		x	x				B	Ma.	≠
193.	a	b	a		x	x	x		x	x				B	Fun.	≠
194.	a	b	a	x	x	x	x		x	x				B	Fun.	≠
195.	a	b	a	x	x	x	x	x	x	x				B	Fun.	≠
196.	a	b	a			x	x		x					B	Ma.	≠
197.	a	b	a			x	x	x		x				B	Ma.	≠
198.	b	b	a	x		x				x				B	Ma.	?
199.	a	b	a	x	x	x	x		x	x				B	Ma.	?
200.	a	b	a	x		x		x		x				B	Fun.	?
201.	b	b	a	x						x		x		B	Ma.	-
202.	b	b	a						x	x				B	Fun.	-

A and B   indicate schools of nursing
Fun.   indicates Fundamentals of Nursing
Ma.   indicates Mathematics
≠   indicates "positive" category
?   indicates "positive with reservations" category
-           indicates "negative" category

Student No.	Student Responses to Items 1 through 16															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
203.	b	b	a	x	x	x	x	x	x	x				B	Ma.	∤
204.	b	b	a	x	x	x	x	x	x	x				B	Fun.	∤
205.	b	b	a		x	x	x		x	x				B	Fun.	∤
206.	b	b	a	x	x	x	x	x	x	x				B	Fun.	∤
207.	b	b	a	x	x	x	x			x				B	Ma.	∤
208.	b	b	a			x	x			x				B	Ma.	∤
209.	b	b	a	x	x	x	x			x				B	Fun.	∤
210.	b	b	a	x	x	x	x			x				B	Fun.	∤
211.	b	b	a	x		x	x			x				B	Fun.	∤
212.	b	b	a	x		x	x				x			B	Fun.	∤
213.	b	b	a	x	x	x	x			x				B	Fun.	∤
214.	b	b	a	x	x	x	x			x				B	Fun.	∤
215.	b	b	a			x	x	x		x				B	Fun.	∤
216.	c	d		x						x				I	HDI	-
217.	c	d	a			x				x				I	Ma.	-
218.	c	d	a			x	x			x				I	HDI	?
219.	c	d	a	x		x	x			x				I	HDI	?
220.	c	d	a	x		x	x			x				I	HDI	?
221.	c	d	a	x					x		x			I	Ma.	?
222.	c	d	a	x			x			x				I	Ma.	?
223.	c	d	a	x	x	x	x			x				I	Ma.	∤
224.	c	d	a	x			x			x				I	Ma.	∤
225.	c	d	a	x	x	x	x			x				I	Fun.	∤
226.	c	d	a	x			x			x				I	HDI	∤
227.	c	d	a	x		x				x				I	HDI	∤
228.	c	d	a	x	x	x	x		x	x				I	Ma.	∤
229.	c	d	a	x		x					x			I	Ma.	∤
230.	c	d	a	x			x			x				I	Ma.	∤
231.	c	d	a	x	x	x	x			x				I	Ma.	∤
232.	c	d	a	x		x	x			x				I	Ma.	∤
233.	c	d	a	x		x	x					x		I	HDI	∤
234.	c	d	a	x	x	x	x			x				I	Ma.	∤
235.	d	d	a									x		I	L	-
236.	d	d	a				/			x				I	L	-
237.	d	d	a			x	x			x				I	L	-
238.	d	d	a	x			x				x			I	L	-
239.	d	d	a	x		x	x				x			I	L	-
240.	d	d	a			x	x			x				I	L	-
241.	d	d	a			x	x					x		I	HDI	-
242.	d	d	a			x	x			x				I	L	-
243.	d	d	a			x	x			x				I	L	?
244.	d	d	a			x	x		x	x				I	L	?
245.	d	d	a		x		x		x	x				I	L	?
246.	d	d	a	x	x	x	x					x		I	L	∤
247.	d	d	a	x		x	x		x	x				I	L	∤
248.	d	d	a			x	x		x	x				I	L	∤
249.	d	d	a	x	x	x	x			x				I	L	∤
250.	d	d	a			x		x	x	x				I	L	∤
251.	d	d	a	x		x	x		x	x				I	L	∤
252.	d	d	a						x	x				I	L	∤

Ma.   indicates Mathematics
Fun.   indicates fundamentals of nursing
HDI   indicates Human Development Inventory
L   indicates Leadership
B and I   indicate schools of nursing
∤   indicates "positive" category
-         indicates "negative" category
?   indicates "positive with reservations" category

Student No.	Student Responses to Items 1 through 16															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
253.	d	d	a				x					x		I	L	∤
254.	d	d	a				x	x		x				I	L	∤
255.	d	d	a	x			x		x	x				I	L	@
256.	a	c/b	a					x						H*	Ma.	-
257.	a	c	a			x		x		x				H*	P.	?
258.	a	c	a	x		x	x			x				H*	P.	?
259.	a	c	a	x		x	x			x				H*	P.	∤
260.	a	c	a	x		x	x			x				H*	P.	∤
261.	a	c	a	x		x	x			x				H*	P.	∤
262.	a	c	a	x		x	x			x				H*	P.	∤
263.	a	c	a	x		x	x			x				H*	P.	∤
264.	a	c	a	x	x	x				x				H*	P.	∤
265.	a	c	a	x		x	x		x	x				H*	P.	∤
266.	a	c	a	x	x	x	x			x				H*	P.	∤
267.	a	c	a	x	x	x	x			x				H*	P.	∤
268.	c	b/c	a			x	x		x	x				H*	L	∤
269.	c	b/c	a			x	x			x				H*	L	∤
270.	c	c	a			x	x		x	x				H*	L	∤
271.	c	c	a	x		x	x	x	x			x		H*	L	∤
272.	c	c	a	x		x	x	x		x				H*	L	∤
273.	c	c	a			x				x				H*	L	∤
274.	c	b/c	a				x					x		H*	L	∤
275.	c	c	a			x			x		x			H*	L	∤
276.	c	c	a			x	x	x	x	x				H*	L	∤
277.	d	d	a			x						x		I	L	∤

H* and I	indicate schools of nursing
Ma.	indicates Mathematics
L	indicates Leadership
P.	indicates Pharmacology
∤	indicates "positive" category
-	indicates "negative" category
?	indicates "positive with reservations" category
@	unable to judge

APPENDIX C

COMPILATION OF RAW DATA
(From Questionnaire for Students)

Student Number	Response to Question 16	Response to Question 17
1	it makes studying easier to understand	The material is interesting and to the point
2	Material presented in an interesting yet easily understood manner.	Answers your questions right away. May read yet absorb material at your own rate.
3	favorable	The material is well presented, easily understood and is easier to remember and use.
4	that it does make it easier to understand certain material and remember.	That is is helpful and more should be used. The more we use it then more will be understood.
5	that it gives you a better understanding of information	We were able to discuss the information presented and everyone contributed.
6	makes learning progressive material interesting and with less effort. Also related principles are emphasized.	Gave ward conference using this type of programmed article.
7	very interesting and was easily understood	1. helped me in study 2. improved grades
8	--it is useful, timesaving	conciseness, important facts pointed out
9	I liked it--Felt I learned a lot.	I feel I learned more and remembered it longer.
10	I thought it was very good material.	it made me learn the material better, it was interesting to read.
11	helpful info. in brief yet easily understandable context	Since the reading was a requirement-- having it so it could be understood was ok
12	that it is very thorough--you had all the information right before you	that it helped me study and be interested in the material
13	I found it an easy method to learn by. It made material more presentable.	It improved my grades.
14	I like it fairly well; however, I'd prefer to use it as supplementary material.	It is more direct and has improved my grades.
15	It was good but some of it seemed more like questions out of a doctor's book.	Some of the RN's felt the same as we did.
16	I like the general idea of programmed material but I did not like the way ours was set up.	The learning steps were too segmented--I had to go through so much to learn so little. There was no index to locate facts forgotten.
17	I thought it was helpful in learning facts and applying them.	I have never had it before. It was helpful initially.
18	That this is good for some courses such as math or straight factual material that needs memorization.	The repetition is needed for memory work, but becomes boring with other material.

Student Number	Response to Question 16	Response to Question 17
19	favorable, but sometimes dull and almost too repetitious and time consuming	they help when needed, but are not always needed
20	it's great if you have the time to spend on it. We were given too much to learn at once.	We weren't given enough time on one pharm-math and not enough supplementary material was presented with this type of instruction.
21	I thought it was helpful to a certain extent.	I thought more discussions would have been helpful.
22	It is good, but does not take a lot of time to finish.	It was very simple because of my previous background in math so this made some of it monotonous.
23	It's good but if you had even a little math before hand it seemed too easy.	My background in math made most of the material old and things I had already known.
24.	That it is good for someone who knows nothing about material covered, otherwise takes a lot of time.	The material use, I had a background in and did not need to spend so much time in.
25	in math it was helpful--especially for those who have difficulty with math.	
26	I think it is a good way to study material	It makes you think more about what you are studying as you have to answer questions.
27	I think it presented difficult material in an adequate and advantageous manner.	I learned how to work problems with relative ease which could have been difficult for me.
28	It is very good. It goes into great detail and discusses things very thorough.	It took a lot of time to go through it but it was worth it.
29	Favorable for this subject. (Pharmacology-math)	Progressed slowly and very basic level. Had many problems extra for additional practice.
30	Very good as it's up to the person--had good depth well explained	I became acquainted with it in Jr. Hi-- gives students chance to work at own pace --serves as constant review with facts right there.
31	this course of study made understanding pharmacology quite easier than I expected it to be.	learning pharmacology was quite interest- ing through this method.
32	it's a good idea	One is carried into deep material gradually, making sure you understand the simpler con- cepts before going into the complex. With review questions, it doesn't require the discipline that ordinary study does.
33	it is a valuable aid in learning--but should also be supplemented	I used it quite frequently--
34	For reviewing my math it was good to have.	I took math in my Freshman and Sopho- more yrs. in high school and did pretty good--but then no more after that. So the review was good.

Student Number	Response to Question 16	Response to Question 17
35	It was an effective method of review and of learning new material.	This was the easiest type of learning experience I have had.
36	it seems to be an organized method of study.	I could learn and review a lot more material in what seemed to be less time.
37	It does help me to study by giving instructions and examples.	
38	it is a very organized progressive way of learning--makes learning more thorough and seem easier.	I like it.
39	moving at your own rate is beneficial to a certain extent.	when reviewing, it was beneficial, because a person could do as much as necessary.
40	favorable	Because one can start at the beginning and can easily follow step by step through the course, the studies are learned more thoroughly and it is easily retained
41	acceptable, easier to learn and remember than other methods.	
42	helps in saving time--easier to remember and understand.	having used the programmed math book I understand better some basic concepts.
43	favorable	A definite listing of facts et associated principles.
44	favorable	Interesting study, motivation, reward
45	Favorable: made studying easier, quicker and least frustrating.	Because this makes learning easier, quicker, and less confusing--which helps you when you have heavy study loads.
46	Negative--there is room for improvement	It seems very impersonal and mechanical but does seem to get some material across
47	that it moves too slowly--you stay on easy problems too long and seem never to progress	I can think faster than the instruction allows me to--I become very bored with answering the same question 1000 times.
48	I felt it was a good way to practice problems but not to learn	I became too dependent on the book and expected answers.
49	It is no better than other learning mechanisms.	They didn't help me.
50	I don't like it--but I think that I would after time of adjustment.	You must adjust to this manner of presentation--material when too easy is not stimulating enough.
51	good. But we didn't use enough to get a full picture of studying all subjects this way.	It was a different way of studying.
52	okay	I have not had enough experience with this material in other fields of study to give a definite answer.

Student Number	Response to Question 16	Response to Question 17
53	I think just as much can be accomplished with a regular math course and I understand human instructor better because I can ask questions.	I think I could have gotten more from a human instructor.
54	This is my second experience with it. I had it for Algebra in high school and I definitely feel I am not as well as I could be in Algebra because of this.	I got good grades in Algebra but I definitely did not retain the material. I miss the student-teacher contact.
55	More application via the instructor in application of math is needed	I still believe mathematics must be taught by the Instructor for a better retaining of material.
56	This type of study didn't motivate me. I really didn't study just picked out the proper word or statement in the paragraph.	I feel that I retain more when I read and outline the material I am trying to learn!
57	It made the studying much easier but I'm afraid that I forgot much of it in a very short time.	I enjoyed the book but it did not really make me memorize the various formulas, etc. that I should. Instead I merely looked back in the book until I found the information I needed.
58	Seems to be an easier way of learning but some questions were a little ridiculous.	
59	I like it but at times the explanation wasn't clear enough on the answers or the examination given.	1. The answer is there when you need it to know if you are right rather than waiting until the next day. In order to learn you have to apply yourself and think rather than let a teacher do it for you.
60	I found it difficult to sum all the material up.	I found I forgot things more easily because it stated things in such a way that it seemed easy then but & the book I found it hard to correlate.
61	that it saved me some time et most of the time I enjoyed it.	Saved time; helped to learn the material easier but not necessarily to retain the knowledge.
62	a well used idea--providing the instructor is capable of supplementing the material.	Instead of asking the teacher constantly-- you were able to work it out on your own.
63	Very good. It saved time by going over the problems and pointing out areas of possible mistakes.	a. They can be used for quick reference. b. Can point out solutions quickly.
64	I liked this sort of instruction.	Because if you didn't understand you could go back et re-read--The answers were there so you could see if you worked the problems correctly.
65	I feel it is an advantageous method of learning. I found it to be good.	I was able to learn the material easily and understand it through this type of study.
66	I liked this new method of study. It was a challenge to find the right answer.	This was a new method of study. It was interesting and you learned exactly what you put into it.

Student Number	Response to Question 16	Response to Question 17
67	it made it easier to remember content and record it	Sometimes it is hard to remember an answer, but if I see it written immediately I recognize it.
68	I liked it very much.	I could learn at my own speed and review was easier.
69	a necessary part of teaching program. Makes understanding facts easier.	Could teach problems to ourselves.
70	that I felt it very beneficial and helped me to know if I understood it or not.	That you would work the problems and then could see if you did it right if not you could do it over.
71	That I feel it helped me to learn by giving me problems to work and correct answers to prove it by.	I found I could do the problems on a test and on the hospital floor as well, where some medication problems arise.
72	helps me know what type of material I need to study more.	I gave the opportunity to work out problems, then check with ans. sheet. I was sure that my reasoning was correct this way.
73	I liked it very much. It made learning easier for me.	Anything that makes learning easier for me is favored by me. I would like to see more of this type of learning.
74	A positive one. It explained the material to me and I could explain it to others-- bothering the teacher for extra time.	saved time for instruction of whole class, could be repeated as often as necessary for/by individual student, gave opportunity to help others learn by explanation. Thank you.
75	it was very helpful in this type of course.	Certain formulas were set up by which you could follow and this is helpful especially when you deal with drugs and solutions.
76	I found that the examples and problems did help.	I found it easier to remember the material in the way it was presented.
77	It saves study time et helps make it easier to learn the material.	The material is concise--answers et questions so that you can check your knowledge as you go along
78	--it made the material very clear and easy to understand--I think it is a good idea.	It was a great learning help.
79	It is very helpful to learning and remembering important facts	I gained much from doing Drugs and Solutions. I think I can say I was able to retain most of what I learned.
80	Liked what I had--could have used more	I would have enjoyed more as they saved time.
81	I like it. It is helpful in study time and studying	Helpful -
82	I liked it cause it helped my studying	(* no response)
83	from what we had it was good-	Repeating material over and over is helpful to me-

Student Number	Responses to Question 16	Responses to Question 17
84	O.K.	it saved time
85	I like it.	It saved time by supplying the answers beforehand.
86	Excellent for the amt. we had	Saved study time and research
87	yes	saved study time
88	(* no response)	Did not have enough material to know if I liked it or not.
89	(* no response)	Didn't have enough.
90	(* no response)	Didn't have enough.
91	(* no response)	Didn't have enough.
92	I like it.	I needed more of it to really decide.
93	I think it is useful especially if it is utilized positively.	Makes one aware of depth of personal study.
94	I don't remember much about it.	Didn't have enough of it to know.
95	(* no response)	Didn't have enough.
96	Didn't have enough to really know	Didn't have enough.
97	I didn't have enough to really know	(* no response)
98	I didn't have enough to know	(* no response)
99	I didn't have enough to know	I didn't have enough to know.
100	time consuming	I learned from it but it was time consuming and repetition
101	It helped my scope of learning	it was hard to remember all the important facts I wanted to –
102	it was helpful but was some contradiction with own book –	It was easier to learn $\bar{c}$ all the repetition–
103	It made studying easier because it gives basic pts to work from--I like it.	While it doesn't give all related information a great help.
104	it saved time in studying but did not go into depth enough, did not answer all of my own personal questions. Just facts!!	Because when using program learning I could not question the statements.
105	is very good for memory work but is not in enough detail.	Programmed material does not cover all systems thoroughly but is sufficient.
106	good basis for learning but there's a little too much repetition, not enough detail.	Programmed material doesn't appear to cover the system as thorough as it possibly could.
107	It's good but you can get real lazy about it. It's easy not to do it because the answers are right there to peek at.	I had never used it before. I liked it because of repetition but it was too easy to look at the answers.

Student Number	Responses to Question 16	Responses to Question 17
108	States facts but doesn't go into explanation. The why and wherefore	I learned facts but also want to know the reasons why such facts are stated to be so.
109	Learned association and remembered material. Seemed to stay with me.	My grades were better than had been before. More interested in material taught.
110	it made some things clearer and also was made to understand.	More out of assigned material in books to be read.
111	I liked it real well. A person can't help but learn with it.	This has helped me to better understand and learn the material in this course.
112	I believe it to be a great learning aid.	By the constant drilling, I was able to remember more.
113	favorable	the programmed learning stressed important facts and also a good outline for study of human body and functions.
114	I like it.	Because you couldn't help but learn the facts by the time you wrote them down so many times.
115	that in my case it was very helpful, the repetition of facts, the presentation of facts from different facets is very stimulating.	I found marked improvement on my exams after I began the use of programmed learning.
116	made studying easier and learned facts, improved grades.	Programmed put the material into a simple but very comprehensive form.
117	I liked it very much and I think it should be used in other schools such as high school and grade school.	It repeated the important facts until you were able to understand and retain it.
118	it helped in remembering important facts	I retained more material by reading an important fact over and over again.
119	helps to get my assignments	(* no response)
120	the question and answers are concise and brief.	I was able to get facts quickly, then read my textbook.
121	there should be more of it.	I found it very useful in my case.
122	that it helps and saves time. Makes learning easier to remember.	That they are simple and uncomplicated. They are easier to comprehend.
123	The ability to read and know, what I have read.	They are more easier to understand.
124	it served as a guide for studying.	The material is well outlined--I developed a very good understanding of it.
125	good--If you do all of it it is a great help--But ours I found only covered the most basic factors.	I still had to go over my book to get some of the lesser facts, but it did make me learn the general things. It was an excellent idea.
126	Excellent method for learning the material presented--the repetition was particularly helpful.	Much better retention--Facts that should be studied were condensed. Almost made you learn material.

Student Number	Responses to Question 16	Responses to Question 17
127	It is a good way to learn more in detail what is being taught in class	Because this course is so condensed it is difficult to get enough out of lectures. The programmed material aided in learning more easily and by memory when called on to discuss a certain topic.
128	I felt I learned more after study of my program learning book--I did not sell my book at end of course -	The book took an "inside" view of each subject and went deep enough and over it enough to learn
129	I learned much faster and retained more material.	I have a limited time to study and am older and it has been hard for me to settle down and study and with program learning I am able to retain more.
130	I liked it better than an ordinary textbook.	It is easier to grasp, understand, and remember and get more out of it.
131	It was very interesting	It just interested me
132	that it's easier to study and easier to learn.	that it makes studying more fun and interesting to learn
133	A positive one	Reasons in part two
134	favorable	(* no response)
135	favorable	(* no response)
136	a greater feeling of unity in learning. I feel more secure in my educational background for nursing.	(* no response)
137	Very easy to learn facts, helps in studying.	Math used to be very difficult and is now made easier by programmed math.
138	it makes remembering easier and especially helps you learn math.	It helps you by having the answers and procedure for finding the answers (math) where you can refer to them if you are stuck.
139	Brings facts closer together and ties them in so they can be applied more readily.	It has helped me understand the basic material that needs to be learned rapidly.
140	good	easier learning.
141	It helps me work at my own speed.	I worked at my own time so that I could understand.
142	it's very good	It did help me remember and kept repeating the important areas
143	I feel it is easier to retain the material.	Because I have found especially in nursing fundamentals it is easier to comprehend.
144	I like it better than classroom, it saved study time.	I have finished both books.
145	Makes possible faster learning of basic facts and principles which are related to subject matter.	Definite facts are given--There is more time for concentrating on facts because study time is sacred.
146	I like it	It makes learning easier in my opinion

Student Number	Responses to Question 16	Responses to Question 17
147	it's all right for easy study but I would not recommend it for studies which require a great deal of thought	I did very well in Drug math, however in nursing principals I retained very little of the material.
148	I enjoy studying this way, it's not as much of a chore, however I don't always seem to retain the important or pertinent material.	It makes studying easier and more enjoyable.
149	that they are very helpful to a student	programmed material enables you to learn the right things and therefore you are able to learn much faster and much better.
150	it helped me to think while I read	I often do not think while I read--find myself daydreaming--Here I am forced to think.
151	I like it.	It's like having an instructor with you while you are studying.
152	Easier--saves time -	(* no response)
153	I think it is the best thing that ever happened.	it works.
154	I think it is a good idea.	It helps you to study and learn the material you are studying.
155	it is of great help if the material presented is not overly repetition, but has facts that will really help me in my field of study.	This is the first time I have had programmed instruction and a lot of my material was repetition and I soon lost interest in the assignment even though I completed it.
156	that it has helped me immensely to learn and retain facts and it is an interesting way to study	I find it hard to put the book down; it is actually a fun and meaningful way to learn
157	Fine for learning facts, but for memorization it could be improved--the basic facts are too spread out	that I have found it difficult to study the material for a test because of all the repetition of material.
158	favorable, with reservations	It is effective for learning facts such as math, and give a general picture of other subjects but the material we have used lack depth for specific knowledge.
159	Favorable for certain courses.	Programmed material is better for cut and dried material.
160	I thought it was very good for the math problems	It helps the student adopt to answering questions.
161	It was beneficial as I could directly apply facts to situations	(* no response)
162	--is a good guide and always a good reference to check with.	This material helped me to understand the problem more thoroughly and is good to refer back to.
163	Very helpful--What took you so long?	Compact--We were able to function well with the material given--Appeared to be a collection of data from many texts

Student Number	Responses to Question 16	Responses to Question 17
164	Good instruction--some a bit elementary	You could work at your own level and spend more time on parts you felt necessary--elementary sometimes and repeated.
165	it is faster and easier to learn	it took less time to learn the material.
166	I thought it very helpful. Would like to use it more.	It made it easier to learn the material and remember it.
167	Good for quick fact learning--not depth.	Felt more depth of understanding gained by reading texts.
168	Okay	sometimes easier to learn material
169	material is sometimes boring however, I retain the material longer	Even though the book keeps repeating itself --I still learn by seeing it several times.
170	Generally poor. I do like some of the short programs--1-2 hrs long	They seem to be boring--I would rather listen to a lecture.
171	Very time consuming, unpleasant, but helpful.	Helpful because I remember the facts I write down; requires long periods of time in which I may wish to do something else, very tiring because it takes so long.
172	it would be good for review but I feel it inadequate for primary instruction	I had a difficult time doing the assigned parts by myself and still have some problem areas.
173	That it is a quick way to learn something but it does not stimulate further interest	That it does not tend to stimulate one's interest or furthers studying of the material.
174	it is helpful in learning although it takes a lot of time	It helped me in my hospital work, and the hours of time spent on it will continue to be useful.
175	that I really like it and would like to use it in all my classes	I found it much easier to learn, and I did not become tired while reading.
176	It really helped	it seems you can get more depth in the material
177	It was fun and beneficial.	It was enjoyable to read and confer with other people. Both people learned together.
178	I enjoyed studying that way	I could go at my own speed.
179	best thing around.	Helped me by pointing out important facts and made me review them.
180	that it is quite helpful in learning and I enjoy using it.	It provides a more interesting type of study situation
181	I like it.	I think it is a sound teaching technique. Small amounts of material are handled at one time and correct responses are reinforced
182	It's terrific!	Easier and more interesting way of presenting facts in a concise manner.

Student Number	Responses to Question 16	Responses to Question 17
183	Programmed material makes studying easier and more effective	I find it hard to remember reading material with the programmed material it became easier
184	It is helpful in learning facts	It is hard for me to pick out facts which others consider important. I tend to learn what is practical and I can put to use--
185	I like it very much.	The step-by-step way it was presented, I couldn't miss learning the material.
186	I like it. It holds your attention.	Holds attention. Gives practice Can refer back.
187	very favorable	easy to understand, go at your own rate-- you get immediate feed back to what was learned
188	I like it, interesting while learning	It's my first time back in school after many years--I enjoyed them.
189	that I like it	because the material is easier to comprehend
190	I like it all right	Studying went faster and it was made more interesting so, the thought of reading it wasn't dreaded.
191	A very good teaching device in that you can go at own speed.	(* no response)
192	It is very interesting to go through.	Very good
193	I feel as though I get more out of it than just reading a text book.	I understood more of the material than I did when I read the text book.
194	It is real good. Interesting and you can read it a lot faster.	Good understanding of two courses studied in this manner.
195	that they are a lot easier to study and more interesting.	(* no response)
196	that it is very good. I enjoy learning this way where it is thoroughly explained and then additional problems given for better understanding.	I needed this material to help me better understand the technicalities of some of the data studied.
197	good	points made very clearly; helps you to "think" answers.
198	I think it depends on WHAT the material is covering.	The programmed material on interpersonal relationships wasn't especially helpful, but the one on drugs was.
199	I liked the asepsis unit but disliked drugs and sol.	I found it harder to remember the equivalents by program study.
200	Nice invention, but not thorough.	Although the programmed material was a different approach, it could not replace textbooks due to approach of material in p. instruction (poorly organized)

Student Number	Responses to Question 16	Responses to Question 17
201	Sometimes good sometimes bad--depends how it's written.	I thought the OB programmed material was boring and very obvious
202	Fair	I found it difficult at times to understand the material and explanations.
203	I think it is a good system	It is more self teaching, therefore a good supplement to the instruction.
204	Very good!	It was easier to learn this way and much more enjoyable.
205	good	found them hard to put down!
206	I really learned and enjoyed it.	I was really teaching myself and learning on my own initiative
207	OK.	Make studying interesting
208	favorable	I remembered the material easier and they make good reference books and review material
209	enjoyed using it	made studying easier, retained material better
210	I like it, it is a good way to learn.	I thought I learned a lot from it.
211	different than previous studies.	I had never attempted a programmed unit of instruction before and found it successful.
212	it helps make the material covered easier to understand and remember	it was just easier to study, helping make tests easier.
213	I enjoyed it very much.	it did make studying easier and made it interesting and fun, yet I learned much from it.
214	I enjoyed it.	It was very interesting reading--I feel that I learned the material at a greater speed.
215	"finally they've created a way to make a subject enthusiastic and more eager to learn."	makes facts clearer States all facts gives me a chance to test myself
216	I didn't learn as much because I didn't have to dig for the facts, everything was done for me.	I'd rather have a method where we have to collect our own material and thus learn more.
217	Takes more time in difficult material. Doesn't stick with me as long	I am a poor reader; I like more condensed material better
218	it is worth while in subjects where only set facts are expected to be learned	it does not motivate further study it is difficult to review certain phases without going through the whole lesson.
219	it was good for some types of learning and some type of material but I wouldn't like it for all.	the train of thought is broken too often and therefore it is better to use it for learning facts rather than concepts

Student Number	Responses to Question 16	Responses to Question 17
220	I liked it even though sometimes it seemed easy or like the questions were silly	New and interesting approach instead of the same routine can go at own rate
221	that if I did not know anything about Drugs and Solutions it would have been fine	That once you learn something like Drugs and Solutions one way it is confusing to learn another although it is good to know more than one way
222	an affirmative one, but I can only compare it with math type problems	Saved study time, very easy outline to follow, but it can easily become a crutch and remove the needed motivation for deeper study.
223	I understood the material faster and could review for myself with no difficulty the areas hardest for me.	1. an easier way of studying 2. presenting facts $\bar{s}$ unnecessary explanation, etc.
224	I feel that it greatly reduces reinforcement of incorrect conclusions, answers, etc., by immediate correction-	positive
225	one of acceptance and usually enjoyment.	it touches a variety of subjects; brings up different thoughts and ways of thinking.
226	that it is a detailed explanation of each step.	This is the way that it appeared in that it made learning easier and at ones own rate
227	It made learning of the material easier-- and if you were wrong, it explained why.	Giving reasons for incorrect answers helps to learn--and you understand better.
228	it seems more conducive to learning and was even sort of fun	I repeated what I didn't learn the first time. It made me stop and think before answering. It was fun to know right then if I had guessed right.
229	appeared too simple at first. Was deceiving but after adjustment was effective	I was surprized at the outcome of my first quiz but after re-evaluation of study habit it worked fine.
230	(* no response)	(* no response)
231	I found it simplified and enjoyed this type of studying	Easier to understand, could study through subject faster, a fun-way to learn.
232	active immediate recall made me incorporate the correct answer instead of incorporating an incorrect answer and have to change my thinking.	I did not feel frustration of waiting to find out how adequate my answer was. I remembered the material longer because there was no conflict as to its accuracy
233	I think it is a benefit	I felt I learned better from this type of material.
234	I enjoyed this method of study and felt it it was one of the most efficient methods of learning	(1) It requires less time (2) It provides a constant challenge. (3) It concentrates the material down to the important facts.
235	negative	I have used it very little so perhaps haven't learned to appreciate it; however, I feel my time is used to more value by study in other methods.

Student Number	Responses to Question 16	Responses to Question 17
236	Neg--busy work.	Most of it is written out longer than necessary. Keeps breaking into middle of a concept to ask questions--I don't know, just didn't seem worthwhile!
237	I feel the instruction moved too slowly-- much repetition--too much reading Boring	I am a slow reader. I feel I receive more stimulation for learning from lectures and instructors and then doing outside reading on my own.
238	I'd rather have a class in some cases	I feel that in a class we can ask questions and know the whys but you can't with this.
239	Sometimes I feel that the material is too simple, when it is simple questions which do not stimulate thought I tend to skim the material.	I feel that the theory is good, but should be made more difficult.
240	moves too slowly--seemed like grade-school work	probably having to recall answers and fill in on the questions.
241	So far I have considered it somewhat of a "bother"	I haven't really had enough experience with it to realize the educative possibilities and have not always completed assignments given.
242	I don't like it.	I usually find it hard to find time to do this sort of thing in my spare time--that was when we were supposed to do it--on our own in spare time.
243	it is rather time consuming, but I feel it is useful in forming concepts that "stick"	1. It takes too long to read. 2. I remember what I do read.
244	I feel it is good but so time consuming.	the area covered in one hour for instance is quite small however the depth of coverage is good.
245	I think it takes a long time to do without interruptions--but I like it if I have time	I haven't the time with all my other reading assignments that are pressing.
246	good	time consuming, but definite learning advantage
247	good. The material is presented in a way easily and progressively understood.	See above (item 16)
248	that it is a great way to learn.	I was able to retain the material longer and it seemed easier to learn.
249	I like using it--I suppose as it gets to be used more the variety will increase which would be my desire	I find the things stick with me, it helps thought processes.
250	I am in favor of them	It helped me reason out the answers--not just having all the positive answers, but actually putting yourself in the judgment situation
251	I feel that it is helpful in stressing and making workable the knowledge of a course.	It makes important facts readily understandable and you are able to advance your own learning in an outline way.

Student Number	Responses to Question 16	Responses to Question 17
252	It is sometimes beneficial to promoting new concepts, esp. helpful in improving interpersonal relationship theories	I have done a number of them--they all made me think and become more aware of situations and goals.
253	It makes studying more interesting and meaningful.	I enjoyed it as I was able to check my progress and comprehension by the questions asked at the end of each paragraph and section. I was able to tell in which areas I needed improvement.
254	It is a good plan-	It helps one to remember material better, and have a fuller understanding of concepts rather than bare facts.
255	I haven't used or become well enough acquainted with it to form an opinion	(* no response)
256	I feel the material seems easier in it, but it is not as easy to apply to actual experience.	I had some trouble transferring that which I learned to outside practice and experience.
257	I liked it but some of the questions were too simple and seemed a waste of time.	it helped me relate facts--the ones I knew with the ones I didn't know.
258	The booklet did not cover enough different types of problems.	I had to do more outside work in order to understand the material adequately.
259	I liked the programmed study.	The study decreased the amount of study time necessary and was somewhat interesting.
260	I enjoyed using this study.	It helped me to learn and to apply facts better.
261	that on the whole I liked it and thought it was a good teaching aid, however, the very simple questions seemed a waste of time.	that it helped me to understand the material better because it gave you the answers so that you could work the problem until you got it. The repetition was also helpful.
262	that it helped me apply the material to experiences and situations that would be found in the hospital.	that it gave problems for us to solve that we would later use. It helped me to gain experience in doing the problems and increased my understanding of them.
263	it helped me to see the application of formulas and facts to how I would need to use them in the hospital.	(* no response)
264	that it encouraged me to learn the assigned material quicker and it therefore made it easier for me to learn.	that the repetition was helpful to me and I was able to directly apply the facts just learned.
265	I enjoyed it and I wish more courses were available to us.	that I feel that it leaves out the unnecessary facts.
266	it helped me. It was good	I helped me to learn.
267	it helps make learning a little simpler and saves a slight amount on study time.	this is what it did for me.

Student Number	Responses to Question 16	Responses to Question 17
268	positive!	I learn by putting details together. Most of the hours I've spent utilizing it is my free time, unassigned topics, supplemental to my own learning. Systematic steps clarify my thinking.
269	found it interesting and informative; helped me to learn enclosed material-	Material was pertinent to class; easily utilized for pt care.
270	I thought they were very helpful to learn and not memorize material. Increased understanding.	The step-by-step method made it necessary for you to understand one area before going to another--more thorough comprehension resulted.
271	that it is clear, concise and an informative form of subject presentation	same as above (16)
272	that it is useful et should be introduced early in a program of nursing	that it provides a visual et functional aid enabling the student to test himself on his own knowledge.
273	that it gives a better understanding	because it gave me ideas and better understanding of team nursing et staff nursing.
274	It helped me to apply what I had been taught	It asked about situations to which I applied my knowledge of principles.
275	positive; I think it is an excellent educational media.	a. Easy to understand b. thought-provoking c. Good review!
276	I feel it is very useful. It provides an effective method of presenting material.	(1) it aids in application of instructions (2) it makes the material easier to remember by use of specific case studies.
277	They are okay	They seemed to me to be more time consuming. It's easier just to read the textbook material.

Instructor Number	Responses to questionnaire Items 1 through 5 by "non-users of programmed instr.				
	1	2	3	4	5
3	A	In.	MS	b	b
9	B	In.	PN	a	b
12	D	In.	MS	a	b
13	D	-	-	-	-
14	B	In.	All	a	b
15	E	In.	PN	a	b
16	D	In.	-	a	b
20	G	In.	Ped.	c	b
21	G	In.	Nut.	c	b
22	G	In.	Mat.	c	b
23	G	In.	OR	c	-
24	G	Sup.	-	c	b
25	G	AD	Ad	c	b
26	G	In.	S	c	b
27	G	In.	MS	c	b
28	G	In.	M	c	b
29	G	In.	MS	c	b
30	G	In.	Ortho	c	b
31	G	In.	MS	c	b
32	G	In.	Fun.	c	b
33	G	In.	Fun.	c	b
37	H	In.	OB	c	b
38	H	In.	Ch.	c	b
39	H	In.	Ger.	c	b
40	H	AD	HT	c	b
41	H	In.	MS	c	b
42	I	Ap.	P/C	d	b
43	I	Ap.	P/C	d	b
44	I	In.	P/C	d	b

A, B, D, E, G, H, H*, I indicate Schools of nursing
In.   indicates instructor
AD   indicates Associate Director
Sup.   indicates supervisor of Health Service
Ap.   indicates Associate Professor
MS   indicates Medical-Surgical
Fun.   indicates Fundamentals
P/C   indicates Parent and Child
OB   indicates Obstetrics
PN   indicates Practical Nursing
Ch.   indicates Child
OR   indicates Operating room
Ortho   indicates Orthopedics
HT   indicates Health Teaching
Nut.   indicates Nutrition
Mat.   indicates Maternal Child Health

Instructor Number	Responses to questionnaire Items 1 through 13 by "users" of Programmed Instruction												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1	A	Ch	MS	b	a	a	b	Fun.	D&S	c	a	h	a/c
2	A	In.	Fun.	b	a	c	b	Fun.	Ma.	a/c	b	a	a/c
4	B	In.	Fun.	b	a	b	a	Fun.	As	c	b	a	c
5	B	In.	MS	b	a	a/b	b	Fun.	As	c	b	h	a/b
6	B	In.	MS	b	a	b	b	As.		c	b	h	b/c
7	B	In.	Fun.	b	a	a/b	b	Fun.	D&S	c	b	e	a/b
8	B	In.	Fun.	b	a	b	a	As.	HDI	c	b	h	a
10	C	Di.	Ad	c	a	c	b	AP	Am	f	b	a	b
11	D	In.	Cl	a	a	c	b	Cl	Am	c	b	a	a
17	G	In.	S	c	a	b	b	Fun.	D&S	d	b	c	a
18	G	In.	M	c	a	a	b	Fun.	D&S	b	b	h	b
19	G	In.	S	c	a	b	b	Fun.	D&S	d	b	e	a/c/e
34	H	In.	MS	c	a	c	b	AJN	AJN	a	b	e	a
35	H	In.	MS	c	a	c	b	AJN	AJN	c	b	e	b
36	H*	Di.	-	c	a	b	b	1&3	-	b	b	h	a/b/d
45	I	In.	MS	d	a	b	b	D&S	D&S	a/c/f	a	e/g	a/b
46	I	ap	MS	d	a	a/c	b	D&S	-	a/b	b	e/h	a/b

A, B, C, D, G, H, H*, and I indicate Schools of Nursing
Ch   indicates Chairman of Medical-Surgical faculty
In.   indicates Instructor
Di.   indicates Director
ap   indicates Associate Professor
MS   indicates Medical-Surgical
M   indicates Medical
S   indicates Surgical
Fun.   indicates Fundamentals of Nursing
Cl   indicates Clinical
Ad   indicates Administrative
As   indicates Asepsis
AJN   indicates American Journal of Nursing
D&S   indicates Drugs and Solutions
AP   indicates Anatomy and Physiology
Ma.   indicates Mathematics
HDI   indicates Human Development Improvement
x/x   indicates more than one answer given

Responses of "users" of programmed instruction to Item 14 and 15 of Questionnaire for Instructors

Instructor Number	Responses to Item 14	Responses to Item 15
1	I tend to forget it since it was assigned for independent study; found the students capable of independent study did well; the others too "forgot" it. I tended to regard this as an independent out-of-class exercise and tested on the material given s any discussion. The student was left to take her math difficulties to her counselor in their weekly conference.	None as my knowledge of them is too slight.
2	No way to answer questions or correct misconceptions.	none at present
4	ability to accurately assess learning	not sure
5	(1) difficult to review or re-read without taking entire program again. (2) Lack of individualism in instruction Boring for some, etc.	Less repetition
6	Difficult to use it as a later reference.	
7	Must depend upon students to achieve understandings desired and to have read the program--no guarantee assignments carried out except discussion and testing	Would like to see one developed for Nursing History. No suggestions.
8	Students still have questions regarding material which needs explanation by instructor.	This is my first quarter using programmed material, therefore, I am not familiar enough with it to make suggestions--need longer time to evaluate
9	No response	No response
10	Too many extra texts are used in our program and this is an added expense	I haven't seen any except the American Health Series. Would like to view some others
11	Presentation and terminology is not consistant with material presented in textbook--confusing--time consuming for limited facts presented.	Teaching materials need to be consistant with programmed material. Textbook and programmed materials should be correlated with all visual aid material.
17	Development of adequate evaluation method is a problem as self study is the method used.	Development of content related to Medical-Surgical nursing is a need in the area of programmed material.
18	Difficult to know if students were consistently studying this--some had no difficulties, others needed much encouragement--consequently a separate and division in the class-	More instruction and information to teachers--Some presented in the AJN are too detailed and some of this needs to involve the students more. Thus far has not been enough material presented to us in this form. This material is excellent in the area of drugs and solution, I think.
19	Creativity and expression are limited.	Greater availability and variety before I can evaluate.
14	Tends to limit scope of subject	(no response)

Responses of "users" of programmed instruction to Item 14 and 15 of Questionnaire for Instructors (cont)

Instructor Number	Responses to Item 14	Responses to Item 15
34	Time	(no response)
35	Cannot think of any, at the moment.	I have none, I find Programmed Inst. Most Valuable!
36	Too time consuming for individual preparation, too few texts and articles are available.	
45	Difficult to diagnose where the students are having problems. Can't diagnose value of content until have been through it with one group of students.	In the one on Drugs and Solns. it needs less emphasis on the review and more items on the new material. Perhaps providing tools to tell how much of the material the student is really getting as she uses it.
46	. . . give only a pre-set point of view	Some seem to be quite lengthy and overly involved--perhaps shorter more concise versions would help. Really its quite new and I haven't used it a great deal.

Instructor Number	Responses by "nonusers" to Item 16 of Questionnaire for Instructors
3	Have only been teaching for six weeks.
9	I have not found them appropriate for Pract. Nursing.
12	Have not seen any that suited this group
13	Our program uses it only in the pre-clinical period and only in Anatomy and Physiology—since I teach a specialty we do not use it, but would be very interested in programmed instruction in the specific areas such as: Medical-Surgical Nsg., Pediatrics, Obstetrics.
14	Have not seen any for practical Nurses specifically.
16	It is to be used in the next class
20	Just starting after years of absence and haven't investigated the method or available material
21	Because I am not familiar with this type of instruction.
22	Have not been exposed to this method of instruction
23	The main material covered in OR nursing is learned by demonstration and return demonstration by the students.
24	I haven't taken the time to rewrite any course outline, nor have I had any formal education regarding this method of teaching.
25	No familiar enough with available programmed material
26	The bulk of the material consists of manual skills and dexterity plus intra-personal relationships which would be difficult to program. Students at this level of preparation have many questions and anxieties which require more supportive et exploration of subject matter than a programmed approach could supply.
27	Interesting question—I really am not sure. The programmed instruction that I have done is for my own pleasure from AJN. These programmed instruction have not been applicable to my particular content.
28	I have not been convinced of its value unless a limited time element presents itself. I feel strongly that first year students, suddenly embracing such new, uncomfortable and complex activities, require time for discussion, clarification, and exploration on a very individualized personal level. Even technical skills involve a great deal on anything but "technical" aspects.
29	I have not as yet taught a complete course and therefore I am not familiar with these kinds of materials.
30	No text has been programmed in my area. I think Programmed instruction is good and the learner can progress at his own pace. The few programmed texts I have seen I do approve of.
31	I have only been teaching one year, and other than briefly going over a book in Pharmacology am not familiar with programmed material.
32	Have had little experience teaching at this time. Have not seen any thing I like for when I will begin teaching fundamentals. Am interested in possibility of using a programmed instruction program for content related to interpersonal relations some time. I had it as a student and thought it was good.
33	Will be using this fall, have not before as this is my first year here and before was teaching over seas where these were not available.

Instructor Number	Responses by "nonusers" to Item 16 of Questionnaire for Instructors (cont)

37   None available in my area. Also, for this level of student and limited time, can sometimes cover material in less time, also, I'm not sure how some students would respond to this type of teaching because (1) they learn from group, discussions, exchange ideas, etc. (2) Some can learn as well in less time by other methods.

38   Have found no material to this time applicable to our area

39   Have not been applicable in type of course now taught--Plan to utilize some aspects of Rehab. Program material.

40   I have not evaluated what type of programmed material is available for area which I teach.

41   None applicable to specific course (Leadership and management) until just recently.

42   . . . have not familiarized myself with this method as yet

43   It has not been initiated here--not sure finances would be adequate--instructors are not prepared to use it.

44   No one has ever started it. It is not published or advertised enough

AN ABSTRACT OF THE THESIS OF

Marcella S. Cate

for the Master of Science in Nursing Education.

Date of receiving this degree: June 8, 1967

Title: The Opinions of 277 Student Nurses and

46 Instructors Regarding the Use of

Programmed Instruction in Nursing.

Approved: ███████████████████████

(Professor in Charge of Thesis)

1.   The Problem

During the last few years, programmed instruction has under-
gone a rather intensive study as an educational instrument.   The
experiences reported in all fields of education seem to suggest that
programmed instruction can teach.   A survey of the literature shows
that many factors affect the use of programmed instruction.   Among
these factors are the course objectives, method of making assign-
ments, areas best suited for programmed instruction, and the reac-
tions of both students and teachers to programmed instruction.   This
study was undertaken to delineate these factors as they apply in
schools of nursing.

2.   Description of Procedure

The data were collected by questionnaires filled out by 277
student nurses and 46 instructors in eight schools of nursing located
in the state of Washington.

The questionnaire for students consisted of three parts.   Part I
included general information and an identification of the independent
variables relevant to students.   Part II of the questionnaire for stu-
dents was composed of six statements pertaining to the students' own
conclusions concerning the value and effect of programmed instruction

to and on the learning process. Part II of the questionnaire for students was composed of four statements designed to determine the student's tolerance of the boredom factor inherent in programmed material. Part IV of the students' questionnaire consisted of two open-end questions designed to elicit the students' general reaction and the reasons for this reaction, to the programmed materials used.

The questionnaire for instructors included general information such as questions relevant to the school, position, clinical area, type of school, and kind of programmed instruction used. Items 10 through 13 related to method of assignments, scope of materials, areas of nursing, and the objectives the instructors felt were best met by programmed instruction. Questions 14 through 16 were designed to elicit the instructor's reaction to, and suggestions for, the use of programmed materials in the teaching of nursing.

In analysis and tabulation of the data the students were assigned to categories according to type of school and year of study. The instructors were assigned to categories according to type of school and users or nonusers of programmed instruction.

3. Summary of Results

On the basis of the information obtained from the questionnaires, from these students and instructors in the eight schools of nursing the following conclusions were drawn:

1. On the basis of the findings of the study the reactions of the students seem to indicate that they objected to using their own time to work on programmed materials.

2. The instructors objected to the fact that they could not be sure that the students were consistently working on the assignments.

3. Since the majority of the instructors selected "independent study" as the method of choice in making assignments it is inferred that programmed instruction is being used in schools of nursing contrary to the literature.

4. Despite the rather wide-spread use of programmed instruction in fields of general education it does not appear that much material is yet available for use in schools of nursing.

5. The faculty did not appear to feel secure in the use of programmed instruction; even those who used it, expressed reservations.

4. Recommendations for Further Studies

Based on the findings of this study, it is recommended that the following studies be made:

1. A similar study that included a group of students predominantly senior students.

2. A controlled study using designated programmed texts, one group of students would use the programmed instruction plus usual reference material; a second group would have only the usual reference material. If evaluations show contrasts, the findings should be significant.

3. A survey of available programmed material for nurses.

4. A study of the need for inservice or continuation education for faculty relative to the use of programmed instruction and other newer teaching methods.