HOME ECONOMICS TEACHERS AND PROGRAMED INSTRUCTION - AN EXPLORATORY INQUIRY

by

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CHAPTER I

INTRODUCTION

Programed instruction is new; its worth as a teaching method is still questioned by some educators. If a classroom teacher is to evaluate and use programed instruction effectively, she needs to know its purposes and must understand and accept the principles of learning on which it is based. A report of the exploration of this thesis follows.

Background for the Study

Early in 1960, home economics staff members of the University of North Carolina at Greensboro[1] began informal investigations of programed instruction. To become familiar with all types of available programs, the staff examined catalogs and advertising materials of publishing companies in addition to professional journals and popular periodicals. A visit to the City Schools of Roanoke, Virginia and classroom observations there increased the enthusiasm for the new method. With the examination of each pamphlet, catalog or book which had been ordered and after consultations with

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[1] At that time the institution was called The Woman's College, University of North Carolina. The name was changed July 1, 1963. The new name will be used throughout this entire paper.

authorities in the field and with representatives of publishing companies; staff members became concerned about the absence of programed materials for home economics instruction. Convinced that no prepared materials were available, the faculty of the area of home economics education began to explore the possibilities of developing programs for use in home economics classrooms.

The writer and two other graduate students were invited to attend faculty seminars and staff meetings where the possibilities for more formal research were investigated. During the summer of 1962, one of these students completed a six weeks' course at the University of Pittsburgh, while the writer went to Southwestern State College in Weatherford, Oklahoma for a workshop on programed learning.

Under the direction of the workshop leaders, the writer began a program which would prepare the beginning home economics student to use the elements of art and apply the principles of design in her daily living. At the end of the workshop one hundred frames, a small beginning, had been written, tested with students and revised. Though the program is not yet complete, the writer believes that the insights which came from her efforts to produce a segment of a program improved her effectiveness as a classroom teacher.

During the workshop mentioned above, qualified persons with practical experience lectured and answered questions asked by participants. Two of these persons were public school administrators who

had supervised the use of programed materials, several were classroom teachers who had used the materials in their subject areas, and one was the author of a programed text in beginning Spanish. Each of these persons stressed the importance of the relationship of the teacher's attitudes and understanding to the effective use of programed materials. The writer noted that Barcus, a programer employed by the Denver Public Schools, said, "Without the teacher's enthusiasm, a program is no good. The teacher must keep the children interested; the teacher is the cheerleader."[2]

Reed, another staff member of the Denver Public Schools, advised; "Don't distribute widely any programed instruction without training persons who will be using them. Many teachers are highly creative in misusing programs."[3]

Many authors agree with the views expressed by these persons. In his summarizing section, Schramm (24, p. 40) offers several suggestions for needed research. His fourth recommendation states:

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[2]In June 1962, when notes were taken from a lecture by Delbert L. Barcus, he was employed by the Public Schools of Denver, Colorado. Part of his job involved the writing of a programed text, Automated Spanish, and the supervision of the use of the text as a part of a research project in cooperation with Stanford University.

[3]Notes from lecture by Jerry Reed who was supervisor of English instruction. In this position, he selected teachers and trained them to program materials for use in the high schools of Denver, Colorado.

Teachers must be trained to use programed materials expertly; and the possibilities of making and using programs should be explored as one introduction to the human learning process in teacher training.

Moore (21) developed self-instructional materials by which the first year clothing student can learn the fundamentals of the sewing machine. One of the purposes of her study was to provide guidance and information to other persons interested in developing programed materials.

Purposes of the Study

The experiences cited above motivated the writer to undertake the present study, the purposes of which were: (a) to determine some of the problems which will be involved in preparing home economics teachers to use programed materials in their classrooms, (b) to recommend appropriate methods for orienting teachers so that they can use programed materials effectively.

Definitions of Terms Used

Educators and psychologists have not yet agreed on common definitions of terms and one may encounter a number of synonyms in the literature. In such instances the writer has chosen one term to use throughout the study and will use the following terms as defined by Moore.

Programed instruction: the method of teaching in which the program becomes a tutor for the student. It is designed and sequenced to lead the student through a set of specified behaviors which make it more probable that he will behave in a given desired way. This term is synonymous with automated instruction and automated teaching.

Programing: the process of arranging the material to be learned into a series of steps, specifying some kind of response to be made by the learner and providing for reinforcement of the correct response.

Programer: the person responsible for developing the program. The programer may be a subject matter specialist, a psychologist, a person trained in programing techniques, or a combination of these.

Program: the sequence of carefully constructed frames leading the student to mastery of a subject with a minimum number of errors. It is synonymous with self-instructional program, auto-instructional program, self-tutoring device, and self-teaching device (21, pp. 5-6).

Organization of the Thesis

The remaining chapters of this thesis include: (a) a brief review of non-technical materials which teachers might read to familiarize themselves with this method of teaching, (b) the procedures followed in conducting the study, (c) the findings of the study, (d) a summary with recommendations for the preparation of teachers and suggestions for further work in the area of programing materials for home economics classes.

CHAPTER II

REVIEW OF RELATED LITERATURE

Because of the newness of programed instruction, available sources of information are limited. Much of the written material is intended for persons with extensive knowledge of learning theories and for persons devoting their time to programing. These technical materials have been excluded from this review, since the writer is concerned with preparing home economics teachers to use programed materials in the classroom.

One of the purposes of this study is to recommend appropriate methods for educating teachers so they can use programs effectively. Any plan for this type of instruction will include suggested readings for the teachers. In this chapter, the writer will discuss articles which may be used by any teacher who wishes to acquire basic information about programed instruction and its uses as a method of teaching. Each article included is discussed in relation to its main purpose in the orientation process. The articles have been arranged in a logical order for a teacher with no previous knowledge of programed instruction.

An Overview of Programed Instruction

In 1962, a popular weekly magazine devoted several pages to an article on programed instruction. Describing programed instruction as "a new scientific discovery," Leonard (15) presented a general overview of the subject. He began his article with optimistic, candid opinions of several psychologists concerning possibilities of the new method, then presented the following distinguishing characteristics of the method:

1. The student is given information in tiny, easy-to-digest bits, only a sentence or a short paragraph at a time.
2. The information is arranged in logical order, with each step building on those that came before. The first steps are very easy. They become difficult so gradually that the student is hardly aware of it. This arrangement is called a "program."
3. At each step, the student writes his answer; he participates actively in the learning process.
4. He is shown the correct answer immediately, so that he can compare it with his own.
5. Most programs are written and pretested to insure that almost all students will get about 95 per cent of the answers right. This, according to programers, makes learning a pleasure, not a threat, and leads students to learn faster and remember longer.
6. Each student works individually, at his own rate of speed.
7. The program (on paper or microfilm) may be loaded into a teaching machine. This is simply a box about the size of a portable record player. The student turns a knob to bring each step or "frame" before a window in the face of the box. He writes in his answer to the frame, pulls a lever to uncover the correct answer, then goes on to the next frame. A program may also be presented in book form. This can be done by printing the frames one beneath the other, with the correct answer at the side of the frames. The answers are covered with a slider (or a ruler or sheet of paper), which the student slides down after he has written each of his own answers (15, p. 60).

Anticipating questions concerned with the classroom use of programed instruction, Leonard quoted from his interviews with teachers, students and administrators of the schools of Roanoke, Virginia.[4] His vivid description of a typical programed mathematics class helped clarify some of the comments made by the students. He reported that a few students complained of being bored, but expressed the opinion that, "students and teachers have accepted the technique as a fact of school life."

The journalist presented Skinner, the distinguished Harvard professor, as a parent and psychologist concerned about working out ways of applying the science of learning, as he saw it, to the art of teaching. He gave some of the background of Skinner's laboratory work with pigeons and pointed out the relation of these studies to the development of programing techniques and Skinner's first teaching machine.

Leonard stated that when teachers began to prepare materials for the machines, "they discovered they had much to learn about the learning process." He described this insight by teachers as programed instruction's first and perhaps its greatest contribution to education.

Several frames of an elementary school science program were included for the reader's examination. The instructions provided and

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[4]In 1962, Roanoke's school system was participating in this country's largest test of programed instruction. In this instance, the programs in book form, were supplied by Encyclopedia Britannica Films, Inc.

the descriptive material which accompanied this part of the program gave some indications of programing procedures. Leonard's realistic description of the programing task probably would not discourage qualified, interested teachers, but would give them a preview of the nature of the work necessary to prepare a good program.

As Leonard explored the possibilities for future uses of programed instruction, he included a simple explanation of branching programs, a discussion of some of the yet unsolved problems in using programed materials, and an interesting description of the use of programed instruction in helping teach skills to persons of underdeveloped nations.

Programed instruction probably will continue to improve as classroom teachers learn more about using it. Whether a teacher with strong negative views of the method should attempt to use it is questionable. The articles reviewed in the remainder of this chapter were selected as basic information for teachers who have a favorable impression of programed instruction and wish to learn more about using it. Other teachers might become more interested in the method after reading the materials.

If the teacher needs more information of an introductory nature, Fine's book, Teaching Machines (10), is recommended. This book was written after the author made a survey of the programed instruction movement. Fine visited schools and colleges in five locations, interviewed parents, teachers and psychologists, and sent questionnaires to

three hundred school administrators in his search for answers to several questions concerning programed instruction.

Fine did not present numerical data; he reported his findings, generally as a dialogue with the interviewer, in an interesting informal manner. From his interviews with students, Fine concluded:

1. Most students prefer teaching machines to the methods of the conventional classroom.
2. They would rather have both the machine and the human teacher than either one alone.
3. They feel that a human teacher is especially important in discussion subjects such as social studies, philosophy, creative writing, and history -- in brief, the non-tool subjects.
4. They think the teaching machine needs to be improved so that it can allow for review.
5. Students respond enthusiastically to immediate reinforcement.
6. They believe the step-by-step framing technique helps them learn better.
7. They like the principle of errorless learning.
8. They like being able to study at their own pace and accept this opportunity as a challenge rather than as a shield for laziness.
9. They believe programed learning is especially suited to the brightest student and the student who is below average.
10. In all their comments about the machine's patience, its adjustment to individual differences, its techniques of small steps and rewards, the students made a very definite response in favor of the new learning psychology and against the aversive psychology of the traditional classroom (10, p. 101).

Fine also reported flaws of automated teaching. Three such disadvantages may be summarized from the interviews with teachers: (a) students complained of boredom when there was a lack of contact with teachers and classmates, (b) some students cheated by skipping frames or looking ahead, (c) some students were unable to work independently.

In pointing out the contributions of programed instruction in strengthening American education, Fine included its advantages for students--making learning more enjoyable, encouraging students to do their best, and allowing each one to learn at his own rate-- as well as advantages for teachers--reducing the amount of routine teaching drudgery, and improving the teaching of tool subjects.

In conclusion, Fine stated his opinion that:

> The American system of education is the best there is. Its traditions are good.
> And:
> Programed learning is new. Its worth is untested. Machines are still regarded as curiosities.
> But:
> The future belongs to those who are willing to experiment (10, p. 165).

To meet the above challenge, the teacher may find direction for further action by reading a small book, Programed Instruction, Today and Tomorrow (24). In this book, Schramm pointed out the need for teachers to be prepared to use programed materials. He further suggested some plans of action to guide the teacher. Among other proposals, he recommended that the schools make more imaginative applications of programed instruction and that all channels of teaching be examined to see where they could apply some of the principles of programed instruction beneficially.

As the teacher follows these suggestions, she must have some understanding of the principles of learning on which programed

instruction is based.

Underlying Principles of Programing

Deterline (8) suggested that theories of learning should more accurately be called theories of behavior, because learning is concerned with behavioral changes. To provide teachers with an adequate background for using programed instruction and for understanding the theories, he defined the five principles which follow:

> Reinforcement: the occurrence of a consequence which strengthens the behavior that produced that consequence.
> Extinction: the weakening of a response when the response is not reinforced.
> Generalization: the broadening or far-reaching tendency for a response to occur, not only in the presence of those stimuli actually present during the first occurrence of the response but in the presence of other, similar stimuli.
> Discrimination: the ability to tell the difference between stimuli and to respond appropriately.
> Concept formation: the joint operation of generalization within certain specific limits and the discrimination of those limits (8, pp. 27-32).

Though these principles are complex, Deterline presented them with simplicity by using explanations and illustrations that would be familiar to teachers. He elaborated on the term "successive approximations," which he described as a method of training developed in the animal laboratory similar to the logical sequence of small steps in a program. The type of education which builds on the existing behavior of the learner and gradually shapes that behavior toward the final goal or objective, he explained, is the underlying procedure of a

good tutor and of programed instruction.

To emphasize the differences between programed instruction and ordinary texts, several authors have programed their explanations of the principles of learning. While these programs effectively teach the learning principles, such writings are difficult to review. Each bit of information is related to that which immediately precedes it, so that material lifted from the context would have little meaning for the reader.

Milton and West (20) prepared sixty-five frames which describe programed instruction in terms of the principles on which it is based. Their program presents information and gives the learner some experience in constructing his own responses.

Cram (7) programed a book to acquaint the reader with various types of programs. The learner is instructed about each style of programing by using that style. Cram included one section of material which compared linear and branching styles of programing.

In addition to teaching the variations in styles of programing, this work demonstrated one way in which a program can reflect the personality and philosophy of its creator.

Cram states on page 63 of the text that "the teacher who says of a failing student, 'It's all in the book--he's just too lazy to dig it out,' might be using that comment as an excuse for poor teaching."

A teacher who resents this remark is instructed to turn to page

58 for Cram's response:

> O. K., I take it back. I wasn't referring to you anyway. But surely you'll admit that it could happen with a frustrated, unskilled, or lazy teacher. Please accept my apology, return to page 63, and select another alternative.

Cram included in his programed text a self-test at the end of each chapter. When the learner has completed this program, he should no longer confuse programed materials with testing devices.

Creating A Program

Programs '62 (23) provided descriptive information and sample frames for each program which was available by the end of 1962. For each program listed in the guide, a teacher can determine: subject matter, suggested academic level, title, author, publisher, size and number of pages, cost per pupil, number of frames, availability of teacher's manual and tests, forms of response used, intended population, prerequisites, and the time required to complete the program.

Perhaps a teacher needs to attempt to program at least a segment of subject matter if she is to understand programing principles and techniques. Almost every author has his own scheme or programing model to recommend (e. g., 21, Chapter 2). All authorities agree that the programer must have specific objectives before beginning the actual writing of frames. Learning to state program objectives in terms of desired behaviors may be as

profitable as any experience of the teacher in her preparation to use programed instruction.

To teach persons to set appropriate behavioral objectives, Mager (18) programed a brief text. He summarized his thesis in this manner:

1. A statement of instructional objectives is a collection of words or symbols describing one of your educational intents.

2. An objective will communicate your intent to the degree you have described what the learner will be DOING when demonstrating his achievement and how you will know when he is doing it.

3. To describe the terminal behavior (what the learner will be DOING):
   a. Identify and name the over-all behavior act.
   b. Define the important conditions under which the behavior is to occur (givens and/or restrictions and limitations).
   c. Define the criterion of acceptable performance.

4. Write a separate statement for each objective; the more statements you have, the better chance you have of making clear your intent.

5. If you give each learner a copy of your objectives, you may not have to do much else (18, p. 53).

In a handbook by Bloom, et.al. (3), the cognitive areas of learning --knowledge, comprehension, application, analysis, synthesis, and evaluation--are thoroughly discussed and well illustrated with specific examples of objectives. If objectives were classified in the order recommended by Bloom, specific weaknesses in planned learning experiences might become evident. This process could be used to

help the teacher to know and to explain to others what she is trying to accomplish through the program she intends to prepare.

Bloom also presented sample test items with the objectives. These examples might be helpful in preparing tests for a good program. Data from pre-tests and post-tests are used to determine some of the strengths and weaknesses of a program. Several authors include the construction of these tests as a part of programing. The teacher might choose either to prepare the tests or the frames of the program first. There are no research findings to recommend either as the preferred method.

Gilbert (12, pp. 478-80) devised a set of rules for anyone concerned with the improvement of a given educational subject matter. Gilbert facetiously stated rules for programing which he said should "get the job done."

Markle, Eigen and Komoski (19) cooperated to produce a program on programing. Presented in a more scholarly manner than Gilbert's rules, the information could be used as a guide for the writing, testing, and revising processes of programing. The teacher who enjoys programing enough to continue working on the techniques and procedures, should be able to prepare a short program which she could try in her own classroom.

As a result of the decision making experienced during the programing, a teacher should be more capable of evaluating

self-instructional materials. These teaching materials are so new that the accompanying labels have not yet been standardized. Lysaught and Williams (17) suggest that every programer should provide, with the program, a final report including the bases for the decisions that were made concerning selection of the unit, assumptions about learners, selecting appropriate objectives, choosing a program model, revising the program, evaluating it, and any other information which might help solve an instructional problem.

Using Programed Instruction

Whether the teacher administers her own program or one prepared by another, she may experience some alterations in her role as a teacher. As Lysaught and Williams (17) point out, the teacher will necessarily take an experimental approach as she uses programed instruction to discover better methods of teaching. She will gain insights into the role of the teacher and the learner as some methods work and others are less successful and as she points out possible reasons for the successes and failures. According to these authors, the teacher who uses programs should expect to devote more of her time to counseling, guiding, assisting and stimulating students as individual learners.

Supplementary Material

Though the materials reviewed will provide basic information for

the teacher, she may wish additional help on a particular phase of programed instruction. For this purpose, the writer would recommend books by Galanter (11) and Lumsdaine and Glaser (16). Almost all of the early writings on programed instruction are included in these two source books. From the extensive bibliographies in the books, the teacher could locate many other articles of interest.

CHAPTER III

THE GROUP STUDIED AND THE MATERIALS USED

Sampling Plan

This study was limited to home economics teachers in North Carolina who were employed during the academic year 1962-63. All white teachers, vocational and non-vocational, were included in the population. Due to the difficulty of securing a list of names of non-vocational Negro teachers, this group was omitted. There were 878 teachers in the population sampled. In January 1963, questionnaires (see Appendix I) were mailed to the 35 Negro and 165 white teachers drawn by using a table of random numbers.

Data To Be Secured

The survey was designed to describe North Carolina home economics teachers with respect to:

1. Present knowledge of programed instruction.
2. Available sources of information about programed instruction.
3. Interest in using programed materials.
4. Willingness to experiment with programed materials in the classroom.
5. The relationship between knowledge of the materials

and willingness to use such materials.

6. Misconceptions regarding principles on which programed instruction is based.
7. Misconceptions related to the use of programed materials in the classroom.
8. Readiness to participate in a training program on using the materials.
9. Types of in-service education preferred.
10. Reaction to the beginning frames of a program for home economics students.
11. Home economics subject matter areas in which supplementary help seems to be needed.

Preparation of Materials

This study is based on assumptions derived from the study of printed matter concerning programed instruction and from consultations with persons who had used it as a method of teaching. The following suppositions are basic to the study:

A working knowledge and understanding of programed materials is a prerequisite for effective and efficient use of such materials.

The attitude of the teacher has an important influence on her choices and uses of programed instruction.

The types of instruction given teachers preparatory to their use of

self-instructional devices should be based on their previous knowledge of the programed materials and programing methods.

The writer decided to program a part of the questionnaire to avoid embarrassing any participant who previously had not heard of programed instruction. These thirty frames (see Appendix I) briefly introduced programed instruction and gave the teachers some understanding of the principles of learning related to programing. After proceeding through the short program, all participants had some of the same basic terms of reference. Suggestions for this informational part of the material were taken from a published booklet (20) with special permission of the publisher (13).

To give the teachers a preview of what a home economics program might be like, the investigator included, with the questionnaire, one objective and the first twelve frames of a program for beginning home economics students.[5] When she had examined this small part of the program, the teacher was instructed to complete part B of the questionnaire. This part (see Appendix I) was devised by the investigator:

1. To learn teachers' reactions to the program prepared for the home economics students.

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[5]These frames were copied from the previously mentioned program prepared by the writer.

2. To discover teachers' present interests in programed instruction.
3. To obtain from secondary school teachers their suggestions for subject matter areas which might be programed.
4. To determine teachers' willingness to experiment with programed instruction in the classroom.
5. To ascertain preferred types of orientation.

The final section of the questionnaire included a randomly arranged list of simple statements concerning the use of programed instruction. The teachers were instructed to indicate, by checking the appropriate space, whether they agreed or disagreed with each of the statements. From these responses, the investigator hoped to discover teachers' attitudes and misconceptions regarding the use of self-instructional devices in the classroom. For the purposes of this study, the investigator did not consider it necessary to plan a device which would measure the degree of agreement or disagreement.

The basic ideas for the twelve items in this part of the questionnaire were selected from various sources. In order to clarify the method, specific examples follow.

> Programed materials should be used to supplement the basic course rather than being the basic element of the course.
>
> The ideal would be to have all high school courses programed so that a student could work on a program during every period

of the school day.

The above items, 2 and 12 in the questionnaire, were based on suggestions from a number of persons who view programed instruction as one of the many methods of teaching available to the teacher. Schramm (24) proposed that in addition to some programed work, students should read, write, explore, discuss and experiment. To these essentials, the write would add, especially for home economics students, the necessity for many creative experiences in the classroom.

Programed instruction may help relieve the teacher of many routine duties so that she has more time for the other aspects of teaching. Skinner (25) states that no machine can substitute for teachers in the important productive interchanges between teachers and students. These interchanges prevent the students from becoming passive receivers of instruction. Komoski has said:

> Programed instruction is able to implant knowledge with great efficiency and thoroughness. But if teachers are not able to cultivate in students the ability to interrelate this knowledge and use it creatively, these students will end up as well instructed but uneducated persons. Programed instruction can teach a person mathematics; it can teach him economics; but it cannot guarantee that he will <u>not</u> cheat on his income tax. The people who talk about replacing teachers with machines talk nonsense (14, p. 12).

From these statements and others of similar content, the writer phrased questionnaire items 4, 9 and 11 which follow:

> One of the results of using programed materials will be that the teacher will eventually be replaced by a machine in the classroom.

The student does not really learn anything from a program because it is so easy that the answers are really given to him.

Programs may be able to teach factual information more effectively and efficiently than a human teacher.

The content of item 7 was founded on the importance of specific objectives. Mager (18) considered the preparation of objectives such an important part of programing that he devoted much time and effort to programing materials designed to teach interested persons to write attainable objectives.

The six items not discussed in detail deal with the use of programed instruction in the classroom. The notes from which these items were formulated were collected informally over a period of several months, from correspondence, conversations, and interviews with teachers who had used programed materials. These teachers of subjects other than home economics described the problems related to programed instruction which they had encountered in the classroom. As the investigator used this information for discovering common problems as a background for preparation of the questionnaire, she will not cite specific references for the remaining items.

When all parts of the data-gathering instrument had been completed, a cover letter was composed to accompany the materials (see Appendix II). This letter explained the general purpose of the survey and emphasized the importance of each individual's contribution to the study. The materials, with a self-addressed, stamped envelope for returning

the responses, were mailed in January 1963. About three weeks later, a follow-up letter was sent to all persons who had not responded (see Appendix III). Late in March, another set of materials with an attached note (see Appendix III) was mailed to each of the eighty teachers from whom replies had not been received.

Seventy-five per cent, 150 of the teachers in the sample, returned completed questionnaires. A check of the sub-groups revealed that 87 per cent of the white vocational, 73 per cent of the non-vocational and 57 per cent of the Negro teachers responded. The investigator did not consider these differences unusual considering the length of the questionnaire.

The study was under the direction of the School of Home Economics from which most of the white teachers had received their training for vocational work. The investigator has been teaching vocational home economics in North Carolina for six years and has become acquainted with many of the vocational teachers through conferences, summer school classes, and her work with the Future Homemakers of America. The weight and apparent length of the questionnaire probably discouraged responses from persons who did not feel obligated to the institution or to the investigator.

All responses from sections B and C of the questionnaire were recorded, summarized and analyzed. Answer sheet A was used only for the response to the informational part of the material; mistakes on this

sheet might have been merely an indication of weaknesses in programing. Because this investigator was not interested in revising the program for further use, these answer sheets were disregarded. The investigator did note with interest that most of the teachers who responded had checked their own answers and had made few errors.

The data are summarized and discussed in detail in the chapter which follows.

CHAPTER IV

FINDINGS

This study did not include an extensive statistical analysis, but tables are included to help summarize the results. A discussion of the teachers' reactions to the frames of the program for home economics students will be followed by a descriptive analysis of the data from section B of the questionnaire. The final section of this chapter will summarize the teachers' responses to the twelve statements presented in part C of the questionnaire.

Reactions to Home Economics Program

Interest in Using the Program

Sixty-six per cent of the teachers responded to the section of the questionnaire about the program for home economics students. Of those who responded, 96 per cent made favorable comments concerning the program. Most of these teachers indicated that they were interested in using the method because they believed the program would save time and would present the material in an unusual manner, or because they were interested in any new method or idea which might in some way improve their effectiveness as classroom teachers.

Suggestions for Future Programs

Areas recommended

It was difficult to interpret all of the 218 recommendations for future programs, because some of the ninety-six teachers who responded specified only the general areas of home economics subject matter. It is doubtful that they intended such large units to be taught entirely through the use of a program. A few of these teachers noted that they would like "anything" in the suggested area. Such responses may mean that these teachers were expressing a need for some help in strengthening their teaching in that area.

Three areas, clothing, housing, and foods, were listed by fifty or more teachers (see Table 1). These three areas probably contain more factual information for students to master than most of the others do.

TABLE 1

AREAS RECOMMENDED FOR FUTURE PROGRAMS

Area	Frequency
Clothing	61
Housing	53
Foods	51
Child care	23
Health and safety	13
Management	10
Family relations	7

The area of clothing

A program on the sewing machine was suggested by ten teachers (see Table 2). Nine teachers recommended that construction methods be programed. Textiles, also, was a topic recommended by nine teachers. The use of programed instruction was suggested by eight teachers as a possible way to teach students to use a pattern. About one-sixth of the responses were related to personal appearance and care of clothing. Ten teachers who suggested programs in the area of clothing did not specify a particular topic.

TABLE 2

SUGGESTED TOPICS FOR FUTURE PROGRAMS IN THE AREA OF CLOTHING

Topic	Frequency
Clothing (not specific)	10
Use of the sewing machine	10
Methods of construction	9
Textiles	9
Use of a pattern	8
Personal grooming	6
Care of clothing	4
Personal hygiene	3
Costume designing	2
Total	61

The area of housing

More responses were recorded for the general area than for any specific topic within the housing area (see Table 3). Ten teachers recommended that art principles be considered as a topic with possibilities, and eight teachers indicated that they would like a program to teach "the correct way" of hanging pictures. Several topics in this area were mentioned only once.

TABLE 3

SUGGESTED TOPICS FOR FUTURE PROGRAMS IN THE AREA OF HOUSING

Topic	Frequency
Housing (not specific)	18
Furniture selection and arrangement	13
Art principles	10
Hanging pictures	8
House plans	1
Home appliances	1
Moving	1
Flower arranging	1
Total	53

The area of foods

About one-third of the responses in the area of foods suggested the need for a program to teach the terms used in recipes and the

principles of food preparation (see Table 4). Most of the teachers who suggested these two topics combined them in one response. Eight teachers suggested that nutrition might be taught more effectively by the self-instructional method. Four other topics were recommended less than six times.

TABLE 4

SUGGESTED TOPICS FOR FUTURE PROGRAMS IN THE AREA OF FOODS

Topic	Frequency
Terms and principles of food preparation	19
Foods (not specific)	9
Nutrition	8
Table setting	5
Table service and etiquette	4
Meal planning	3
Food preservation	3
Total	51

Section B of the Questionnaire

Previous Knowledge

The investigator found that approximately one-third of the teachers who responded had not heard of programed instruction before receiving the questionnaire. Another third had heard or read about the method but had never seen any programed materials. Of the remaining one-third, twenty-three teachers had previously become familiar with the principles and terms associated with programed instruction. Nearly 85 per cent of the 150 teachers indicated that they had not previously known the learning principles on which programed instruction is based (see Table 5).

TABLE 5

TEACHERS' KNOWLEDGE OF PROGRAMED INSTRUCTION PRIOR TO THE STUDY

Extent of Knowledge	Number	Percentage
No previous knowledge	49	32.7
Had never seen a program	50	33.3
Not familiar with the principles	28	18.7
Knew principles and terms	23	15.3
Total	150	100.0

Sources of Information

Fourteen teachers indicated their previous knowledge came from two sources. As there was no way to determine which was the primary source, both responses were counted equally (see Table 6).

TABLE 6

TEACHERS' SOURCES OF INFORMATION ABOUT PROGRAMED INSTRUCTION

Source	Frequency	Percentage of Teachers	
		Responding N=150	With Some Knowledge N=150
Other teachers and administrators	36	24.0	36.0
Professional magazines and materials	57	38.0	57.0
Popular periodicals and laymen	13	8.7	13.0
Other sources	8	5.3	8.0
No previous knowledge	50	33.3	. .
Total	164+	109.3+	114.0+

+Fourteen of the 150 teachers responding checked two sources of information, therefore, the percentage totals are greater than 100.

Ninety-three per cent of those teachers with some prior knowledge attributed their knowledge to professional personnel or materials. Several of the thirty-six who indicated that they had obtained their information from other teachers and administrators noted that mathematics teachers in their schools had used some programed texts.

Professional magazines and materials were the sources of information for 57 per cent of the teachers who had some previous knowledge of the teaching method. While popular periodicals advertise some types of teaching machines and have included articles on automated instruction and though several publishing companies have used door-to-door salesmen to distribute some of their programs, only thirteen teachers indicated that they had obtained information from these sources.

Four teachers indicated that they had obtained their knowledge through work in summer school courses. Four others had learned about the method when a son or daughter had been taught by the method.

Willingness To Try Programed Instruction

Three teachers, 2 per cent of those responding, expressed no interest in trying to use programed instruction as a method of teaching (see Table 7). However, 70 per cent of the teachers indicated

that they were willing to try to use the method and would like to have more information about it. Forty-one desired more information prior to making a decision concerning their willingness to use programed instruction in their classrooms.

TABLE 7

TEACHERS' WILLINGNESS TO USE PROGRAMED INSTRUCTION AS A TEACHING METHOD

Interest in Using Programed Material	Frequency	Percentage N=150
No interest at present time	3	2.0
Willing to try and would like more information	106	70.7
Undecided at present and desire more information	41	27.3
Total	150	100.0

The teachers' willingness to use programed instruction varied with their knowledge of the method (see Table 8). Of the teachers with no prior knowledge of the method, 55 per cent were willing to try to use the method, while 45 per cent desired more information before deciding whether they would be willing to use it. Eighty-four per cent of the teachers who had heard about the method, but had not previously

TABLE 8

NUMBERS AND PERCENTAGES OF TEACHERS, GROUPED ACCORDING TO PREVIOUS KNOWLEDGE, WHO EXPRESSED VARIOUS DEGREES OF INTEREST IN USING PROGRAMED INSTRUCTION

Previous knowledge	Interest in Using Programed Instruction							
	No Interest		Willing to Try		Undecided		Total	
	N	%	N	%	N	%	N	%
No previous knowledge	0	0	27	55	22	45	49	100
Never seen a program	0	0	42	84	8	16	50	100
Not familiar with the principles	0	0	20	71	8	29	28	100
Knew terms and the principles	3	13	17	74	3	13	23	100
Total	3	. .	106	. .	41	. .	150	. .

seen a program, were willing to try to use programed instruction; 16 per cent of this group were undecided.

Nearly three-fourths of those teachers who were not previously familiar with the principles of learning on which programed instruction is based were willing to try to use it in the classroom.

Of the twenty-three who indicated that they had already become familiar with the terms and principles of programed instruction, three teachers were not interested in trying to use it, seventeen were willing to try and three desired more information before making their decisions.

Plans for Preparatory Education

Though the instructions stated that a teacher should check the statement which most accurately described her opinion or position, seventeen teachers checked two plans for receiving the necessary training (see Table 9).

A plan for obtaining information through a summer school course for graduate or certificate renewal credit was most preferred. Thirty-nine per cent of the teachers marked this item. Thirty-five per cent desired a non-credit workshop in a nearby school. About one-fifth of the teachers indicated that they preferred receiving materials and responding by mail.

The response patterns of those who were willing to try to use programed instruction differed only slightly from that of the total

TABLE 9

TYPES OF PREPARATORY EDUCATION
PREFERRED BY TEACHERS
PRIOR TO USING PROGRAMED INSTRUCTION

Method of Acquiring Information	Frequency N=167	Percentage N=150
County group meetings	53	35.3
Local non-credit workshops	24	16.0
Summer school course for graduate credit or certificate renewal	59	39.3
Receiving materials and responding by mail	31	20.7
Total	167	111.3[+]

[+]Seventeen teachers marked two items.

group in regard to their choices of plans for preparatory education (see Table 10).

The responses of the vocational teachers concerning preparatory education differed from those of the non-vocational teachers (see Table 11). North Carolina vocational teachers are organized and meet monthly by groups. The typical group consists of all the teachers from one or two counties. Because of the small number of Negro vocational teachers and because of the limited supervisory staff, these teachers travel greater distances for their meetings and meet less often than the

TABLE 10

TYPES OF PREPARATORY EDUCATION PREFERRED BY TEACHERS WHO WERE WILLING TO TRY TO USE PROGRAMED INSTRUCTION

Plan for Education	Frequency	Percentage of Teachers N=106
County group meetings	37	34.9
Local non-credit workshops	17	16.8
Summer school course for graduate or certificate renewal credit	44	41.5
Receiving materials and responding by mail	22	20.8
Total	120 +	114.0 +

+Fourteen of the 106 teachers checked two plans for preparatory education, therefore the total percentage is greater than 100.

white teachers. For these reasons, the responses of the Negro teachers are not considered in this small section of the discussion.

The percentage of vocational teachers who preferred the county group meeting was double that of the non-vocational group. Nearly one-half of the non-vocational teachers preferred to respond to the materials by mail, while only 13 per cent of the vocational teachers chose this plan.

TABLE 11

PERCENTAGES OF
VOCATIONAL AND NON-VOCATIONAL TEACHERS
WHO PREFERRED VARIOUS PLANS
FOR PREPARATORY EDUCATION

Plan for Education	Percentage of White Teachers	
	Vocational N=103	Non-vocational N=27
County group meetings	45	22
Non-credit workshops	13	22
Summer school courses	33	37
Responding by mail	13	48

Section C of the Questionnaire

Teachers' Reactions to Statements

Most of the statements of this part of the questionnaire were related in some manner to the principles or uses of programed instruction. The teacher indicated her agreement or disagreement with each of the ideas or opinions expressed (see Table 12). Although no space was provided for a teacher to designate indecision, several teachers put question marks in the response spaces by specific items of the questionnaire. Because of the location of these marks, they were interpreted and recorded as indecisions rather than as lack of understanding of the idea stated.

Some teachers used two check marks in the same column by occasional items in the list. Such indications probably were inserted to show stronger agreement or disagreement for the particular item. Since the study was not planned to measure the degree of agreement or disagreement, these double checks were tabulated as a single response. The constructed responses to this section, "Never," "I really do," "Yes, indeed," "wholeheartedly," etc., were tabulated as the agreement or disagreement they expressed.

All of the 150 teachers who returned questionnaires responded in some way to this section of the material.

The responses of at least 80 per cent of the teachers concurred on seven of the twelve statements in section C of the questionnaire.

TABLE 12

PERCENTAGES OF TEACHERS WHO AGREED, DISAGREED, OR WERE UNDECIDED CONCERNING STATEMENTS ABOUT PRINCIPLES AND USES OF PROGRAMED INSTRUCTION

Item No.	Statement	Percentage of Teachers		
		Agree	Disagree	Undecided
1	If a teacher were using programed materials in a class, she would make assignments in terms of minutes to be worked rather than pages or sections to be completed.	52.0	39.3	8.7
2	Programed materials should be used to supplement the basic course rather than being the basic element of it.	90.0	7.3	2.7
3	Any teacher could order available programs from a reputable commercial company and use them well.	22.0	75.3	2.7
4	One of the results of using programed materials will be that the teacher will be replaced eventually by a machine in the classroom.	1.3	96.0	2.7
5	The personality of the teacher in the classroom would have little or no effect on the learning of the pupils if they were using programed materials.	12.0	87.3	0.7
6	Any program is a good program for the student if he does not make many incorrect responses when working through the total program.	22.0	74.7	3.3

TABLE 12--Continued

Item No.	Statement	Percentage of Teachers		
		Agree	Disagree	Undecided
7	It is essential for the person writing a program to have definite objectives from which to work.	96.0	2.0	2.0
8	Cheating will be a major problem when programed instruction is used.	32.7	61.3	6.0
9	The student does not really learn anything from a program because it is so easy that the answers are really just given to him.	9.3	86.7	4.0
10	Programed materials are of necessity very dull and uninteresting, and are all very similar.	8.7	83.3	8.0
11	Programs may be able to teach factual information more effectively and efficiently than a human teacher.	48.7	48.0	3.3
12	The ideal would be to have all high school courses programed so that a student could work on a program during every period of the school day.	6.0	89.3	4.7

These statements, questionnaire items 2, 4, 5, 7, 9, 10, and 12, will not be considered in the following discussion. In another section of this chapter, the responses of teachers will be discussed in more detail. In that section the responses will be described item-by-item, and the extent of the teachers' knowledge and their sources of information will be considered in the analysis.

Item 1 was a statement to the effect that a teacher would assign a number of minutes to be worked rather than specific problems or sections to be completed if the students were using programed materials. Nine per cent of the teachers were undecided about this item. Some of the 39 per cent who disagreed probably interpreted the word "assignment" to mean out-of-class work. It is possible that a teacher might ask students, who were behind, to complete a certain number of frames by a particular date and these students might do some of the frames at home. However, if each pupil is to progress at his own rate, the class time given to programed instruction probably would be the same for all students. A slight majority of the teachers agreed with the latter idea.

Seventy-three teachers agreed and seventy-two disagreed with item 11, which stated that a program might be a more effective and efficient teacher of factual information. Most authorities agree that research has sufficiently verified the statement. As it has been pointed out previously, there are no programs for home economics

students and most of the teachers who responded had little previous knowledge of programed instruction. Home economics teachers may be reluctant to accept some statements about the effectiveness and efficiency of the method until they have evidence that programs can be used successfully in their academic field.

Two statements, items 3 and 6, were somewhat related to the evaluation of programs. The majority seemed to realize that a teacher might need help in selecting and using programed materials. Section B of the questionnaire implied such by suggesting several plans for preparatory education. The materials which were mailed to the participants did not suggest specific ways to evaluate programs. Seventy-five per cent of the teachers disagreed with the opinion that the number of correct responses would be the only criterion necessary for determining the value of a program for a student.

Six per cent of the teachers did not decide whether they thought cheating would be a major problem in using programed instruction. Sixty-one per cent did not think it would be a problem. The teacher's philosophy and attitude toward students are factors which probably had more influence on her response to this particular item than on some of the other items of the questionnaire.

Statements Related to Classroom Use
of Programed Instruction

Curricular problems

Item 2: Programed materials should be used to supplement the basic course rather than being the basic element of the course.

Throughout this section of the chapter, the reader should consider that each teacher classified herself in regard to her previous knowledge of programed instruction. Some of the teachers who indicated the highest level given might have known the terminology and yet not have known the principles well enough to apply them. A less subjective classification of the teachers according to their knowledge of the method probably would have been more discriminatory.

Ninety per cent of the teachers agreed with the statement of item 2 as given above; only four teachers were undecided. Ninety-four per cent of the teachers who had no previous knowledge of programed instruction agreed with this item (see Table 13).[6] The percentage of teachers who agreed with the item diminished slightly as the extent of knowledge increased.

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[6] In the series of tables which follow, the total number of responses for the four sub-groups classified according to extent of knowledge is 150. The responses of the forty-nine teachers with no previous knowledge are excluded from the data summarized in the lower half of each table. A total of 114 responses were given by the teachers classified in four groups according to their sources of information about programed instruction.

TABLE 13

QUESTIONNAIRE ITEM 2: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	46	94	2	4	1	2	49
Never seen program	45	90	3	6	2	4	50
Unfamiliar with principles	25	89	2	7	1	4	28
Knew terms and principles	19	83	4	17	0	0	23
Source of knowledge							
Professional personnel	32	89	3	8	1	3	36
Professional materials	52	91	4	7	1	2	57
Popular periodicals	11	84	1	8	1	8	13
Other sources	6	75	2	25	0	0	8

Item 11: Programs may be able to teach factual information more effectively and efficiently than a human teacher.

Teachers with no previous knowledge of programed instruction seemed to question its effectiveness and efficiency as a teaching method more than teachers who had some knowledge of the method prior to the study (see Table 14). Fifteen of the twenty-three teachers who indicated they already knew the principles of programed instruction agreed with the statement. Forty-six per cent of the teachers in the two groups who had never seen a program before the study agreed with the statement; of the two groups with more previous knowledge of the method, 53 per cent agreed.

The percentage of agreement with this item was slightly larger among teachers who had acquired their knowledge of the method from other teachers and administrators. The response of teachers who had secured their information from professional materials differed little from that of the teachers who had read popular periodicals or had discussed programed materials with salesmen and other laymen.

Six of the eight teachers who had learned about programed instruction through a college course of some type or from a son or daughter who had used the method agreed that it might be a more effective and efficient teacher for factual information.

Item 12: The ideal would be to have all high school courses programed so that a student could work on a program during every period of the school day.

TABLE 14

QUESTIONNAIRE ITEM 11: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	18	37	30	62	1	2	49
Never seen program	28	56	21	42	1	2	50
Unfamiliar with principles	12	43	15	56	1	4	28
Knew terms and principles	15	65	6	26	2	9	23
Source of knowledge							
Professional personnel	21	58	14	39	1	3	36
Professional materials	29	51	25	44	3	5	57
Popular periodicals	7	54	5	38	1	8	13
Other sources	6	75	2	25	0	0	8

None of the teachers who had previously known the principles and terms of programed instruction thought the described situation would be an ideal one (see Table 15). One teacher from this group was undecided. Six of the nine persons who agreed with this item were teachers who had previously heard of the method but had not seen any programed materials. Perhaps these teachers with such limited knowledge of the materials were inclined to think of programed instruction as a "cure-all" due to their enthusiasm and lack of experience in using the method. However, of the fifty teachers in this group, forty-one disagreed with the statement.

Teachers who had received information from professional materials were the only ones who were undecided about the statement. The smallest percentage of teachers disagreeing with the statement also came from that group. It is possible that these teachers had read some materials which did not point out limitations of programed instruction. Much of the early material of this type contained reports of the proficiency of programs in one or two subjects and did not discuss the topic in terms of the total school curriculum. Many early introductory articles were written before research findings were available to point out problems of student boredom from lack of interpersonal relationships in the classroom.

TABLE 15

QUESTIONNAIRE ITEM 12: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	1	2	45	93	3	5	49
Never seen program	6	12	41	82	3	6	50
Unfamiliar with principles	2	7	26	93	0	0	28
Knew terms and principles	0	0	22	96	1	4	23
Source of knowledge							
Professional personnel	3	8	33	92	0	0	36
Professional materials	3	5	50	88	4	7	57
Popular periodicals	1	8	12	92	0	0	13
Other sources	0	0	8	100	0	0	8

Problems related to program evaluation

Item 3: Any teacher could order available programs from a reputable commercial company and use them well.

Teachers with the least prior knowledge of the method were more inclined to agree with this statement than were teachers who had some previous knowledge of the subject (see Table 16). Ninety-one per cent of the teachers who knew the terms and principles of programed instruction did not agree, while 67 per cent of the teachers with no previous knowledge of the method disagreed with the statement. None of the teachers who had previously seen a program indicated that they were undecided concerning the teachers ability to order and use materials unassisted.

Twelve of the thirteen who cited popular periodicals as a source of information disagreed with the statement in item 3. About 80 per cent of the teachers specifying professional personnel or materials as their informing sources did not agree. It is doubtful that any written materials specifically stated any teacher would or would not be able to select and use programed materials without some type of special education. Perhaps teachers do not always discern the implications of the writer from the facts given. In an attempt to create interest in a new method, it well may be that some persons have failed to point out some of the less attractive aspects of the method, such as the necessity for training teachers to use programed instruction and

TABLE 16

QUESTIONNAIRE ITEM 3: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	13	28	33	67	3	5	49
Never seen program	11	22	38	76	1	2	50
Unfamiliar with principles	7	25	21	75	0	0	28
Knew terms and principles	2	9	21	91	0	0	23
Source of Knowledge							
Professional personnel	6	17	29	81	1	2	36
Professional materials	11	19	45	80	1	1	57
Popular periodicals	1	8	12	92	0	0	13
Other sources	2	25	6	75	0	0	8

giving them help in selecting appropriate materials. The importance of the latter may increase as more programs become available. Perhaps writers in the field have not adequately emphasized that programs like other teaching materials differ in quality. Some of the articles written especially for parents in the popular magazines have pointed out that precautions should be followed when choosing programs for children.

Item 6: Any program is a good program for a student if he does not make many incorrect responses when working through the total program.

Students who already have a good background in a subject might be able to work through a program, make no mistakes and yet not learn from the program. Trivial information can also be taught by the errorless method. At least one-fourth of the teachers evidently did not consider these possibilities, because they agreed with the opinion as stated in item 6 (see Table 17). Teachers who supposedly knew the most about programing were as likely to make this error as were uninformed teachers.

Popular periodicals and non-professional persons had been the sources of information for thirteen teachers. Eleven, 84 per cent, of these teachers disagreed with item 6, while 74 per cent of the ninety-three teachers whose sources had been professional persons and materials indicated disagreement. More authors of popular articles

TABLE 17

QUESTIONNAIRE ITEM 6: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	11	22	36	74	2	4	49
Never seen program	13	26	34	68	3	6	50
Unfamiliar with principles	3	11	25	89	0	0	28
Knew terms and principles	6	26	17	74	0	0	23
Source of knowledge							
Professional personnel	8	22	27	75	1	3	36
Professional materials	14	25	42	73	1	2	57
Popular periodicals	1	8	11	84	1	8	13
Other sources	2	25	6	75	0	0	8

have included sample frames of programs; examining the frames may help the teacher recognize some criteria for evaluating the program.

Problem of student cheating

Item 8: Cheating will be a major problem when programed instruction is used.

Earlier in this chapter, the teacher's attitude toward students was cited as a factor in determining her response to this item. Slightly over one-third of the teachers believed that cheating would be a major problem. The nine teachers who indicated that they had not decided were teachers who had not previously seen a program (see Table 18).

Four of the eight teachers who cited sources of information other than those listed in the questionnaire indicated that they believed cheating would be a major problem. Only 15 per cent of the persons who had learned about the method through popular periodicals expressed this opinion. Many articles written for the general public have included descriptions of teaching machines with built-in devices to prevent cheating. One-third of the group who indicated that other teachers and administrators had taught them about the method agreed that cheating would be a problem. This percentage was greater than that of teachers who had learned about programed instruction from professional materials. Since the response did not indicate the informer's background nor the type of information given by him, one cannot assume that these were

TABLE 18

QUESTIONNAIRE ITEM 8: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	18	37	28	58	3	5	49
Never seen program	17	34	27	54	6	12	50
Unfamiliar with principles	6	21	22	79	0	0	28
Knew terms and principles	8	35	15	65	0	0	23
Source of knowledge							
Professional personnel	12	33	22	61	2	6	36
Professional materials	13	23	41	72	3	5	57
Popular periodicals	2	15	10	77	1	8	13
Other sources	4	50	3	38	1	12	8

teachers and administrators who had had experience with the cheating problem.

The teacher's role

Item 4: One of the problems of using programed instruction will be that the teacher will eventually be replaced in the classroom by a machine.

Only two teachers agreed with the statement (see Table 19). One of these had never heard of programed instruction, and the other was not familiar with its principles prior to this study. Four teachers did not indicate whether they agreed or disagreed with the item.

Practically all the authorities in the field of automated teaching have stated frequently that this is a method to aid the human teacher and that it is not a device to take her place. As there was nearly 100 per cent concordance among the teachers in regard to this item of the questionnaire, the home economics teachers surveyed evidently are convinced that they will not be replaced in the classroom by machines.

Two teachers with previous knowledge who were undecided about this item had obtained their information from materials rather than persons. Even though both teachers who agreed with the statement indicated that professional personnel or materials had been their sources of information, there was not sufficient evidence to indicate that the previous knowledge of programed instruction or the sources of these learnings had affected the responses of the teachers surveyed.

TABLE 19

QUESTIONNAIRE ITEM 4: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	1	2	46	94	2	4	49
Never seen program	0	0	49	98	1	2	50
Unfamiliar with principles	1	4	27	96	0	0	28
Knew terms and principles	0	0	22	96	1	4	23
Source of knowledge							
Professional personnel	1	3	35	97	0	0	36
Professional materials	1	2	54	95	2	3	57
Popular periodicals	0	0	12	92	1	8	13
Other sources	0	0	8	100	0	0	8

Item 5: The personality of the teacher in the classroom would have little or no effect on the learning of the pupils if they were using programed materials.

The teacher's previous knowledge of programed instruction did not seem to affect her response to this item of the questionnaire (see Table 20). Some persons do not agree that the teacher's personality has an effect on the pupils' learning by any method. The device used for gathering data for this study provided no means for determining the number of teachers who also would have agreed with the item if the teaching method had not been specified.

The source from which a teacher had obtained her information perhaps influenced her response. Ninety-one per cent of those who learned about programed instruction from other persons in the teaching profession indicated that they recognized the importance of the classroom teacher even if the students were using self-instructional devices. The relation of the teacher's personality and attitudes to the pupils' effective learning may be pointed out more clearly by professional materials than by popular periodicals and salesmen for program publishers. The latter group may tend to explain the method and its benefits in terms of using programs for home study.

Statements Related to Principles of Programing

Objectives

Item 7: It is essential for the person writing a program to have definite objectives from which to work.

TABLE 20

QUESTIONNAIRE ITEM 5: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	7	14	41	84	1	2	49
Never seen program	3	6	47	94	0	0	50
Unfamiliar with principles	5	18	23	82	0	0	28
Knew terms and principles	3	13	20	87	0	0	23
Source of knowledge							
Professional personnel	2	6	33	91	1	3	36
Professional materials	8	14	48	84	1	2	57
Popular periodicals	3	23	10	77	0	0	13
Other sources	1	12	7	88	0	0	8

Most of the education courses and materials for home economics teachers emphasize the importance of stating objectives before attempting to teach by any method. As one might expect, the teachers recognized the need for a set of working objectives for the program writer (see Table 21). Only three teachers disagreed and three others were undecided concerning the importance of objectives. All twenty-eight teachers who had some knowledge of programed instruction but were not familiar with its principles agreed with the statement as given. Since objectives are a vital part of teaching by any method, the three persons who disagreed with this item may be less well prepared to teach home economics.

Sequence of small steps

Item 9: The student does not really learn anything from a program because it is so easy that the answers are really just given to him.

There were fourteen teachers, 9 per cent, who agreed that the students would not really learn anything (see Table 22). Three of these teachers indicated that they knew the principles of programed instruction. Some of the teachers who agreed with the statement voluntarily stated that the material presented in programs was so simple that people did not learn anything from it. These teachers may be persons who believe that learning which comes easily and is enjoyable is less worthwhile than that which is difficult and unpleasant to master. Research does not support the theory, however.

TABLE 21

QUESTIONNAIRE ITEM 7: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	48	98	0	0	1	2	49
Never seen program	47	94	2	4	1	2	50
Unfamiliar with principles	28	100	0	0	0	0	28
Knew terms and principles	21	92	1	4	1	4	23
Source of knowledge							
Professional personnel	35	97	1	3	0	0	36
Professional materials	55	96	1	2	1	2	57
Popular periodicals	11	85	2	15	0	0	13
Other sources	7	88	1	12	0	0	8

TABLE 22

QUESTIONNAIRE ITEM 9: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	5	10	42	86	2	4	49
Never seen program	5	10	43	86	2	4	50
Unfamiliar with principles	1	4	26	92	1	4	28
Knew terms and principles	3	13	19	83	1	4	23
Source of knowledge							
Professional personnel	1	3	34	94	1	3	36
Professional materials	6	10	48	85	3	5	57
Popular periodicals	0	0	12	92	1	8	13
Other sources	1	12	7	88	0	0	8

When the teachers were classified according to their sources of information, most of the responses which agreed with item 9 were given by teachers who cited professional materials as a source of information. Perhaps some of the articles written to introduce teachers to programed instruction have not adequately explained the purpose of presenting the materials in a sequence of small steps.

Principle of self-pacing

Item 1: If a teacher were using programed materials in a class, she would make assignments in terms of minutes to be worked rather than pages or sections to be completed.

A previous discussion of this item pointed out that the various interpretations of the term "assignments" may have affected the response to this item. Though the teacher's previous knowledge did not seem to be related to the manner in which she responded to this item, the response of the majority of those who indicated they knew the principles of programed instruction did not concur with the majority of responses from the other groups classified according to previous knowledge (see Table 23).

Eight of the thirteen teachers who had acquired knowledge from popular periodicals disagreed with the statement in item 1. This tendency was anticipated since such sources do not propose to prepare teachers for using programed instruction in the classroom. However, teachers who clearly understood the principle of self-pacing should

TABLE 23

QUESTIONNAIRE ITEM 1: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	24	49	20	41	5	10	49
Never seen program	30	60	16	32	4	8	50
Unfamiliar with principles	15	54	11	39	2	7	28
Knew terms and principles	9	39	12	52	2	9	23
Source of knowledge							
Professional personnel	22	61	11	31	3	8	36
Professional materials	30	53	22	39	5	8	57
Popular periodicals	5	38	8	62	0	0	13
Other sources	6	75	2	25	0	0	8

have realized that requiring all students to do the same pages or sections would defeat the purpose of this programing principle. Sixty-one per cent of the responses from teachers who had obtained information from professional personnel agreed that all students would spend the same amount of time on a class assignment, and six of the eight who cited "other sources" of information agreed that the teacher would assign minutes to be worked. Four of these eight knew about programed instruction because a son or a daughter had been taught by the method. The responses of this small group may have been determined in part by the methods used in the classrooms of these children.

Variety in programing

Item 10: Programed materials are of necessity very dull and uninteresting, and are all very similar.

Persons who had not previously seen a variety of programs were handicapped when they tried to respond to the item. Eleven of these teachers were undecided (see Table 24). Since responses from these few would have been based only on their opinions of the segments of programs prepared by the writer and mailed with the questionnaire, the participants may have hesitated to express their opinions especially if they tended to agree with the statement of item 10. A teacher could have used her response to indicate either the interest appeal of the materials presented or it could have been a reflection of her knowledge

TABLE 24

QUESTIONNAIRE ITEM 10: RESPONSE OF TEACHERS CLASSIFIED BY EXTENT AND SOURCE OF KNOWLEDGE OF PROGRAMED INSTRUCTION

Classification	Response						
	Agree		Disagree		Undecided		Total
	N	%	N	%	N	%	N
Extent of knowledge							
None previously	7	14	37	76	5	10	49
Never seen program	2	4	42	84	6	12	50
Unfamiliar with principles	1	4	27	96	0	0	28
Knew terms and principles	3	13	19	83	1	4	23
Source of knowledge							
Professional personnel	0	0	33	92	3	8	36
Professional materials	3	5	50	88	4	7	57
Popular periodicals	1	8	11	84	1	8	13
Other sources	1	12	7	88	0	0	8

of the variety of programs available. Though it was not intended that the programs included with the questionnaire would be dull or uninteresting to the teachers, both were quite similar in design.

Teachers and administrators who had informed other teachers about programed instruction probably also had described various types of programed texts; there were no teachers with information from this source who agreed with the statement. Ninety-two per cent of the responses from this group expressed disagreement with the idea stated. The seven responses of indecision from teachers may indicate that they had not seen or heard of the many types of available programs.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purposes of this study were to determine some problems which would be involved in preparing home economics teachers to use programed instruction in their classrooms and to recommend appropriate methods for orienting teachers to use the programed materials successfully.

A questionnaire of four parts was designed to collect data for the study. One section in the form of a program gave information about programed instruction; another section solicited the responses of teachers to a few frames of a sample program for home economics students; the third part surveyed teachers with respect to their previous knowledge of programed instruction, the sources of their information about the subject, their willingness to use the method in the classroom, and the types of education they preferred before using the method; the final section requested the teachers to indicate agreement or disagreement with twelve statements related to classroom use of programed instruction.

The questionnaires were mailed to a sample of 200 home economics teachers randomly drawn from the population of 878 vocational and non-vocational white teachers and vocational Negro teachers employed in North Carolina schools during the academic year 1962-63. Completed questionnaires were received from 150 teachers, three-fourths of those in the sample.

The home economics teachers were interested in programs for their students because they believed this type of instruction would enable students to learn the subject matter in less time than would be required by conventional methods. Many teachers thought the program presentation might be more interesting for the students. Teachers also expressed interest in learning to use the method so that they might become more effective and efficient classroom teachers.

After examining the frames of a sample home economics program, ninety-six of the teachers suggested possible topics for future programs. Specific sections of the clothing, housing, and foods areas were suggested most frequently. More teachers recommended the development of a program to teach principles of food preparation and terms used in recipes than any other specific topic.

The teachers indicated that they had little knowledge of programed instruction prior to the study. Only one-third of the teachers had seen

a program previously. Professional materials and personnel had been the sources of information for a large majority of the teachers with some previous knowledge of the subject.

Of the 150 teachers who responded, 106 were willing to try to use programed materials in their classrooms and desired more information; only three teachers expressed no interest in using the materials. Nearly one-half of those teachers with no prior knowledge of programed instruction desired more information before deciding whether they would be willing to try to use the method. Plans for receiving instruction at county group meetings and for enrolling in a college course for certificate renewal or graduate credit were the two methods most preferred for receiving further information. Few responses were recorded for the plan which included a non-credit workshop. More vocational than non-vocational teachers indicated a preference for the county group meeting proposal. Nearly half the responses of the non-vocational teachers favored the plan for receiving information and responding by mail.

On each of the twelve statements related to the classroom use of programed instruction, the majority of the teachers agreed with the opinion of authorities in the field of automated instruction. Of the teachers who made decisions concerning the statements, over 80 per cent were of the opinion that:

1. Programed materials should be used to supplement the basic course rather than be the basic element.
2. Teaching machines will not replace teachers in the classroom.
3. The personality of the teacher in the classroom will have some effect on the learning of pupils even if they are using self-instructional devices.
4. The program writer needs to have definite objectives from which to work.
5. The student does learn from the program even though the material is presented so that the learner seldom experiences difficulty and failure.
6. Material which has been programed is not necessarily dull and uninteresting and all programs are not similar.
7. High school students should not work with programed material during every period of the school day.

From one-half to three-fourths of the teachers indicated that they believed:

1. Teachers using programed materials in the classroom would make assignments in terms of minutes to be worked rather than pages or sections to be completed.
2. A teacher might not be able to use well the programs she could order for her students from publishing companies.

3. Making few incorrect responses does not necessarily indicate that the student is using a program which is a good one for him.
4. Cheating will not be a major problem when programed instruction is used.

A slight majority, seventy-three of the 145 teachers who expressed opinions, thought that the method might be a more effective and efficient teacher of factual information than the human teacher using conventional methods.

Teachers, administrators, professional journals, popular periodicals, program salesmen and other laymen had given teachers some information about programed instruction. The responses of the teachers in some instances varied according to their previous sources of information.

Other teachers and administrators had been beneficial in giving information which helped teachers to understand the importance of the teacher's attitude toward programed instruction as a method of teaching. Responses of teachers who had obtained information from professional materials indicated that the teachers were well informed concerning the aspects of programed instruction related to school curriculum. Teachers who had read articles in popular periodicals or had consulted laymen or program salesmen were more aware of the importance of carefully evaluating programs, but were less well

informed about the details of using programs in the classroom.

Conclusions

North Carolina home economics teachers are interested in programed instruction and though they have little knowledge of the method, they are willing to learn how to use it effectively in the classroom. Information about programed instruction acquired from professional and non-professional sources has not adequately prepared the teachers to use the method in the classroom. An organized arrangement for informing teachers would give them greater understanding of the method and its principles and uses. A summer school course with certificate renewal or graduate credit would be an appropriate plan for providing further information for teachers who might be interested in learning to use the method. After the initial orientation at a college, vocational teachers might be given supplementary information at county group meetings and non-vocational teachers could be further informed by mail.

Recommendations

For a Summer School Course

The investigator recommends that a North Carolina college offering home economics courses for graduate credit should include a summer course on programed instruction. It is further suggested that:

1. The course be scheduled as soon as possible.
2. Any home economics teacher interested in learning to use programed instruction be permitted to enroll.
3. Special announcements of the course be sent to teachers who participated in this study.
4. The course be conducted as a workshop.
5. A panel including a teacher, a student, and a school administrator who have used programed materials be present during one session of the workshop to give their views of the method of instruction.
6. A psychology teacher be asked to present one or more lectures on the theories of learning which are related to programed instruction.
7. Some teaching machines be displayed for examination by workshop participants.
8. Appropriate audio-visual aids be used. Especially recommended are the following films: Learning and Behavior (5), Teaching Machines and Programed Learning (22), and Programed Instruction in the Schools (1).
9. All programs or parts of programs available for home economics students be studied by the workshop participants.

10. All persons enrolled in the workshop be requested to read articles reviewed for this study (see Chapter 2 and Bibliography).
11. More advanced students enrolled in the course be provided additional lists of suggested readings.
12. Junior and senior high school girls who have and who have not previously been instructed in home economics be available during the final workshop sessions for student testing of programs.
13. The workshop be divided into two parts.
14. The first part be used to present information for answering the following questions:
    a) What is programed instruction?
    b) How does this method differ from other more conventional methods?
    c) How does programed instruction aid learning?
    d) What kinds of programs are there?
    e) When and why are programed used?
    f) How will teacher-pupil relationships be altered when programed instruction is used?
    g) What are the advantages and disadvantages for teachers, students and school administrators when programed instruction is used?

15. The second part of the workshop be planned to help the participants apply their knowledge of programing principles as they:
    a) Select a segment of subject matter to program.
    b) Prepare objectives for such a program.
    c) Write some frames of the program.
    d) Test the frames with an appropriate student.
    e) Revise the frames and repeat the testing with at least one other appropriate student.
    f) Complete a minimum of 20 frames.
    g) Develop a test for the completed part of the program.
    h) Administer the completed frames and the prepared test to at least one appropriate student.
16. The last session of the workshop be devoted to the evaluation of programs and of the workshop.
17. The curriculum study guide of Cook and Miller (6) and The Use of Programed Instruction in U. S. Schools (26) be used as source books by the instructor who coordinates workshop activities.

For Further Study

As a result of this study, the investigator recommends the following studies related to home economics teachers and programed

instruction.

1. Continue efforts to develop home economics programs giving special attention to portions of the clothing, housing and foods areas of the high school home economics curriculum.
2. Experiment with the sewing machine program to determine teachers' preferences for various ways of using the program.
3. Develop a guide for teachers to use in evaluating programs for home economics students.
4. Encourage persons capable of programing home economics materials and direct them in the programing of a large segment of home economics subject matter.
5. Compare programed instruction as a method of teaching home economics with more conventional methods of instruction with respect to:
   a) Progress of the students.
   b) Time involved for teachers and students.
   c) Attitudes of teachers and students.
6. Survey teachers participating in a workshop on programed instruction and conduct a follow-up study one year later to determine the extent to which teachers have applied the knowledge gained from the workshop.
7. Compare teachers who have attended a workshop on programed instruction with teachers who have acquired some knowledge

of the method from other sources with respect to:

a) Their attitudes toward programed instruction.

b) Their understanding of the principles of learning related to programed instruction.

c) The extent to which they have used programed materials.

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APPENDIX

I. Questionnaire

II. Cover Letter

III. Follow-up Letters

Answer Sheet A (to be returned)

1. _____
2. s _____
3. a _____ l y
4. _____
5. _____
6. _____ _____
7. _____
8. _____
9. _____ _____
10. _____
11. _____
12. _____, _____
13. _____
14. _____, _____
15. _____
16. _____
17. _____
18. no response is required
19. _____
20. _____
21. _____

22. _____

23. _____

24. _____

25. _____

26. _____

27. _____

28. _____

29. P _____ I _____

30.

From this little experience we hope you will learn something about one of the most important developments in education of our century. This is NOT a test. You will rather be learning as you read the statements and then fill in the blanks. You will know what to write in the blanks from the material you have previously read. Read carefully to make sure that your answer is the right one. You will notice in the packet of materials there is more than one answer sheet. For this first section you will be using the answer sheet labeled A. Please do all your marking on the answer sheet since it is the part you will be mailing back to us. You will notice that each set of statements is numbered and that a line has been used to divide the sets. Begin by reading the material presented in step 1. Place your A answer sheet along the long line just under step 1, so that you see only on set of statements at a time. Write your answer in the space beside 1 on the answer sheet. Slide your answer sheet to the next line, you will see the correct answer to step 1. When you have checked your answer to 1, proceed to read and answer step 2. Continue in this manner - sliding the paper to the next line, checking your answer, and then answering the step you have exposed.

---

1. We infer that learning has taken place when through practice a student can make a response he was unable to make earlier. A response is made to a stimulus (plural: stimuli). For the stimulus, "How much is 2+2?" your response is _____.

---

4 (answer)

2. To the stimulus "hand", the Russian student responds "ruka". To "city" he responds "gorod", to "table", "stol". He makes Russian responses to the English words which serve as s_____.

---

stimuli (answer)

3. Most home economics teachers believe that their students should be active. We would agree that effective learning is suggested by the phrase "learning by doing". We try to keep the learners from becoming passive. Instead, we believe girls should be a_____ly responding to stimuli.

---

actively

4. The beginning student does not learn to sew just by silently reading a printed pattern guide. She reads and then does what she has been instructed to do. She makes active responses to the printed words which serve as _____.

(go on to the next page)

stimuli.

5. Few of us are aware, however, that in all learning, not just in physical skills, it is preferable that the learner not be passive. On the contrary, she should be making _____ responses to the stimuli.

---

active

6. When the teacher talks and the students (sometimes!) listen, stimuli are presented, but to these stimuli the students are not often asked to make _____ _____.

---

active responses

7. Text books present stimuli; but the readers rarely make _____ responses to the materials presented.

---

active

8. Contrast the statements you are reading here with those in an ordinary textbook. Here you read and you also fill in the blanks. This is to make sure that your responses are _____ ones.

---

active

9. Now just for fun ask yourself whether you know the Russian words for "city", "hand", and "table". If you do not it is partly because you were not asked (step 2) to write the equivalent Russian words. You see how very important it is to make _____ _____ to stimuli.

---

active responses

10. A second important condition for efficient learning is the presentation of subject matter in a series of small steps The learner must master step A before she can grasp _____ B.

---

step

11. In the usual home economics classroom it is very difficult to present subject matter in steps which are sufficiently _____ in size.

---

small

12. A later item in this program, to which you probably cannot yet respond correctly reads: "Another condition is that each response is followed by:....." That items is a large step beyond the present one. However, after being led through many _____ steps you will be able to _____ correctly.

---

small
respond or answer

13. If this seems too simple to you, remember that the merit of its step-by-step presentation is shown by the fact that you have made few if any incorrect _____ to the statements or stimuli.

---

responses

14. To review a bit: The first two important conditions for learning are: (1) To each stimulus the learner must make an _____ response: (2) Subject matter must be organized into a series of steps which are _____ in size.

---

active, small

15. Another factor influencing instruction in your classroom is that of individual differences in the RATE of learning. In a class of 25 students, each one will learn at a different _____.

---

rate

16. You can work through this series of statements as rapidly as you are able. You work at your own rate in making _____ to the stimuli of this program. Just for fun see how long it takes another member of your faculty or family to do this same program. You could make your own answer sheet. Remember that you will keep this part and will mail to us only the answer sheets.

---

responses

17. Thus a third important condition for efficient learning is to pace the presentation of subject matter to the learning _____ of each individual student.

---

rate

18. Now let's see, is "gorod" the Russian word for "city"? Whether you say "Yes" or "No", you should both feel better and learn better if the program tells you whether or not your response is correct. In other words, the fourth important condition for learning is IMMEDIATE KNOWLEDGE of RESULTS.

---

no response was required

19. In order for you to have immediate knowledge of results, you must be allowed to compare your response with the _____ response.

correct
desired 20. Whether or not your response is correct, this program
accurate (by letting you see the correct response) gives you
etc. _____ of results.

---

knowledge

21. Finding out that your own response is correct is said to strengthen or REINFORCE that response. To strengthen or _____ a correct response, it must be followed by immediate knowledge of results.

---

reinforce

22. We tend to repeat any response which has been reinforced. We tend not to repeat or to avoid repeating a response which has not been _____.

---

reinforced

23. Being able to see the correct response is one form of reinforcement. When you smile at a student or nod your head, or give her an assuring pat on the shoulder, you are using other forms of _____ment.

---

reinforcement

24. Teachers furnish knowledge of results when they return corrected examination papers promptly - perhaps 24 hours after the test. To have maximum reinforcement value, however, knowledge of results cannot be delayed this long; it must be _____.

---

immediate

25. (And wouldn't you like to see the teacher who can always get all her papers back in 24 hours? We would like to, also. Contrast this program with your other teaching aids such as conventional textbooks, films, and pamphlets. These aids begin and end with the presentation of stimuli. They do not for example require the student to _____ actively.

---

respond

26. In this program you have not had to wait to find if your responses were correct, knowledge of results is not delayed - it is _____.

immediate

27. If as a teacher you have ever "lost" some of your students, it was probably because some small point or step was omitted. Programs like this one highlight the importance of a series of _____ steps.

---

small

28. These materials are said to be "programed". Accordingly from the learner's point of view we speak of PROGRAMED LEARNING. From the instructor's point of view we speak, alternatively of _____ Instruction.

Programed

29. Unless you are superhuman (and we will admit that sometimes home economists seem to be) it has been all but impossible to meet the important conditions for learning in the classroom. But they might be met regularly and simultaneously for each learner if each learner uses materials designed in accordance with the principles of P_____ I_____.

Programed Instruction

30. Are there any such materials or programs available to the home economics teacher and students now?

If there are any, we don't know about them and we have been searching for several months now. Your cooperation is going to help us know how far to go in our efforts to begin to develop such materials. If you wish to learn more about this new method, you will find much interesting reading material available to you. Many of the frames you have just completed were copied from:

PROGRAMED INSTRUCTION: What It Is and How It Works, by Ohmer Milton and Leonard J. West, Copyright 1961, by Harcourt, Brace and World, Inc. Reproduced by permission of the publishers.

The next page we have included for you is just a sample of what a program for home economics students might be like. The program, from which we have taken the first twelve frames, is designed for the beginning home economics student who needs to master the basic facts concerning the elements and principles of art as a foundation for her learning experiences in all areas of

home economics work.

You are not asked to write your answers to these frames on any answer sheet. We just thought that you would be interested in looking at these few frames in terms of the possibility of using this type of material with your own students at some future time.

Objective: This program is concerned with providing the beginning home economics student with basic knowledge of the elements and principles of art as a foundation for instruction in other areas of home economics.

1. Mary had a little lamb,
   Its fleece was _____ as snow.
   And e_____ that Mary went,
   The lamb was sure to go.

---

white, everywhere

2. Look carefully at your answer - white everywhere - Wouldn't this be a dull world, if everywhere we looked, we would only see white. Making our world interesting and attractive is one of the functions of c_ _ _ _ s.

---

colors

3. One of the main functions of c_____ is to make things interesting and attractive.

---

color or colors

4. Red is a color.
   Red is a c_____ which helps add interest and attractiveness to our world. Red is a HUE.

---

color

5. Red is a HUE. B_ _ _ is a hue. Yellow is a h_ _.

---

blue, hue

6. A box of crayons contains several different h_ _ _.

---

hues

7. What hue reminds you of the grass in the spring and summer?

---

green

8. The word we commonly use for hue is c_____.

---

color

9. To describe a color to someone, we must be sure to tell its _ _ _.

---

hue

10. Hue is another word for the n_ _ _ of a color.

---

name

11. What is your favorite hue?

---

the name of the
color you like best

12. The name of a color is its _ _ _ .

---

hue

Section B

(to be returned with answer sheet A)

We realize that you have only seen the first small part of a program for teaching art principles and elements to the girl who needs this background. If this program were complete and available, would you be interested in using it in your classes?

Please give us one or two reasons why you would or would not like to trying using it. This will be most helpful to us as we plan.

What other areas of home economics would you like to see available as programed material? You may select an entire area or a very small section of a larger area - for example the threading of the sewing machine as a part of the clothing work. List as many as you wish.

Please respond to the following section by placing a check by the statement which most accurately describes your opinion or position at this time.

1. Before I read these materials I had:
_____a. not even heard about programed instruction.
_____b. heard about it but had never seen any programed materials
_____c. read about it but did not know what principles of learning were involved in the use of programed materials.
_____d. already become familiar with the terminology used, and knew the principles of learning on which it is based.

2. What knowledge I had obtained about Programed Instruction, I had obtained from:
_____a. other teachers or administrators
_____b. professional magazines and materials
_____c. popular magazines, periodicals, encyclopedia salesmen, laymen
_____d. other sources (please name specifically)
_____e. I had no previous knowledge.

3. When I think of using programed materials in my classroom at this point I feel:

_____a. I am not interested in trying to use them.
_____b. I would be willing to try to use it sometime, and would like to know more about such materials and their uses.
_____c. I would like further information before deciding whether I would be willing to give this type of material a try.

4. If I were participating in an experiment using programed instruction in my classroom, I would prefer taking the necessary training:

_____a. through instructions given at county group meetings.
_____b. at a short non-credit workshop at a nearby school.
_____c. as a college course (summer school) for certificate renewal or graduate credit.
_____d. by studying printed materials mailed to me and by responding by mail.

Please turn this page over and complete the final part.

THANK YOU for your time, thought, and effort.

Section C

To be returned

Now that you have seen a small sample of some programed materials, would you please give us your own personal opinion.

Please place a check mark in the column (by each statement given) which most accurately describes the way you feel about the statement at this time.

	I AGREE	I DISAGREE
1. If a teacher were using programed materials in a class, she would make assignments in terms of minutes to be worked rather than pages or sections to be completed.	1. _____	1. _____
2. Programed materials should be used to supplement the basic course rather than being the basic element of the course.	2. _____	2. _____
3. Any teacher could order available programs from a reputable commercial company and use them well.	3. _____	3. _____
4. One of the results of using programed materials will be that the teacher will eventually be replaced in the classroom by a machine.	4. _____	4. _____
5. The personality of the teacher in the classroom would have little or no effect on the learning of the pupils if they were using programed materials.	5. _____	5. _____
6. Any program is a good program for the student if he does not make many incorrect responses when working through the total program.	6. _____	6. _____
7. It is essential for the person writing a program to have definite objectives from which to work.	7. _____	7. _____

8. Cheating will be a major problem when programed instruction is used.	8. _____	8. _____
9. The student does not really learn anything from a program because it is so easy that the answers are really just given to him.	9. _____	9. _____
10. Programed materials are of necessity very dull and uninteresting, and are all very similar.	10. _____	10. _____
11. Programs may be able to teach factual information more effectively and efficiently than a human teacher.	11. _____	11. _____
12. The ideal would be to have all high school courses programed so that a student could work on a program during every period of the school day.	12. _____	12. _____

THE WOMAN'S COLLEGE
OF THE UNIVERSITY OF NORTH CAROLINA
GREENSBORO

SCHOOL OF HOME ECONOMICS

January, 1963.

Dear Fellow Teacher,

Are you still making New Year's Resolutions?

We, here at the Woman's College, are too. We have resolved to try to do more research in Home Economics Education. We are hoping you have resolved to continue your fine spirit of cooperation with us in our efforts to improve our profession. You have been selected to help answer some of the questions in the minds of those who are trying to help North Carolina "get ahead" in the use of a new type of instruction. Who knows better than the teacher, what is needed to improve instruction in our state?

Please find one hour to give to the completing of the enclosed questionnaire. (Now don't even think about how you hate to complete questionnaires, because we promise you this one will be quite different, and we think it will be a bit of fun for you to do.) If you do not enjoy completing the questionnaire, you can tell us about it when you mail your answer sheets to us in the enclosed "ready-to-mail" envelope.

We hereby resolve to let you hear more by '64 based on the results of the information you give us. By that time we should have some good news for you concerning some new teaching materials.

When you have one hour you are now ready to open the other materials and get started making your own contribution to research in North Carolina in 1963.

Sincerely,

(sgd.) Hildegarde Johnson
Hildegarde Johnson
Professor of Home Economics

(sgd.) Sally Huffman
Sally Huffman
Graduate Student

Noticx:

This mxssagx may bx a littlx hard to rxad bxcausx onx kxy is brokxn. It is trux that thxrx arx 45 kxys that function wxll xnough, but just onx kxy makxs a big diffxrxncx.

Our survxy is somxwhat likx thx typxwritxr. If wx at thx Woman's Collxgx arx going to havx a mxaningful survxy, xach of us must contributx. You can makx your contribution simply by mailing today your complxtxd answxr shxxts.

You may say to yoursxlf, "I am just onx pxrson. How can I affxct thx succxss of thx survxy?"

Whxn you fxxl that way just rxmxmbxr: It took only onx kxy to makx this noticx onx big mxss!

Plxasx mail thosx answxr shxxts today!

(sgd.) Sally Huffman
Sally Huffman

FACSIMILE OF SECOND FOLLOW-UP: A NOTE ATTACHED TO THE DUPLICATE QUESTIONNAIRE

WHAT HAPPENED??????

Your answer sheets were not received.

Perhaps you have misplaced your questionnaire about programed instruction. Enclosed is a new set of materials. Please read them carefully and return your answer sheets as soon as you can spare the few minutes. Your opinions are very important. Thank you for your efforts in helping make this a successful study.

signed