LEWIS, ALICE JANE. Development of the Objectives and Generalizations for Use in a Self-Instructional Program on the Selection and Use of a Commercial Blouse Pattern. (1968) Directed by: Dr. Mildred Johnson. pp. 61

The purposes of this study were (1) to develop the objectives and the generalizations for a self-instructional program on the selection and use of a commercial blouse pattern for Home Economics I students; (2) to determine whether the teaching procedures used by vocational home economics teachers were in agreement with the procedures selected for use in the self-instructional program; and (3) to conduct a survey of vocational Home Economics teachers in North Carolina to ascertain their opinions concerning grade placement of stated generalizations.

The objectives and generalizations for the selection and use of a commercial pattern were formulated. The procedures for the selection and use of a commercial pattern were studied, tested, and recommended for use in the self-instructional program. An opinionnaire was developed to determine whether Home Economics I teachers used the same objectives and generalizations in their classroom instruction for the selection and use of a commercial pattern. It was mailed to a random sample of 150 vocational Home Economics teachers in North Carolina during the school year 1964-65. A follow-up attempt was made which resulted in an 80 per cent return of the opinionnaire.

A summary of the findings of teachers' opinions of the objectives and generalizations were:

1. In seven of the nine groups of procedures for selecting and using a pattern, teachers followed the same procedures as were used in the self-instructional program.

2. Only one-fourth of the teachers followed the same procedure used in the self-instructional program in relation to pattern selection.

3. There was evidence that the majority of the teachers and their students transfer more pattern markings to the fabric than was done when using the self-instructional program.

4. The majority of the teachers planned their teaching so their students formed the same generalizations that were planned for in the self-instructional program.

Implications for further research were suggested in reference to (1) methods of teaching students to formulate generalizations, and (2) ways to evaluate the attainment of objectives. Some of the objectives formulated for this study need some changes for clarity, completeness, and agreement with the generalizations.

DEVELOPMENT OF THE OBJECTIVES AND GENERALIZATIONS FOR USE IN A SELF-INSTRUCTIONAL PROGRAM ON THE SELECTION AND USE OF A COMMERCIAL BLOUSE PATTERN

by

Alice Jane Lewis

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CHAPTER I

INTRODUCTION

One of the perplexing problems educators face today is that of making every phase of formal education meaningful for the student. Helping pupils develop intellectual skills and abilities that can be used in many situations is important. Educators realize that without a basic understanding of the inextricable relationship of the many individual facts of a subject matter area, a student may possess many isolated facts and ideas which he might fit together through trial and error but seldom by reasoning and understanding. Learning becomes more meaningful when a relationship is drawn between new knowledge and knowledge already known by the student. Then, and only then, do facts become meaningful and understanding, a basic key to learning, increases.

Educators also realize and stress the importance of stating objectives. Deterline stated that

> A child is always learning but he is not always becoming educated, for education is a controlled and directed kind of learning, leading to a rather rigorously defined set of objectives.[1]

Clearly defining objectives and identifying the specific generalizations to be developed are necessary for both conventional methods of classroom instruction and programmed instruction to facilitate learning. In the preparation of programmed instructional materials, the objectives must be stated clearly because once the programmed instructional materials have been developed a definite sequential order must be followed.

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[1]William A. Deterline, An Introduction to Programmed Instruction (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1964), p. 67.

Background for the Study

In the spring of 1962, the Home Economics Education faculty members at The University of North Carolina at Greensboro began a pilot study of programmed instruction. The study consisted of a questionnaire survey of home economics teachers to determine problems which might arise in the instruction of home economics teachers to use programmed instruction and to recommend methods suitable for programmed materials.[1]

Following the pilot study three studies were conducted. The first study was developed by Moore which was a program of instruction on the use of the sewing machine for the Home Economics I level.[2] The second study, a paper and pencil test to accompany the sewing machine self-instructional program, was developed by Ross.[3]

A seminar was held in the spring of 1963 for the Home Economics Education faculty and interested graduate students. Members of this seminar made the first revision of the sewing machine program that had been developed by Moore. The third study by Shoffner was a second revision of the sewing machine program.[4] Shoffner administered the program to Home Economics I

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[1]Sally Huffman, "Home Economics Teachers and Programmed Instruction: An Exploratory Study" (unpublished Master's thesis, School of Home Economics, the University of North Carolina at Greensboro, 1963).

[2]Catherine Porter Moore, "Development of a Self-Instructional Program on the Sewing Machine" (unpublished Master's thesis, School of Home Economics, The University of North Carolina at Greensboro, 1963).

[3]Carolyn Ross, "Development of a Paper and Pencil Test and a Performance Test to Accompany a Self-Instructional Program on the Sewing Machine," (unpublished Master's thesis, School of Home Economics, The University of North Carolina at Greensboro, 1965).

[4]Sarah Moore Shoffner, "Revision and Field Test of a Self-Instructional Program on the Sewing Machine" (unpublished Master's thesis, School of Home Economics, The University of North Carolina at Greensboro, 1964).

classes in several secondary schools. It was discovered that more time was required for students to complete the program than the time the regular teacher would have planned for using traditional methods of teaching the use of the sewing machine. In the same study a comparison of the test scores of an experimental group who used the program and a control group taught by a teacher indicated that the students who used the program knew more facts about the use of the sewing machine than did those students in the control group.

In 1964 The Cooperative Research Branch of the United States Office of Education funded a proposal for a three and one-half year project for developing and evaluating the effectiveness and efficiency of three self-instructional programs in the area of clothing construction. The self-instructional programs were to be used as the experimental variable and were to be written by members of the research staff. Self-instructional program specialists from the American Institute for Research conducted a workshop at The University of North Carolina at Greensboro in the fall of 1964 to teach the Home Economics Education faculty members and graduate students the details of writing and preparing materials for self-instructional programs.

The three programs were to cover the following subject matter: (1) the use of a sewing machine, (2) the selection and use of a commercial blouse pattern, and (3) the construction of a blouse. Graduate students assisted the research faculty members in developing teaching materials for these three self-instructional programs. This study was concerned with the development of the objectives and the generalizations for the program in the selection and use of a commercial blouse pattern.

Purposes of the Study

The specific purposes of the present study were (1) to develop the objectives and the generalizations for a self-instructional program on the selection and use of a commercial blouse pattern for Home Economics I students; (2) to determine whether the teaching procedures used by vocational home economics teachers were in agreement with the procedures selected for use in the self-instructional program; (3) to conduct a survey of vocational home economics teachers in North Carolina to ascertain their opinions concerning grade placement of stated generalizations.

Limitations of the Study

The limitations of the study were as follows: (1) the level of the self-instructional program was for Home Economics I students; (2) the students had no choice in the selection of the pattern, which was designed as a collarless overblouse with set-in sleeves; and (3) the procedures for pattern selection and use began with taking body measurements and ended with transferring pattern markings to the fabric.

Definitions of Terms

For purposes of clarification, the following specific terms used in this study are:

Self-instructional program: the sequence of carefully constructed frames frames leading the student to mastery of a subject with a minimum of errors.[1] Programmed instruction is synonymous with self-tutoring device and self-teaching device.

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[1]Moore, op. cit., p. 6.

Frame: a single unit of material which the student considers at one time. It varies in length from one sentence to one page of material and usually concludes by requiring a response from the student.[1] This term is synonymous with the word "item."

Objective: an intent communicated by a statement describing a proposed change in a learner--a statement of what the behavior of the learner is to be like when he has successfully completed a learning experience.[2]

Generalizations: express underlying truth, have an element of universality, and usually indicate relationships.[3]

Home Economics I Students: high school students in their first home economics course.

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[1] Ibid., pp. 6, 7.

[2] Robert F. Mager, Preparing Objectives for Programmed Instruction (San Francisco: Vail-Ballou Press, Inc., 1965), p. 3.

[3] Berenice Mallory, "Curriculum Developments, "The Bulletin of the National Association of Secondary-School Principals, 48 (December, 1964), p. 56.

CHAPTER II

REVIEW OF LITERATURE

This study is concerned with the development of objectives and generalizations for programmed instructional materials. The following review of literature is in two parts: (1) objectives and (2) generalizations.

Objectives for Programmed Instructional Materials

An objective is the statement of an intended goal. Gibbs specified that an instructional objective is a "statement which describes an intended outcome of instruction."[1] A more detailed definition was given by Bloom as

> . . . explicit formulation of the ways in which students are expected to be changed by the educative process. That is, the way in which they will change their thinking, their feelings, and their actions.[2]

Assuming that all learning brings about a change in the behavior of the learner, the statement of the behavior the learner is to possess at the end of each learning process is called an objective. Mager defined the actual written specifications of the objectives of an instructional sequence as "an intent communicated by a statement describing a proposed change in a learner."[3]

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[1] W. E. Gibbs, "Programmed Approach to Instruction," Balance Sheet, 47 (December, 1965), p. 151.

[2] Benjamin S. Bloom (ed.), Taxonomy of Educational Objectives (New York: Longmans, Green and Company, 1956), p. 26.

[3] Mager, op. cit., p. 3.

Deterline emphasized that learning is evidenced by a change in the behavior of the student. Therefore, it is necessary that the objective describe the student's behavior and not that of the teacher.[1] "The teacher discusses the Civil War" does not indicate any change of behavior in a student, but would be classified as a general lesson plan. Taber, Glaser, and Schaefer pointed out that the first important consideration in instructions is "what the student learns. The primary objective of the teacher's work is to produce definable changes in student behavior and to bring this behavior under the discipline of subject matter."[2] Objectives can be of little use unless the purpose is stated clearly enough for the teacher and the student to thoroughly understand the intended outcome.

All materials written by programming experts, which the investigator reviewed, agreed that defining objectives is the first step in programming any subject. Deterline said

> . . . The initial step in writing a program is the specification of the terminal objectives of the course through a thorough analysis of its content, that is, the preparation of an outline which describes in detail every principle, definition, and relationship that the student is to carry away with him. Each idea must be carefully defined, along with all of its subsidiary concepts, examples, and related principles.[3]

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[1] William A. Deterline, "Practical Problems in Program Production," National Society for the Study of Education Yearbook, Vol. 66, Part II (Chicago: University of Chicago Press, 1967), 191-206.

[2] Julian I. Taber, Robert Glaser, and Holmuth H. Schaefer, Learning and Programed Instruction (Reading, Massachusetts: Addison-Wesley, 1965), p. 3.

[3] William A. Deterline, An Introduction to Programed Instruction (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1964), p. 13.

Taber, Glaser, and Schaefer stated:

> . . . The initial problem that arises in starting to build a programmed learning sequence is the analysis and specification of the subject matter behavior to be covered. Before programming can begin, the subject matter must be analyzed into units that can provide the frames or building blocks of the instructional program. The construction of a particular program sequence is determined by both the subject matter and by the instructional procedures which best facilitate the achievement of behavioral goals such as retention or transfer.[1]

Ofiesh declared that the stating of objectives is the "heart of the system" in programming.[2] Klaus, an expert in programmed instruction, believed that the most important step in programming is the phrasing of frames. Klaus did agree, however, that stating objectives is a very important and necessary step in preparing programmed instructional materials.[3]

Many sound and logical reasons have been given concerning the overall importance of objectives. Galanter stressed the fact that the learner who knows what he is supposed to learn or do will improve his learning or performance.[4] Fry expressed the opinion that objectives serve as a guide in the selection and techniques for building a program and also provide the standards by which programs can be evaluated.[5]

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[1]Taber, Glaser, and Schaefer, op. cit., p. 62.

[2]Gabriel D. Ofiesh, Programed Instruction A Guide for Management (New York: Vail-Ballou Press, Inc., 1965), p. 324.

[3]David J. Klaus, "The Art of Auto-Instructional Programming," Audiovisual Communication Review, 9 (Number 2, 1961), pp. 133-134.

[4]Eugene Galanter, Automatic Teaching (New York: John Wiley & Sons, Inc., 1959).

[5]Edward B. Fry, Teaching Machines and Programmed Instruction (New York: McGraw-Hill Book Company, 1963).

Tyler stated:

> . . . These educational objectives become the criteria by which materials are selected, content is outlined, instructional procedures are developed and tests and examinations are prepared. . . . if we are to study an educational program systematically and intelligently we must first be sure as to the educational objectives aimed at.[1]

The overall importance of educational objectives is stated by Deterline as a test of whether the subject matter is worth teaching at all. Deterline emphasized that if it were not possible to identify a student response and a test item could not be written, it could be assumed that the fact or subject matter was irrelevant and should be excluded. If such subject matter were included, it would be added for interest value only.[2]

The importance of stating objectives is stressed by Taber, Glaser, and Schaefer. They stated:

> . . . The specification of objectives for programmed instruction must be made in terms of behavioral end products, that is, in terms of what the student must be able to perform, the words he will be able to spell, the algebraic equations he will be able to solve--when he has completed a program.[3]

In programming the specification of objectives is of optimum importance. All techniques used to bring the student to the intended aim are organized and employed before the student begins the program. Kersh affirmed that

> . . . The programming movement has emphatically shown the need to pull educational objectives out of the realm of the ineffable and into the realm of the concrete and behavioral.[4]

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[1]Ralph W. Tyler, Basic Principles of Curriculum and Instruction. (Chicago: Syllabus Division, University of Chicago Press, 1950), p. 3.

[2]Deterline, N.S.S.E. Yearbook, op. cit., p. 203.

[3]Taber, Glaser, and Schaefer, op. cit., p. 63.

[4]Bert Y. Kersh, "Programming Classroom Instruction," Educational Technology, John P. DeCecco (ed.) (New York: Holt, Rinehart, and Winston, 1964), p. 307.

Taber, Glaser, and Schaefer strongly expressed concern that even though much progress in the science of learning has appeared in the laboratory situation by such precise specification of behavior, educators in general seem reluctant to submit student behavior to analysis in precise terms.[1] Fry agreed that

> . . . in the nature of things, educational objectives are somewhat ephemeral and not easily determined with precision. For there is a subjective element in education that eludes our most persistent efforts to define and categorize, and it plays a significant part in the formulation of objectives for any education or training program.[2]

Objectives have been stated in various ways. Terms such as "knowing," "understanding," or "appreciating" have been accepted by many people over the years as a way of stating objectives. Writers of programmed instructional materials have stated that such terms are not specific enough for one to recognize when a student had attained the objective. Mager has asked and answered the following questions:

> What do we mean when we say we want a learner to 'know' something? Do we mean that we want him to be able to recite, or to solve, or to construct? Just to tell him we want him to 'know' tells him little--the world can mean many things. Though it is all right to include such words as 'understand' and 'appreciate' in a statement of an objective, the statement is not explicit enough to be useful until it indicates how you intend to sample the 'understanding' and 'appreciating.' Until you describe what the learner will be doing when demonstrating that he 'understands' or 'appreciates,' you have described very little at all. Thus, the statement which communicates best will be one which describes the terminal behavior of the learner well enough to preclude misinterpretation.[3]

Leuba called this kind of definition of goals an "operational definition of the goals," indicating that some type of performance will be necessary.[4]

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[1]Taber, Glaser, and Schaefer, op. cit., p. 3.

[2]Fry, op. cit., p. 73.

[3]Mager, op. cit., p. 11.

[4]Clarence Leuba, "A Professor Can Learn from Developing Programed Instruction," Improving College and University Teaching, 14 (Autumn, 1966) p. 250.

Taber, Glaser, and Schaefer stated that when words such as "understanding" are used, "they should refer to some observable examples of student performance."[1] Deterline designated objectives stated as terminal behaviors as "behavioral objectives."[2]

In the following statement, Deterline described the steps in converting content objectives into behavioral objectives:

> . . . This conversion consists of taking a statement of content objective (e.g., 'describe the operation of a cathode ray tube'), converting it to the response units of which it is composed, and specifying the discriminations involved in learning each response unit. This step is very important because a content objective, such as 'describe the operation of a cathode ray tube,' can be interpreted--or misinterpreted--in many different ways. The depth and scope of detail specified at this point determines the terminal-behavior components that the program will teach.[3]

Mager has suggested that a strong, performance-type verb be used in preference to the verbs "understanding," "knowing," or similar words. He suggested such words as "to write, to recite, to identify, to differentiate, to solve, to construct, to list, to compare, to contrast." Mager believed these verbs to be specific, precise, and measurable. The student would know exactly what was expected of him and the teacher would know whether the student had attained the objective because of its measurable and evaluative possibilities.[4] Also defining objectives as terminal behaviors permits selection of the most effective instructional methods and materials.[5] These instructional methods and materials are designed to remedy a performance deficiency and direct the learner in attaining his stated goal.

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[1]Taber, Glaser, and Schaefer, op. cit., p. 73.
[2]Deterline, NSSE Yearbook, op. cit., p. 183.
[3]Ibid.
[4]Mager, op. cit., p. 11.
[5]Taber, Glaser, and Schaefer, op. cit., p. 62.

Taber, Glaser, and Schaefer presented a procedure to be used to delineate instructional objectives for measurability. The procedure follows:

> (1) As a first step, the programmer must specify the behavior that is to be accepted as evidence that the learner has achieved the objective.
> (2) The second step is to outline the conditions under which the desired behavior can be expected to occur.
> (3) The third step in the specification of objectives is the determination of an acceptable level of performance.[1]

If a programmer has followed the steps of procedure listed above and converted content objectives to statements of terminal behaviors, he might evaluate his degree of success by comparing his list of objectives with Mager's criteria of objectives, which are stated in the form of terminal behaviors. The criteria are:

> (1) An instructional objective describes an intended outcome rather than a description or summary of content.
> (2) One characteristic of a usefully stated objective is that it is stated in behavioral, or performance, terms that describe what the learner will be doing when demonstrating his achievement of the objective.
> (3) The statement of objectives for an entire program of instruction will consist of several specific statements.
> (4) The objective which is most usefully stated is one which best communicates the instructional intent of the person selecting the objective.[2]

Assessment of the Attainment of Objectives

Behavioral objectives must center on a standard of minimum acceptable performance.[3] A learner must know what is expected of him and the degree of performance desired.[4] As Deterline stated:

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[1] Ibid., p. 64.

[2] Mager, op. cit., p. 24.

[3] Deterline, N.S.S.E. Yearbook, op. cit., 192.

[4] Mager, op. cit., p. 44.

> We need not be concerned with a goal of perfect achievement by all the students, either by programmed instruction or by more conventional instructional methods. It is not one of the goals of education to teach 100 per cent of the students 100 per cent of existing course content, but we should be concerned with teaching all students 100 per cent of the minimum necessary objectives.[1]

If the minimum acceptable performance for each objective is specified, then there is a performance standard against which instructional programs can be tested[2] or the quality of instruction can be measured.[3]

Minimum acceptable performance can be tested in one way by stating a time limit.[4,5] The student is expected to perform certain tasks within a limited amount of time. Another way of testing minimum acceptable performance is to require a minimum number of correct responses or a percentage or proportion of correct responses.

Mager posed three questions as a means of testing the measurable qualities of objectives.

> 1) Does the statement describe what the learner will be doing when he is demonstrating that he has reached the objective?
> 2) Does the statement describe the important conditions (givens and/or restrictions) under which the learner will be expected to demonstrate his competence?
> 3) Does the statement indicate how the learner will be evaluated? Does it describe at least the lower limit of acceptable performance?[6]

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[1] Deterline, N.S.S.E. Yearbook, op. cit., 193.

[2] Mager, op. cit., p. 44.

[3] Gibbs, op. cit., p. 152.

[4] Taber, Glaser, and Schaefer, op. cit., p. 64.

[5] Mager, op. cit., p. 49.

[6] Ibid., p. 522.

Evaluation is an essential part of every program. Taber, Glaser, and Schaefer stated, "If appropriate evaluation instruments are to be selected to measure the attainment of goals, it is necessary that objectives be stated in terms of measurable goals."[1]

Course objectives and requirements should be evaluated to determine their effectiveness in meeting the educational demands placed on youth. Schramm suggested that consideration should be given to the necessary content of teaching .[2] This could result in a long-overdue revision of courses and requirements.

According to Deterline, there is an astonishing lack of agreement among curriculum specialists, subject matter experts, and professional teachers concerning the subject matter content for a given area.[3] This lack of agreement over subject matter content could be one of the weaknesses in our educational system today. It is possible that programmed instruction may be an aid in the solution of this lack of agreement.

In commenting on the opinions of teachers who have been in summer workshops studying programmed instruction, Kersh reported:

> Practicing teachers who attempt to learn the techniques of programmed instruction in summer workshops and professional courses are finding that the rigor of specifying objectives in behavioral terms, reducing the instructional experience to small steps, and trying out the materials on students before actually using them, makes them more sensitive to the shortcomings of their own classroom techniques.[4]

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[1]Taber, Glaser, and Schaefer, op. cit., p. 63.

[2]Wilbur Schramm, Programed Instruction Today and Tomorrow (New York: Fund for the Advancement of Education, 1962), p. 3.

[3]Deterline, N.S.S.E. Yearbook, op. cit., 192.

[4]Kersh, op. cit., p. 307.

Principles and techniques which underlie self-instructional programs could be the basis for developing classroom instructional materials and procedures. To facilitate learning, objectives must be clearly stated, to eliminate haziness, inconsistencies, and irrelevancies.

Generalizations for Programmed Instructional Materials

The identification of key ideas which are composed of many smaller units of thoughts and ideas assembled from both simple and complex experiences, has become an expressed task of educators who realize the enormity of subject matter to be taught, to be learned, and to be investigated. Some of the first persons who embarked upon identification of key ideas or generalizations were mathematicians, physicists, and biologists. From the widely publicized efforts of these groups of subject matter specialists, educators from many fields and disciplines put forth concerted effort to identify generalizations for their particular area of subject matter specialization.

It is essential in preparing programmed instructional materials to seek out commonalities of subject matter and generalizations, which may be applicable to many different situations. This generalizing process was defined by Gates as, "the process of identifying the common aspects or basic relationships in a variety of specific situations."[1] If all knowledge consisted of specific isolated facts it would tax one's

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[1] A. I. Gates, et al., Educational Psychology (New York: The MacMillan Company, 1950), p. 44.

memory to exhibit any evidence of intelligent behavior when placed in an unfamiliar situation. This would be comparable to a student who had memorized all the answers for specified examination questions only to have the questions asked with a different wording. With a lack of understanding of information memorized the student would be unable to answer the question, to express this knowledge, or to apply it to a similar situation. To apply knowledge one already possesses to similar situations is commonly referred to as "transfer of learning."

Transfer of Learning

To use learning, one must first find some common relationships among his experiences, thereby organizing them into groups from which he may draw generalizations. A theory of transfer of learning is based on this principle. By recognizing the similarity of situations one can use knowledge gained from past experience as a guide for his actions. Gates recognized that by understanding, organizing and generalizing experiences, "learning becomes more applicable to the specific forms in which new situations and new experiences occur."[1]

Williamson and Lyle stated that

> . . . a fundamental goal of education is to equip pupils to meet effectively new situations encountered in life. To do this, transfer of learning from previous situations is essential. Transfer of learning depends upon the grasp the pupil has of the broad principles or generalizations involved in the new situation. Mere knowledge of the generalization, however, will not insure transfer. The pupil must, in addition, realize which generalizations apply to the new situation or problem and how they apply.[2]

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[1] Ibid., p. 500.

[2] Maude Williamson and Mary S. Lyle, Homemaking Education in the High School (New York: Appleton-Century-Crofts, Inc., 1961), p. 97.

To use knowledge in a new or similar situation, generalizations must be associated with previous learning. Vinacke proposed that generalizations are associated with previous knowledge in two ways: (1) a generalization of stimulating conditions and (2) a generalization of response. In the first case, "each new stimulating condition tends to elicit the response which has been connected with similar stimulating conditions in the past."[1] In the latter case, the generalization of response, "a given stimulating condition, once connected with a given response, will also elicit other responses which are related in some way to the first, or trained, response."[2]

Kinds of Generalizations

Williamson and Lyle noted three distinct types of generalizations: (1) a summary of facts, (2) a statement of cause and effect, and (3) a value judgment.[3] All three types are to be found in the generalizations formulated during this study. An example of a generalization which is a summary of facts is "It is economical use of time, energy, and money to buy pattern, fabric, and notions at one time." "Selecting the correct figure type makes some pattern alterations unnecessary" is a statement of cause and effect. An example of a value judgment is "Leaving the pattern piece pinned to the fabric until ready to be used saves time in identifying cut pieces and the fabric is handled less" (see Appendix B).

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[1]Edgar W. Vinacke, The Psychology of Thinking (New York: McGraw-Hill Book Company, Inc., 1952), pp. 151-152.

[2]Ibid.

[3]Williamson and Lyle, Op. cit., pp. 97-98.

Examples of three types of generalizations given by Williamson and Lyle are related to areas of home economics other than clothing. This relationship may help give a deeper understanding of the distinction between the types. The examples cited by Williamson and Lyle are as follows:

> 1. A summary of facts. 'Families have many kinds of resources -- money, time, energy, skills of family members, and so forth -- which they use interchangeably to get what they want out of life,' or 'Individuals differ in both rate and pattern of growth.'
> 2. Statement of cause and effect. 'Children will be more stable if they feel secure at home,' or 'A lower temperature during roasting of meat prevents loss by shrinkage.'
> 3. A value judgment. 'A pretty centerpiece on the dinner table adds to family enjoyment of the meal,' or 'Girls who follow the social customs of their group get along better than others.'[1]

Teaching for Generalizations

There are two major means of teaching for generalizations -- inductive and deductive. The inductive means of teaching uses many similar situations in slightly different ways to help the student to form associations between the situations, thereby forming a new generalization.[2]

A generalization of response is taught using deduction, "the methods by which already existing generalizations are employed."[3] The interaction between deductive and inductive procedures in forming generalizations is evident in the following statement from Vinacke:

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[1] Ibid.

[2] John Dewey, Logic The Theory of Inquiry (New York: Henry Holt Co., 1938), p. 419.

[3] Ibid.

> . . . Generalizations reached in one series of experiments may be used deductively to formulate a further generalization in the form of a hypothesis. Then inductive procedures may be used to collect evidence relevant to that hypothesis.[1]

This statement gives further evidence that greater understanding may occur if learning is interrelated. Isolated segments of knowledge are of little value other than in specific situations of which they are a part. However, as Brownell and Hendrickson summarize:

> . . . In the end, the important thing is that the generalizations taught (at least those that are essential in life) be full of meaning and susceptible to functional use. If this condition is met, it probably makes little difference whether they have been acquired deductively or inductively.[2]

Hendrix said,

> . . . To plan the kind of learning periods in which the desired generalizations will emerge on the unverbalized awareness level requires insight into how creative work in that field of knowledge comes about. Furthermore, execution of the plans requires self restraint and a high degree of linguistic skill -- skill to formulate good questions and to give clear directions.[3]

Haslerud and Meyers considered teaching inductively by using examples to be the best way of teaching for generalizations.[4] They quote Thorndike as saying that

> . . . only five percent of high school students have language ability sufficient to receive a ready-made sentence and find ready

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[1] Vinacke, op. cit., p. 77.

[2] William A. Brownell and Gordon Hendrickson, "How Children Learn Information, Concepts, and Generalizations," National Society for the Study of Education Yearbook, Volume 49, Part I (Chicago: University of Chicago Press, 1950), p. 123.

[3] Gertrude Hendrix, "A New Clue to Transfer of Training," Elementary School Journal, 48 (December, 1947), p. 207.

[4] George Haslerud and Shirley Meyers, "The Transfer Value of Given and Individually Derived Principles," Journal of Educational Psychology, 49 (December, 1958), p. 293.

illustrations in their own background to provide the prerequisite to meaning.[1]

Summary

Why should teachers teach so that students are able to form desirable generalizations? Thiele says,

> . . . It would seem that unless laws which are common to a large number of facts are perceived, learning may be specific rather than generalized, even though associations are made within narrow limits.[2]

In commenting on an experiment comparing the drill method and the generalization method of teaching addition facts Thiele stated that

> The objective evidence seems to indicate that the achievements of the pupils taught by the generalization method, as determined by the testing program, are greatly superior to those attained by the pupils taught by the drill method. Of special significance is the finding that the drill method pupils would need to spend about 50 per cent more time to reach the point attained by the generalization method group at the end of the experiment.[3]

Learning by principles is an economy of both time and effort. Specifics may be forgotten, but once the principles are understood they can be applied to almost any related situation.

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[1] Ibid., p. 297.

[2] C. L. Thiele, The Contribution of Generalizations to the Learning of the Addition Facts (New York: Bureau of Publications, Teachers College, Columbia University, 1938), p. 14.

[3] Ibid., p. 77.

CHAPTER III

STUDY DESIGN

Developing objectives and generalizations for a self-instructional program on selecting and using a commercial blouse pattern comprised the first part of this study. The remainder of the study was concerned with comparing the behavioral content for objectives with teaching procedures used by Vocational Home Economics teachers; and to survey opinions concerning grade placement of stated generalizations by Vocational Home Economics teachers in North Carolina.

Development of the Objectives and the Generalizations

The first step in the development of the objectives and the generalizations was to review related literature for programmed instructional materials. Clothing construction textbooks for high school home economics, curriculum guides, and resource units for home economics programs were reviewed to determine what was most frequently suggested for high school Home Economics I students in the selection and use of a commercial pattern. The objectives and the generalizations for the selection and use of a commercial pattern were formulated from these sources.

The writer completed the study of procedures for the selection and use of a commercial pattern under the guidance of a clothing specialist on the faculty of the School of Home Economics of the University of North Carolina at Greensboro. Procedures were discussed with

the specialist, whose helpful advice aided greatly in the selection of procedures to be suggested for the self-instructional program for the selection and use of a commercial blouse pattern. If two different procedures were considered equally well-suited for the self-instructional program, the writer tested each procedure with a Home Economics I class and chose the one which appeared to be the better procedure.

The procedures were stated as terminal behaviors (see Appendix A). The equipment to be used, techniques to be followed, and other influencing factors were described as well as the behavior the student was expected to exhibit after completing each unit of the program. For example, "Given a cut garment unit with the pattern attached, the student recognizes the pattern markings she will need to transfer to the fabric for use in constructing the garment."

The objectives were categorized by content and are briefly summarized here. The complete list may be found in Appendix A.

Body Measurements and Pattern Selection - Detailed procedures were specified for measuring another person, as well as the use the students can make of these measurements in selecting the correct pattern size.

Figure Types - The reasons why there were different patterns for various figure types as well as the procedure for selecting a figure type was specified.

Pattern Envelope - The information on the pattern envelope which was to be used by the student was specified.

Guide Sheet - The use the student was to make of the guide sheet in preparation for cutting out the pattern was specified.

Preparation of Fabric - The exact procedures for straightening the ends of the fabric and correcting the grainlines were specified.

Pattern Markings - The identification of all pattern markings and their uses were specified.

Laying Pattern on Fabric - The use the student was to make of the guide-sheet in selecting a pattern layout, as well as the procedure she was to follow in placing and pinning the pattern pieces on the Fabric was specified.

Cutting - The procedure for cutting was specified.

Marking - The markings the student needs to transfer, as well as selection of correct equipment and procedure for transferring these markings were specified.

After the objectives had been stated as terminal behaviors they became the material to be used for criterion frames of the self-instructional program. The two programmers on the research staff then wrote the intermediate frames and completed the self-instructional program for the selection and use of a commercial blouse pattern.

Special emphasis was given to writing the generalizations for the self-instructional program appropriate for Home Economics I students. The generalizations were reviewed by the Home Economics Education faculty of the School of Home Economics of the University of North Carolina at Greensboro. Revisions were made based on their suggestions.

Development of the Opinionnaire

An opinionnaire was developed to determine whether Home Economics I teachers used the same objectives and generalizations in their classroom instruction for the selection and use of a commercial pattern as those which were identified for use in the self-instructional program (see Appendix B). The opinionnaire was divided into two parts: (1) generalizations, and (2) teaching procedures.

All generalizations which had been developed for the self- instructional program were included in the opinionnaire. The generalizations were grouped according to content divisions. Space was provided

on the opinionnaire for the teachers to respond to each of the twenty-two generalizations by indicating whether they (1) planned their teaching in Home Economics I so the students would form the generalization, (2) did not teach for the generalization in Home Economics I but thought they should, or (3) did not think Home Economics I students should be expected to form this generalization.

The second part of the opinionnaire dealt with the procedures the teachers expected the students to follow in the selection and use of a commercial pattern.

Nine groupings of procedures were printed. Each teacher was asked to indicate procedures in each grouping she usually used in teaching clothing to a Home Economics I class. Space was provided for listing other procedures used. Each grouping of possible responses included the procedure which had been identified for use in the self-instructional program and is indicated by an asterisk in Table I of Chapter IV.

After the opinionnaire was developed a list of all vocational home economics teachers in North Carolina for the school year 1964-65 was obtained from the State Department of Public Instruction. Each of the 640 teachers was assigned a number. A table of random numbers was used to select a sample of 150 teachers for the study. A cover letter explaining the purpose of the opinionnaire and soliciting the cooperation of the teachers was mailed with the opinionnaire to each of the 150 teachers. Two weeks later a follow-up letter was sent to those teachers who had not replied (see Appendix B).

The opinionnaires which were returned were analyzed. Findings were summarized and recommendations were made on these findings.

CHAPTER IV

ANALYSIS OF OPINIONNAIRE

Two purposes of this study were to compare the behavioral content of objectives with the teaching procedures used by vocational Home Economics teachers and to survey opinions of vocational Home Economics teachers in North Carolina about grade placement of stated generalizations. The outcome of these objectives is discussed in this chapter.

Of the 150 teachers in the sample selected for the survey, 120 (80 per cent) returned the opinionnaire. The data collected on procedures which made up the objectives will be discussed first, followed by a discussion of the data concerning generalizations.

Teaching Procedures

As shown in Table I, section A, 84.2 per cent of the teachers responding to the opinionnaire allowed the students to measure each other before selecting a pattern size. A number of teachers wrote in such comments as "After a demonstration by the teacher" or "Teacher checks if there is doubt." The procedure selected for use in the self-instructional program was in agreement with the procedure used by the majority of the teachers: The students take each other's measurements following instructions given by the teacher.

Two of the teachers wrote in other procedures, using a combination of items one and three. The teacher measured each student after

TABLE I

NUMBER AND PERCENTAGE OF RESPONSES TO TEACHING PROCEDURES

Procedure	Number	Per cent
A. Taking Body Measurements		
*Students take each other's measurements	101	84.2
Each student measures herself	5	4.2
Teacher measures each student	9	7.5
Other	3	2.5
No response	2	1.7
B. Determining Pattern Size and Figure Type		
Teacher advises each student	18	15.0
*Student determines pattern size and figure type, teacher checks	100	83.3
No response	2	1.7
C. Choosing the Pattern		
*One pattern used by whole class	30	25.0
Teacher selects several patterns	23	19.2
Student selects any pattern with criteria	62	51.7
Student selects any pattern she wants	2	1.7
Other	2	1.7
No response	1	0.8
D. Straightening Cut Ends of Fabric		
*Straightened by pulling a thread and cutting	103	90.0
Not straightened	7	5.8
Other	3	2.5
No response	2	1.7
E. Correcting or Not Correcting Grainline of Fabric		
Grainline not straightened, any finish	5	4.2
*Straightened if necessary, no resin finish	111	92.5
Not straightened, no resin finish	1	0.8
Other	3	2.5
F. Correcting Grainline of Fabric		
*Pulled on true bias	109	90.8
Other	9	7.5
No response	2	1.7

*Denotes procedure selected for use in the programmed instructional materials.

TABLE I -- Continued

Procedure	Number	Per cent
G. Transferring Pattern Markings		
*Dressmaker's Carbon Paper, tracing wheel	87	72.5
Chalk	2	1.7
Tailor's tacks	8	6.7
Other	22	18.3
No response	1	0.8
H. Deciding When to Remove Pattern Pieces from Fabric		
*Left pinned to fabric until construction	106	88.3
Removed immediately	10	8.3
Other	2	1.7
No response	2	1.7

the students measured each other. One teacher taught students to determine pattern size by trying on "shells" of different sizes.

Section B of Table I shows that the majority of the teachers (83.3 per cent) used the same procedure for selecting a pattern size and figure type as the procedure selected for use in the self-instructional program. This procedure was: the student determines her pattern size and figure type and the teacher checks her choice. Fifteen per cent of the teachers in this study advised each student individually concerning selection of a pattern size and figure type.

The item dealing with choosing the style of pattern to use in class brought a variety of responses, as shown in section C of Table I. About half of the teachers (51.7 per cent) allowed the student to select any pattern she wanted or believed she was capable of using if it met certain criteria specified by the teacher. One-fourth of the teachers selected one pattern to be used by the entire class, which was the

procedure used in the self-instructional program. Using only one pattern not only simplified the self-instructional program, but was necessary in order to refer to specific instructions on one guide sheet or specific pattern markings.

Nineteen per cent of the teachers selected several patterns for class use. Two of the teachers in the sample used other procedures determined by the students figure types and abilities and skills of their students for clothing construction.

Section D in Table I indicates that 90 per cent of these teachers taught students to straighten the ends of a piece of fabric which had been cut from the bolt by the same procedure included in the self-instructional program: (1) pull the first crosswise thread extending from one selvage to the other, (2) cut where the thread was removed.

Two teachers suggested tearing the ends of the fabric to straighten it. Seven of the teachers (5.8 per cent) did not have the students straighten the ends of the fabric.

Section E of Table I shows that 92.5 per cent of the teachers had the students correct the crosswise grainline of an off-grain fabric if a resin finish did not make this impossible. This is in full agreement with what was taught in the self-instructional program.

The self-instructional program taught that the crosswise grainline of an off-grain fabric is corrected by gently pulling on the true bias every few inches in the direction of the short corners. Section F of Table I indicates 90.8 per cent of the teachers in the survey also used this method of correcting the crosswise grainline.

Nine teachers gave different responses. Three teachers suggested pulling on opposite corners of the fabric to correct crosswise grainline, irrespective of the length of the fabric. Six teachers suggested steaming the fabric or enclosing it in a damp sheet as a preparatory treatment before correcting the crosswise grainline.

Pattern markings of the garments made in Home Economics I were transferred to the fabric using Dressmaker's Carbon Paper and a tracing wheel according to 72.5 per cent of the teachers and is the procedure given in the self-instructional program (see section F, Table I). Eight (6.7 per cent) teachers used tailor's tacks. Twenty-two (18.3 per cent) teachers taught all three methods and indicated that the garment fabric was the determining factor in the selection of the procedure to be used.

The self-instructional program directs the student to leave the pattern piece pinned to the cut fabric until ready for the construction of that unit. In section H of Table I, 88.3 per cent of the teachers agreed on the procedure of removing pattern pieces. Ten (8.3 per cent) of the teachers permitted students to remove pattern pieces from the cut fabric immediately after marking the fabric with chalk or some other means to identify it. This procedure was necessitated when several students were using the same pattern.

The self-instructional program instructed the students to transfer the following pattern markings to the fabric: darts, dots, center front line, facing fold line, armscye seamline, top of sleeve seamline, and the neckline. Table II shows the number of teachers and the resultant percentage of the 120 teachers requiring the above listed markings and

TABLE II

NUMBER OF TEACHERS AND PERCENTAGE OF TOTAL GROUP REQUIRING THAT CERTAIN PATTERN MARKINGS BE TRANSFERRED TO THE FABRIC

Markings	Number	Per cent
*Darts	118	98.3
*Center front line	100	83.3
Buttonholes	90	75.0
*Facing fold line	89	74.2
*Sleeve cap seamline	75	62.5
*Neckline seamline	59	49.2
*Armscye seamline	54	45.0
All seamlines	48	40.0
*Dots	11	9.2
Pleats	4	3.3
Pockets	3	2.5
Collar	2	1.7
Most curves	1	0.8

*Denotes pattern markings for use in the programmed instructional materials.

other pattern markings to be transferred to the fabric. Items in this table are arranged in order of incidence of use.

GENERALIZATIONS

The students using a self-instructional program formulate their own generalizations as they progress. Therefore, the self-instructional program teaches the making of a blouse as well as generalizations which can be applied in the making of other garments.

Do teachers agree with the generalizations used in the self-instructional program? Do they think they should include these in their teaching? Do they consider the generalizations suggested for the self-instructional program important? These questions were answered by the teachers on the second section of the opinionnaire.

The teachers in the sample were asked to express their reactions to the generalizations which were used in the self-instructional program (for complete listing of generalizations see opinionnaire in appendix B), by checking each item under one of the following columns:

I. In Home Economics I, I plan my teaching so the students will form this generalization.

II. I do not teach for this generalization in Home Economics I, but think I should.

III. I do not think Home Economics I students should be expected to form this generalization. They should learn this in Home Economics II or not at all.

Many of the teachers indicated that they plan their teaching so their students form the same generalizations as given in the self-instructional program. The size range of the group who checked the same generalizations was 90 to 107.

As shown in Table III, the generalizations concerning pattern sizes and figure types were accepted with the exception of one teacher

TABLE III

GENERALIZATIONS CONCERNING FIGURE TYPES AND PATTERN SIZES

Generalizations	Number of Teachers*				
	I	II	III	IV	V
1. Pattern sizes are determined by body measurements, never by age or sizes of ready-to-wear clothes.	104	1	0	12	120
a. A well-fitted garment is most likely to be obtained by buying the pattern with measurements closest to one's own measurements.	104	2	1	13	120
b. The pattern envelope gives information that helps the students know how much fabric and what notions to buy.	105	1	0	14	120
2. Patterns are designed for different figure types as well as for different sizes.	103	1	1	15	120
a. Figure types such as girls, teen, junior, misses, women's, and half-sizes are designed for a body size, not an age.	103	3	0	14	120
b. Figure types are determined by the relationship among measurements of bust, waist, hips, and height.	96	6	4	14	120
c. There is one figure type which is most like each student's own figure.	95	7	4	14	120
d. Selecting the correct figure type makes some alterations unnecessary.	98	6	4	12	120

* I = Teach for these generalizations.
II = Do not teach for these generalizations, but should.
III = Do not expect Home Economics I students to form these generalizations.
IV = No response or did not follow directions.
V = Total number of responses.

who did not think students should be expected to learn that "a well-fitted garment is most likely to be obtained by buying the pattern with measurements closest to one's own measurements." It was assumed that a check in either column one or two indicated acceptance of the generalization. It may be noted that only one or two teachers indicated that they did not accept the generalization.

The generalizations concerning figure types were almost equally as well-accepted as the generalizations concerning pattern size. Four teachers or 3.3 per cent, objected to "There is one figure type which is most like each student's own figure" and "Selecting the correct figure type makes some alterations unnecessary."

Table IV shows that teachers do not always agree on ideas related to grainline of fabric. There were greater differences in opinion to the items on this table than the generalizations given in any other part of the opinionnaire. Ten teachers believed that they should be teaching for the generalization, "The fabric is ready for cutting if the lengthwise and crosswise threads are perpendicular to each other," but were not at the time teaching in such a way that students were guided to formulate this generalization. Four of the teachers believed that Home Economics I was not the appropriate class for this generalization to be taught. It was interesting to note that in the section of the opinionnaire dealing with procedures, the section related to grainline revealed a greater difference of opinion than is indicated in any other section.

Item 5f also brought some discrepancies of opinions. "The ends of the fabric are straight if the crosswise thread ravels from selvage to selvage without interruption" is not taught by seven of the 108

TABLE IV

GENERALIZATIONS RELATED TO CUTTING LAYOUTS AND GRAINLINE

Generalizations	Number of Teachers*				
	I	II	III	IV	V
5. Cutting layouts for different sizes of patterns show how to place the pattern pieces on different widths of fabric.	101	2	1	16	120
a. A garment must be cut on the grainline to hang correctly.	106	2	0	12	120
b. Placing all pieces of the pattern on the fabric at one time is a safeguard against failing to allow space for some pattern pieces.	103	3	2	12	120
c. The fabric is ready for cutting if the lengthwise and crosswise threads are perpendicular to each other.	94	10	4	12	120
d. Lengthwise threads or lengthwise grain runs parallel to the selvage edge.	105	2	1	12	120
e. Crosswise threads or crosswise grain runs across the fabric from selvage to selvage.	104	2	2	12	120
f. The ends of the fabric are straight if the crosswise thread ravels from selvage to selvage without interruption.	96	7	5	12	120
g. The pattern is placed on the grainline when the ends of the grainline arrow on the pattern piece are equidistant from the selvage.	103	3	1	13	120

* I = Teach for these generalizations.
II = Do not teach for these generalizations, but should.
III = Do not expect Home Economics I students to form these generalizations.
IV = No response or did not follow directions.
V = Total number of responses.

teachers who responded (6.5 per cent), although they have no objection to it. Five of the teachers believed that Home Economics I was not the class for this generalization.

Table V is composed of two generalizations, the contents of which were not related to the others. All but one teacher agreed that Home Economics I was the level at which this generalization should be taught: "It is economical use of time, energy, and money to buy pattern, fabric, and notions at one time." Two teachers did not believe that "Leaving the pattern piece pinned to the fabric until ready to be used saves time in identifying cut pieces and the fabric is handled less," belonged in Home Economics I.

TABLE V

MISCELLANEOUS GENERALIZATIONS

Generalization	Number of Teachers*				
	I	II	III	IV	V
3. It is economical use of time, energy, and money to buy pattern, fabric, and notions at one time.	99	7	2	12	120
6. Leaving the pattern piece pinned to the fabric until ready to be used saves time in identifying cut pieces and the fabric is handled less.	97	7	2	14	120

* I = Teach for these generalizations.
II = Do not teach for these generalizations, but should.
III = Do not expect Home Economics I students to form these generalizations.
IV = No response or did not follow directions.
V = Total number of responses.

The writer believed a technical error in the opinionnaire stencil might have been responsible for the lack of responses of fifteen teachers

to the first item presented in Table VI. The blanks beside this generalization "Pattern markings are symbols used in the identification of pattern pieces, in placing pattern on fabric, and in construction processes" were not clear on the opinionnaire. Of the teachers responding, however, none objected to the use of this generalization at the Home Economics I level.

TABLE VI

GENERALIZATIONS REIATED TO PATTERN MARKINGS AND THEIR TRANSFER TO THE FABRIC

Generalization	Number of Teachers*				
	I	II	III	IV	V
4. Pattern markings are symbols used in the identification of pattern pieces, in placing pattern on fabric, and in construction processes.	90	3	0	27	120
a. The seam allowance is the space between the stitching line and the cutting line.	105	3	0	12	120
b. Notches and dots are used to decide which pattern pieces should be placed adjacent to each other and to match seamlines.	107	1	0	12	120
7. Pattern markings transferred with a tracing wheel must be made on the wrong side of the fabric using the correct color of carbon paper and light enough pressure so they will not show in the finished garment.	105	1	1	13	120

* I = Teach for these generalizations.
II = Do not teach for these generalizations, but should.
III = Do not expect Home Economics I students to form these generalizations.
IV = No response or did not follow directions.
V = Total number of responses.

CHAPTER V

SUMMARY AND IMPLICATIONS

A self-instructional program requires certain steps to be followed if it is to be effective in changing the student's behavior. Determination of objectives is the first step and defining the generalizations is the second step.

The Problem

The first purpose of this study was to develop the objectives and the generalizations for a self-instructional program on the selection and use of a commercial blouse pattern for Home Economics I students. The second purpose of this study was to determine whether the teaching procedures used by vocational home economics teachers were in agreement with the procedures selected for use in the self-instructional program. The third purpose of this study was to conduct a survey of vocational home economics teachers in North Carolina to ascertain their opinions concerning grade placement of stated generalizations. Through an analysis of the answers on this opinionnaire, information obtained could be of value for programmers and classroom teachers in comparing the two methods of teaching.

Study Design

The first step in the development of the objectives and the generalizations was to review the related literature. The objectives and the generalizations for the selection and use of a commercial pattern

were formulated. The procedures for the selection and use of a commercial pattern were studied. If two procedures were considered equally well suited for the self-instructional program, the procedures were tested with a Home Economics I class and the procedure which appeared to be better, was chosen for use.

The opinionnaire developed for use in this survey included generalizations and procedures believed to be important in achieving the objectives for the self-instructional program. On the section dealing with generalizations secondary home economics teachers were asked to check one of three columns: (1) I plan my teaching in Home Economics I so students will form this generalization, (2) I do not plan my teaching in Home Economics I so students will for this generalization, but think I should, and (3) I do not think Home Economics I students should be expected to form this generalization, they should learn it in Home Economics II or not at all. On the section of the opinionnaire dealing with procedures the teachers were asked to check the procedure they used in their classes from several accepted procedures for accomplishing an objective.

A random sample of 150 vocational home economics teachers was drawn, and opinionnaires were sent to these teachers. A follow-up letter was sent to those teachers who did not respond to the initial contact within a two weeks period. A total of 120 of the teachers contacted returned the opinionnaire.

Limitations of the Study

The limitations of this study were as follows: (1) the level of the self-instructional program was for Home Economics I students;

(2) the students had no choice in the selection of the pattern, which was a collarless overblouse with set-in sleeves; and (3) the procedures for pattern selection and use began with the taking of body measurements and ended with the transferring of pattern markings to the fabric.

Major Findings

Some major findings of this study of the teachers' opinions of the objectives and generalizations were:

1. In seven of the nine groups of procedures for selecting and using a pattern teachers followed the same procedures as were used in the self-instructional program. These seven groups of procedures included those for (1) measuring, (2) selecting pattern size and figure type, (3) straightening ends of fabric, (4) correcting grainline, (5) the method for correcting grainline, (6) method for transferring pattern markings to fabric, and (7) leaving pattern pieces pinned to the material.

2. Only one-fourth of the teachers followed the same procedure used in the self-instructional program in relation to pattern selection. A slight majority of the teachers allowed students to select their own pattern design which had criteria previously established for the pattern selected.

3. There was evidence that the majority of the teachers had their students transfer more pattern markings to the fabric than was done when using the self-instructional program. The self-instructional program instructed students to mark darts, dots, center front line, facing fold line, armscye seamline, and top of sleeve seamline. The majority of

teachers instructed their students to transfer all of these markings with the exception of the dots. The teachers also required their students to mark buttonholes, neckline seamline, and some of the teachers required students to mark all seamlines.

4. The majority of the teachers planned their teaching so their students formed the same generalizations that were planned for in the self-instructional program.

Implications for Further Study

1. Further research is needed to obtain information concerning how these teachers teach for these generalizations. Both deductive and inductive methods of teaching were described in the Review of Literature, but the teachers were not asked on the opinionnaire which of the two methods they used.

2. There is a need for further study concerning how the teachers evaluate the student's achievement of objectives. Attainment of objectives is necessary before transfer of learning can take place.

3. Some of the objectives formulated for this study need some changes for clarity, completeness, and agreement with the generalizations.

Objectives and generalizations are just as necessary for conventional methods of classroom teaching as they are for programmed instruction. Programmed instruction demands that objectives and generalizations be specified clearly and explicitly. Superior classroom instruction demands this clarity also.

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APPENDIXES

APPENDIX A

BODY MEASUREMENTS AND PATTERN SELECTION

A. Given a tape measure, pencil, paper, and a partner the student:

1. Recognizes that body sizes are determined by body measurements, never by age or sizes of ready-to-wear clothes.

2. Takes measurements over a slip and foundation garments usually worn.

3. Takes her partner's bust measurement

   a. Places the tape measure over the fullest part of the bust, directly under the arms, and straight across the back.

   b. Records bust measurement.

4. Takes her partner's waist measurement.

   a. Places the measuring tape around the natural waistline.

   b. Records waist measurement.

5. Takes her partner's hip measurement.

   a. Measures 7 inches down from the natural waistline in the center front and places a pin horizontally at this point.

   b. Performs step a. in the center back and on each side.

   c. Places tape measure around her partner's hips, parallel to the floor with the top of the tape measure just touching the pins.

   d. Records hip measurement.

6. Takes her partner's back waist length measurement.

   a. Places end of the tape measure at the prominent bone at the back base of the neck and measures to the waistline.

   b. Records back waist length.

B. Given a chart of figure types and sizes the student:

1. Recognizes that a well-fitted garment can be secured by buying the size and type of pattern with measurements closest to her own.

2. Selects a pattern size with measurements closest to her own.

FIGURE TYPES

A. The student recognizes that:

1. Patterns are designed for different figure types as well as for different sizes.

2. Figure types such as girls, teen, junior, misses, women's and half-sizes are designed for a body size, not an age.

3. Figure types are determined by the proportions of body measurements.

4. Proportion refers to the relationship of the sizes of bust, waist, and hip measurements as well as height.

5. Pattern companies have different names for figure types.

6. There is one of the figure types which is most appropriate for each person and it is different for different body sizes.

7. Selecting the correct figure type is as important as selecting the correct size.

8. Selecting the correct figure type makes many alterations unnecessary.

B. Given a new example of a person's height and bust, waist, and hip measurements, plus a table of measurements for different figure types, the student selects the appropriate figure type for the example.

C. The student carries with her when she shops for a pattern, a card with all of her own measurements which will be needed to select a pattern of the correct figure type and size, when the pattern is a brand not previously used.

D. The student refers to the chart of figure types in the pattern book she is using to make the appropriate selection of figure type and pattern size for herself.

PATTERN ENVELOPE

A. Given the pattern envelope of a blouse pattern the student:

1. On the front of the envelope

   a. Locates pattern size, bust measurement and figure type.

   b. Recognizes that this pattern will fit only persons of the size and figure type specified on the envelope.

   c. Locates the different views of the pattern.

   d. Recognizes that any of the views on the pattern envelope can be made with this pattern.

2. On the back of the envelope

   a. Locates the different views of the pattern.

   b. Locates table of fabric yardage required for various views, sizes, and widths of fabric.

      (1) Selects the yardage of 36" and of 45" fabric that would be needed if this were a pattern of a size and view not previously discussed in class or found in the printed material (for example, size 36 and view B).

   c. Locates fabric suggestions.

   d. Recognizes that certain patterns make up well in certain fabrics and that fabric suggestions are helpful when purchasing fabric.

   e. Locates list of notions suggested

      (1) Defines the word "notions"

      (2) Recognizes that it is difficult to tell from a picture what notions will be needed.

      (3) Lists the notions that will be needed to make any of the views shown on this pattern.

   f. Locates outlines of pattern pieces included in pattern envelope.

B. The student recognizes that it is an economical use of time, energy, and money to buy pattern, fabric, and notions at one time.

GUIDE SHEET

Given a guide sheet from a blouse pattern the student:

1. Locates cutting layouts for all sizes.

2. Recognizes that cutting layout diagrams show how to lay the pattern pieces on the fabric on grain and in an economical way.

3. Recognizes that the cutting layout diagrams show how the fabric is to be folded.

4. Selects layout for any width of fabric and any view which might be used to make a garment using this pattern (for example, 36" fabric for view B, size 34).

5. Recognizes that detailed instructions are given for the construction and finishing of the garment on the guidesheet.

PREPARATION OF FABRIC

Given a piece of fabric the student:

1. Identifies the selvage edge of the fabric.

2. Recognizes that lengthwise threads or lengthwise grain runs parallel to the selvage edge.

3. Identifies the cut or torn edge of the fabric.

4. Recognizes that the crosswise threads or crosswise grain runs across the fabric from selvage to selvage.

5. Tests for straightness of ends of fabric:

   a. Pulls a crosswise thread across each end of the fabric to test for straightness

   b. Recognizes that the ends are straight if the crosswise thread ravels from selvage to selvage without interruption.

6. Straightens the ends of the fabric if necessary.

   a. Snips the selvage on the short side and works out the end of a crosswise yarn.

   b. Pulls one yarn all the way across the cut or torn edge of the fabric.

   c. Cuts across fabric following the line left by the removal of one yarn or cuts along one thread pulled to leave a puckered appearance.

   d. Pulls a crosswise thread across each end of the fabric to test for straightness.

7. Folds the fabric lengthwise, selvages together and checks to see if the cut ends are parallel to each other.

8. Straightens the fabric if the cut ends are not parallel.

   a. Gently pulls on the true bias every few inches in the direction of the short ends.

   b. Folds fabric lengthwise, selvages together; if cut ends are still not parallel she repeats the above process.

9. Indicates on a diagram the correct direction to pull any fabric which needs pulling.

LAYING PATTERN ON FABRIC

Given a pattern guide sheet and fabric the student:

1. Selects the cutting layout diagram she is to use.

2. Folds fabric as indicated on selected cutting layout diagram.

3. Recognizes that the possible folds are:
   a. Lengthwise - folds fabric with selvages together.

   b. Crosswise - folds fabric with cut ends together.

   c. Combination of lengthwise and crosswise.

   d. Fabric unfolded.

4. Removes from the pattern envelope all pattern pieces needed for any view shown.

5. Places pattern pieces on the fabric as any of the cutting layout diagrams suggest.

6. Recognizes that placing all pattern pieces for the desired view on the fabric at one time is a safeguard against failing to allow space for some pattern pieces.

7. Places the grain line of any pattern piece on the grain of the fabric as suggested by the guide sheet.
   a. Recognizes that a garment must be cut on the grainline to hang correctly.

   b. Measures from each end of the pattern grainline to the nearest selvage.

   c. Recognizes that the grainline is correct when the ends of the grainline arrow on the pattern piece are equidistant from the selvage.

8. Pins the pattern pieces in place.
   a. Places the first two pins at the ends of the grainline mark.

   b. Recognizes that slipping of the pattern piece results in incorrect grainlines.

9. Smooths the pattern piece in all directions, and pins at corners, then puts in additional pins to hold pattern securely.

10. Places a pin with the point extending out from each notch as a reminder to cut notches away from the pattern.

PATTERN MARKINGS

Given a pattern piece bearing the following pattern markings, the student:

1. Recognizes that pattern markings are symbols used in identification of pattern pieces, laying out pattern on fabric, and construction processes.

2. Identifies identification markings
   a. The name of the pattern piece
   b. The pattern size
   c. The pattern number
   d. Number indicating the view for which it is being used

3. Identifies layout markings
   a. Grain line
   b. "Place this line on fold of fabric" or "place on fold"
   c. "Cut 1" or "cut 2."

4. Identifies pattern construction markings
   a. Notch
   b. Cutting line
   c. Stitching line
   d. Seam allowance
   e. Directional arrows
   f. Darts (short broken lines stitching line for darts)
      (solid line in the center of dart)
   g. Dots
   h. Buttonholes
   i. Hem
   j. "Clip" or "slash"
   k. Center front line
   l. Facing fold line

CUTTING

A. Given a garment unit which is ready to be cut, the student:

1. Recognizes that accuracy of cutting greatly affects the fit and appearance of the finished garment.

2. Recognizes that cutting is done correctly by

   a. Using sharp cutting shears

   b. Cutting on cutting line

   c. Cutting off the margin of the pattern (extra paper outside the cutting line) along the cutting line as the fabric is cut

   d. Opening shears wide each time and cutting with long even strokes on straight edges (to insure a smooth edge)

   e. Using short strokes and points of shears for short spaces

   f. Not lifting or moving pieces while cutting

   g. Holding the pattern and fabric in place while cutting by placing one hand on the pattern and fabric beside the area being cut

   h. Cutting notches outward from the pattern in triangles

B. The student leaves the pattern piece attached to the cut fabric until ready for construction. Leaving the pattern piece attached saves time in identifying cut pieces and the fabric is handled less.

MARKING

A. Given a cut garment unit with the pattern attached, the student:

1. Recognizes the pattern markings she will need to transfer to the fabric for use in constructing the garment

   a. Darts

   b. Center front

   c. Seamline or curved edges

      (1) Armscye
      (2) Top of sleeve
      (3) Neckline

2. Places a padding (magazine, newspaper, cardboard) directly under the section to be marked (to prevent marring the table).

B. Given a selection of dressmakers carbon paper, the student:

1. Selects a color of dressmakers carbon paper which is one shade darker or lighter than the fabric to be marked.

2. Identifies the "chalky" side of the tracing paper as the side that will leave a mark.

3. Recognizes that pattern markings must be made on the wrong side of the fabric, so they will not show in the finished garment.

4. Places the "chalky" side of carbon paper against the wrong side of the fabric.

C. Given a tracing wheel and a ruler, the student:

1. Traces the necessary markings with a single stroke (so there will be only one line to follow) using the amount of pressure necessary for the markings to show.

2. Uses the ruler as a guide for accurate marking of straight lines.

3. Marks a small crosswise line where lines end or converge, such as dart points, to show exactly where stitching should stop.

APPENDIX B

Please express your reaction to each generalization by checking each item under one of the following columns:

I. In H.E. I, I plan my teaching so the students will form this generalization.

II. I do not teach for this generalization in H.E. I but think I should.

III. I do not think H.E. I students should be expected to form this generalization. They should learn this in H.E. II or not at all.

I	II	III	
___	___	___	1. Pattern sizes are determined by body measurements, never by age or sizes of ready-to-wear clothes.
___	___	___	a. A well-fitted garment is most likely to be obtained by buying the pattern with measurements closest to one's own measurements.
___	___	___	b. The pattern envelope gives information that helps the students know how much fabric and what notions to buy.
___	___	___	2. Patterns are designed for different figure types as well as for different sizes.
___	___	___	a. Figure types such as girls, teen, junior, misses, women's and half-sizes are designed for a body size, not an age.
___	___	___	b. Figure types are determined by the relationship among measurements of bust, waist, hip, and height.
___	___	___	c. There is one figure type which is most like each student's own figure.
___	___	___	d. Selecting the correct figure type makes some alterations unnecessary.
___	___	___	3. It is economical use of time, energy, and money to buy pattern, fabric, and notions at one time.
___	___	___	4. Pattern markings are symbols used in the identification of pattern pieces, in placing pattern on fabric, and in construction processes.

I	II	III	
___	___	___	a. The seam allowance is the space between the stitching line and the cutting line.
___	___	___	b. Notches and dots are used to decide which pattern pieces should be placed adjacent to each other and to match seamlines.
___	___	___	5. Cutting layouts for different sizes of patterns show how to place the pattern pieces on different widths of fabric.
___	___	___	a. A garment must be cut on the grainline to hang correctly.
___	___	___	b. Placing all pieces of the pattern on the fabric at one time is a safeguard against failing to allow space for some pattern pieces.
___	___	___	c. The fabric is ready for cutting if the lengthwise and crosswise threads are perpendicular to each other.
___	___	___	d. Lengthwise threads or lengthwise grain runs parallel to the selvage edge.
___	___	___	e. Crosswise threads or crosswise grain runs across the fabric from selvage to selvage.
___	___	___	f. The ends of the fabric are straight if the crosswise thread ravels from selvage to selvage without interruption.
___	___	___	g. The pattern is placed on the grainline when the ends of the grainline arrow on the pattern piece are equidistant from the selvage.
___	___	___	6. Leaving the pattern piece pinned to the fabric until ready to be used saves time in identifying cut pieces and the fabric is handled less.
___	___	___	7. Pattern markings transferred with a tracing wheel must be made on the wrong side of the fabric using the correct color of carbon paper and light enough pressure so they will not show in the finished garment.

Indicate which of these procedures you generally use in teaching clothing to a H.E. I class. Check one procedure in each section

MEASURING

_____ 1. Students take each other's measurements
_____ 2. Each student measures herself.
_____ 3. Teacher measures each student.
_____ 4. Other _____.

PATTERN SELECTION

_____ 1. Teacher advises each student as to what size and figure type to buy.

_____ 2. Student selects size and figure type and the teacher checks her choice.

_____ 3. Other _____.

CHOICE OF PATTERN

_____ 1. One pattern is used by the whole class.

_____ 2. Several patterns are selected by the teacher for the students to use.

_____ 3. Student selects any pattern she wants to use.

_____ 4. Student selects a pattern with certain criteria.

_____ 5. Other _____.

STRAIGHTENING CUT ENDS OF FABRIC

_____ 1. The ends of a piece of fabric which has been cut off the bolt are straightened by cutting along the line left after pulling the first crosswise thread extending from selvage to selvage.

_____ 2. The ends of a piece of fabric are not straightened.

_____ 3. Other procedure _____.

CORRECTING GRAINLINE OF FABRIC

_____ 1. Grainline of fabric is not straightened.

_____ 2. The grainline of an off-grain cotton fabric without resin finish is straightened if necessary.

_____ 3. The grainline of an off-grain cotton fabric without resin finish is not straightened.

PROCEDURE FOR CORRECTING GRAINLINE OF FABRIC

_____ 1. Fabric is straightened by gently pulling on the true bias every few inches in the direction of the short corners.

_____ 2. Other _____.

TRANSFERRING PATTERN MARKINGS

_____ 1. Dressmaker's carbon paper and a tracing wheel are used.

_____ 2. Chalk is used.

_____ 3. Tailor's tacks are used.

_____ 4. Other _____.

REMOVING PATTERN PIECES

_____ 1. The pattern pieces are left pinned to the fabric until ready for construction.

_____ 2. Pattern pieces are removed immediately and put in pattern envelope.

_____ 3. Other _____.

CHECK THE FOLLOWING PATTERN MARKINGS YOU ASK H.E. I STUDENTS TO TRANSFER TO THE FABRIC WHEN MAKING A BLOUSE:

_____ Darts
_____ Armscye seamline on bodice
_____ Buttonholes
_____ Center front line
_____ Other _____.

_____ Sleeve cap seamline
_____ Facing fold line
_____ Neckline seamline
_____ All seamlines

You are teaching Home Economics, so you have some information we need!

How can you help us? By giving your reactions to the enclosed Questionnaire. If you do not teach Home Ec. I, please give this questionnaire to the teacher who does.

Many different procedures for selecting and using a pattern are taught. Each of these has merit. We are interested in finding out which procedures are used by teachers in North Carolina. This survey will be included in a thesis being written to fulfill requirements for a Master of Science degree.

Probably you don't have time to complete the questionnaire right this minute, but please try to find the time during the next three days. A stamped, addressed envelope is enclosed for your convenience in returning the questionnaire.

Thank you so much for your time and cooperation.

Jane Lewis
Graduate Assistant

Hildegarde Johnson
Advisor

We have been awaiting the return of the questionnaire which we sent you last week. If yours is in the mail now you need not read the rest of this letter.

Perhaps the questionnaire is in the "to be done" pile on your desk, and you've almost forgotten it. If so, won't you take some time today to respond and send it to us as quickly as possible? If you haven't received your copy, just drop us a post card and we'll send you one.

We're counting on your help, as an experienced home economist, to help us obtain the information we need.

May we hear from you within the week?

Jane Lewis
Graduate Assistant

Hildegarde Johnson
Advisor