This dissertation has been microfilmed exactly as received

MEACHAM, Esther Anne, 1921—
THE RELATIVE EFFECTIVENESS OF FACE-TO-FACE LECTURE VERSUS INSTRUCTIONAL TELEVISION IN A COLLEGE CLOTHING COURSE,

The Ohio State University, Ph.D., 1962
Home Economics

University Microfilms, Inc., Ann Arbor, Michigan
The Committee on Television of the American Council on Education, formed in the early fifties, has co-sponsored several conferences beginning with one on the consideration of technical means by which educational television could be used and followed by others on credit courses by TV, closed-circuit television, and in 1957, a conference on teaching by television. It also publishes a newsletter and is included in the Joint Council on Educational Broadcasting. 4

The Committee on College and University Teaching, Research, and Publication of the American Association of University Professors prefaced a "Statement of Policy on Educational Television" with this assertion.

It is imperative that a constructive pattern for relationship between administration, faculty, and students be defined for the use of television in college courses. 5

The statement deals with such matters as responsibility of the teaching faculty for course content, provision of student activity beyond televised program, academic standard of courses for credit, faculty time, faculty rights, and need for research. It first appeared in the summer 1961 issue of the AAUP Bulletin with the invitation to

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Through observation, and from indications of the students themselves, it was found that the class group was more attentive during the television lesson than was the control group during the conventional lecture, and there was a greater urgency about attendance and promptness for the television presentations. It would appear that time is used to better advantage during the lecture hour with a televised lesson, even though it may not be evident in level of achievement.

There probably always will be students who object to the limitation of being unable to ask questions during the lecture, and who find the pace of the lesson too fast, or occasionally too slow, for their own rate of learning. Both of these factors arose in this study. With the question-answer period immediately following the televised lesson, and the short time lapse between question in the student's mind and opportunity for having it answered, the students in the experimental group did adjust to the arrangement very well.

It may be hoped that students in Home Economics 431 could come to the same conclusion as a group of students who received instruction by television with no classroom teacher to answer questions. Charles A. Siepmann, after visiting many schools across the country and observing the use of television in numerous classrooms, included some of
his findings in an address to the New York Area Conference of the American Association of University Women. Although one situation he described was not entirely parallel to this study, the problems involved were similar. Mr. Siepmann found that the students learned to pace themselves with the television teacher, discovered they could grasp things faster, and came to enjoy it. The same group of students also volunteered the information that, in their own opinion, about 70 per cent of the questions they had previously asked were questions they could have answered for themselves. It may be concluded that the use of television in the classroom could have a desirable effect on the students by helping to improve their learning habits.

When the lectures were televised, there was more control over the attention of the students and what they saw in the classroom. Setting up illustrative material or preparing to show it in the classroom can sometimes be distracting. The students are frequently more interested in watching preliminary preparations than in paying attention to the instruction in progress. Such was the case in the control section when student models participated in demonstrations on fitting.

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1 Charles A. Siepmann, "The Role and Scope of Television in Education," Address given at the New York Area Conference, American Association of University Women, October 4, 1958. (Mimeographed.)
While the limitation of a black and white image remains a disadvantage in teaching a clothing course by monochrome television, it was not impossible to overcome the handicap. With opportunities provided in the laboratory as part of the course schedule, the students gained experience in the use of color and, in general, accepted the television presentation sans color with little or no comment or question. There was no indication in the final measure that this factor decreased the level of achievement.

More preparation time was required for a lecture presented by television than for one presented face-to-face in the classroom. However, there was less work involved at the time the class received the lecture and less inconvenience of setting up illustrative materials in the classroom which was occupied the preceding period by another group of students.

In this study, three sections of the class, or fifty students, met together for the lecture hour, receiving the lesson by the experimental medium (by television). A lecture group of this size was never considered feasible in previous quarters, and therefore it was necessary for two teachers to prepare and present a lecture at the same hour. This change was made without sacrifice of student achievement.
If it is possible to re-use the video taped lessons with equal success as demonstrated in this study, there would be a-saving of time and energy in lecture preparation freeing the teacher to direct her attention toward other concerns.

One final note, worthy of mentioning perhaps, is the fact that the Home Economics 431 televised lessons extended beyond the captive audience in the classroom and were viewed with interest by several women in their homes.

On the basis of these facts, a number of conclusions are set forth in the following statements.

1. Levels of learning other than acquisition of factual information and development of skills can be achieved by instructional television.

2. A clothing course can be taught effectively by instructional television.

3. There is a potentiality for other Home Economics courses to be taught effectively by instructional television.

4. A large number of students may be included in one section of a televised lecture with the advantage of equal viewing opportunity.

5. Home Economics students have a favorable attitude toward instructional television under certain circumstances.

6. Students receiving instruction in Home Economics 431 need personal contact with a teacher in addition to the televised lesson.

7. The disadvantage of monochrome television for teaching clothing can be overcome with experiences in addition to televised instruction.
8. The disadvantage of being unable to ask questions during a televised lesson can be adjusted satisfactorily with a discussion period.

9. Students appear to be more attentive during a televised lecture than during a live presentation.

10. Students show indication of more concern for attendance and promptness for a televised lecture than for a live presentation.

11. Preparation for a television presentation takes longer than preparation for a classroom lecture, but less work is involved at the time the lecture is received in the classroom when the lecture is televised.

12. Re-use of televised lectures is a saving of time and energy to the television teacher, releasing her for other activities.

13. A televised lesson (by open-circuit) extends beyond the classroom and may be of interest and benefit to home viewers.

Recommendations

There are various implications for further consideration and research to be drawn from this study. In view of the findings and the wealth of other information concerning the usefulness of instructional television, there is little doubt that Home Economics could profit from its use. One of the long-recognized advantages of the use of television is to extend the presentations of a really good teacher to a larger number of students. This, then, is a recommendation for consideration: to investigate the possibility of making available, through televised instruction, the high quality teaching of our outstanding home economists to the departments
of small schools where staffs are limited and all phases of Home Economics cannot be adequately covered.

Virginia Thomas made a similar suggestion to home economists in 1959. She wrote of household equipment, referring back to an earlier survey of college teaching in that area, and expressed this idea.

Suppose, for a moment, that all the best resources for teaching household equipment could be brought together in a telecourse for college students and for in-service teachers? Such a cooperative effort would make it possible for the leading specialists in household equipment to contribute to the education of thousands of students and homemakers in many sections of the country.

The situation has not improved. There is no larger proportion of well-trained teachers now than when this was written; and yet the "seed of imagination" which Miss Thomas sought to plant has not been nurtured, or at least there is little evidence of its growth.

Perhaps Home Economics could be a participant in a plan such as the one outlined as a result of the investigation conducted by Meierhenry and McBride under a contract of the Educational Media Branch of the United States Office of Education. Their study was to

... survey the needs and plans of educational systems and institutions for exchange

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of teaching materials on television, and to make recommendations as to how the indicated needs could best be met.\(^3\)

The recommendations made on the basis of data and reports from all levels of education included establishment of regional and national centers for production and distribution of televised instruction.\(^4\) Through such a center, or by an agency under the auspices of the American Home Economics Association bearing a similar function, the instructional efforts of leading teachers and schools could be shared with smaller, less well-staffed Home Economics departments.

The apparent success of teaching multiple sections of a clothing course by television suggests the feasibility of adapting other multiple section Home Economics courses to instructional television. The same advantages found in the use of instructional television for teaching a clothing course would be applicable to other Home Economics subjects.


Although incidental to the carrying out of the design of this study, the consideration of the potentiality of extending instruction beyond the classroom is important in the overall plan of service in Home Economics. It would appear that the school or department of Home Economics could make a contribution to the community beyond the campus through television programming. An investigation could reveal the most effective and practical way to integrate such a service into the instructional program intended for classroom use. Such programming might also be of interest and help to Home Economics teachers in the process of training or for refresher purposes.

At least three aspects of evaluation connected with this study bear further investigation: (1) the measure of critical standards of clothing, (2) the measure of achievement on the objective test at the upper limit, and (3) the measure of ability to apply principles.

First, the test of critical standards appeared to give an inaccurate measure. The scores on the choice-of-picture test, which was assembled for use in this study, showed practically no correlation with any of the other tests. This is to be expected, to a certain degree perhaps, since the area of design is not necessarily closely associated with fitting and construction of clothing. One might expect, however, that there would be some correlation
with the Graves Design Judgment Test which measures similar qualities. The mean score for the combined group (control section and experimental section) on the choice-of-picture pre-test was 8.25 out of a possible fifteen points with a standard deviation of 1.90 (Table 5). These figures would indicate very little discrimination between students' ability. The mean gain on the test was less than one (0.59) with a standard deviation (on the gain) of 2.26 (Table 4), and a number of scores lower on the post-test than on the pre-test. It has long been recognized that discriminating choice in clothing is difficult to teach and it is also a difficult quality to measure. It is recommended that further development of testing instruments to measure this quality be considered.

Along this line also, the writer suggests that there may be another kind of evaluation that would be apropos to a study such as this one and which might be of value in determining difference in achievement for groups taught by different media. Such evaluation would require a test instrument which might take the form of an attitude scale to measure awareness and interest in qualitative aspects of clothing but not necessarily measure ability to apply principles or to draw fine lines of distinction.

Second, there was indication in this study of a top limit to the achievement of the students in the course. Both regression coefficients and the correlation coefficients
showed a significant negative relationship between scores on the pre-tests and the amount of gain on the tests (Tables 2 and 4). It would appear that the students are expected to attain a certain level of understanding and ability and those who come to the class with a fairly high level of knowledge and experience have little to gain. It is possible that the testing instruments used did not disclose the maximum possible gain in the achievement of these students. The recommendation is made that investigation of more accurate testing instruments be made.

The third aspect of evaluation which appeared to merit attention was the measure of ability to apply principles. The mean grade on laboratory performance was significantly higher at the 5 per cent level for the experimental group, but the writer would be reticent to accept the measure of evaluation as being entirely accurate. The laboratory performance grade was an evaluation of the project chosen by the student, and there was great variation in amount and difficulty of work involved. Therefore, there probably would be less consistency and equality in this evaluation than in other measures of achievement used.

For example, a student may be fortunate in having a well-proportioned figure. The dress she chooses to make as a laboratory project may fit her perfectly because her body dimensions coincide with the measurements of a standard
interested readers to make suggestions of change. Later it was endorsed by the Council and received a vote of approval when presented before the annual meeting in April 1962.  

In 1953 the North Central Association appointed a Subcommittee on Television within its Commission on Research and Service. The function of the committee was "to inquire into the status and uses of television in education and to bring to the attention of member institutions pertinent information in this regard." Two reports were published within the first five years after the group was appointed. A recent report prepared by this committee in cooperation with the Office of Education, and published in March 1961, was the result of a special seminar whose purpose was to consider the uses of television in education, to assess present knowledge in this connection, and to identify areas needing study and research. The members of the seminar set forth a series of basic principles concerning educational television asserting that these statements now may be safely accepted.


8 Ibid., p. 5.
pattern. Her ability (or inability) to apply principles to attain a well-fitted dress is not necessarily measured. On the other hand, another student may have the experience of making application of several fitting principles and may develop a good understanding of the process of attaining a well-fitted garment; but her final product, which is the basis of evaluation, may not look as well and may be scored lower.

Another reason to suspect inaccuracy of evaluation may be evident in this situation also. It is interesting to note that the next highest measure of difference between groups (second high to laboratory performance) is the difference in groups as measured by gain on a performance test. Although these two criteria should measure similar ability and achievement, the t value for the performance gain is a negative value, indicating a difference in the opposite direction, or favoring the control group rather than the experimental group (Table 2). One factor which may contribute to this inconsistency is the teacher-appraiser variable. The performance pre- and post-tests were scored by the television teacher and the laboratory performance was evaluated by the laboratory teacher. There may be a greater degree of difference of standards between these two teachers than was anticipated or there may be a greater element of subjectivity than was anticipated. The entire picture of
evaluation of ability to apply principles leads to the recommendation to investigate more objective or accurate measures.

High scores on the objective pre-test appeared to be predictive of high attainment at the end of the course. The significant positive relationship, as shown by both regression and correlation coefficients, between this particular pre-test scores and the problem-solving test scores as well as the laboratory performance grade bears out this fact. It may also indicate that a high level of achievement before taking the course, as suggested by the objective pre-test score, would warrant exemption from the course. This recommendation could not be made, however, without further investigation. It is suggested that the results of this study may indicate a very favorable possibility of developing an exemption examination to be used in connection with the beginning class in clothing construction.

With the evidence from this study, that a course in clothing can be taught effectively by television, the development of a beginning course designed for independent study for remedial purposes becomes a feasible consideration.

The design of this study included the use of production techniques. Considering the limitations of studio facilities and experience of the television teacher, it is
probable that "the best possible" could be improved. In this study no attempt was made to overcome weaknesses in production techniques. It was hoped that the same mistakes were not repeated, but the video tapes were used without editing or re-recording. It is recommended that improvement could be made with the possible effect of increase in student achievement.

The recommendations for future consideration and research may be summarized in the following manner. First, these general suggestions concerning instructional television and Home Economics are made.

1. Investigation of possible exchange of Home Economics televised instructional material on a national or a regional basis.

2. Adaptation of other Home Economics courses to instructional television.

3. Consideration of programming for an audience beyond the classroom.

4. Investigation of the use of instructional television for teacher training and refresher courses.

Then, more specifically directed toward Home Economics 431, the course used in this study, these recommendations are made.

1. Development of further evaluation measures
   a. Improved measure of critical standards
   b. Development of an interest and awareness scale
   c. Revision of objective test to overcome ceiling effect
   d. More objective measure of application of principles.
2. Development of pre-test for use as exemption examination.

3. Development of independent study program by television for remedial purposes.

4. Further work to improve TV production.
APPENDIX A

Home Economics 431: Objectives
<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
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</thead>
<tbody>
<tr>
<td>To know the principles of effective clothing selection and construction</td>
<td>To develop critical standards in costume</td>
<td>To practice application of principles to selection and construction of clothing</td>
</tr>
</tbody>
</table>

**Harmony in Costume**

**Design elements**
- To know the five plastic elements of design:
  - Line-direction & expression
  - Form-silhouette shapes within costume
  - Fabric design
  - Space-division of space
  - Color-value, hue, & intensity
- To develop critical standards of use of design elements:
  - To distinguish between good and poor use of line, form, space, color and texture.
- To use design elements effectively:
  - Choose appropriate and becoming lines in design of garment made in class.
  - Use space and form relationships that are effective for costume choice.
  - Combine colors and textures effectively.
<table>
<thead>
<tr>
<th>Content</th>
<th>I: Principles</th>
<th>II: Critical Standards</th>
<th>III: Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design composition in costume</td>
<td>To know the principles of design composition: Balance</td>
<td>To recognize good design composition. To distinguish between good and poor design.</td>
<td>To combine design elements to create good composition in costume.</td>
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<td></td>
<td>Proportion and scale Rhythm Dominance and subordination (Emphasis)</td>
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<tr>
<td>Individual coloring and figure type</td>
<td>To know figure types: Stocky Petite Average Willowy Statuesque or Nordic To know personal coloring types: Warm Cool</td>
<td>To appreciate a well-proportioned figure, or the illusion of such and to recognize how the illusion was created.</td>
<td>To identify own personal coloring. To identify own figure type.</td>
</tr>
<tr>
<td></td>
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<td>To select colors, textures and designs becoming to individual characteristics.</td>
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<tr>
<td>Objectives</td>
<td>I Principles</td>
<td>II Critical Standards</td>
<td>III Application</td>
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<tr>
<td>WELL-FITTED GARMENT</td>
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<tr>
<td>Relationship of garment to body—good fit</td>
<td>To know the standards of a well-fitted garment: Balanced on figure Smooth set Proper ease Follows lines of body Accurate grain</td>
<td>To develop critical standards of fit.</td>
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<tr>
<td>Figure variations and fitting problems</td>
<td>To know common figure variations which cause fitting problems: Sloping shoulders Square shoulders Round shouldered Well-developed bust line Large hips Sway-backed Heavy thighs</td>
<td>To recognize figure variations and fitting problems caused by them.</td>
<td>To identify figure variations of own figure.</td>
</tr>
<tr>
<td>Objectives</td>
<td>Content</td>
<td>I Principles</td>
<td>II Critical Standards</td>
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<tr>
<td>Solving fitting problems</td>
<td>(A) Fitting the garment (fabric pattern)</td>
<td>To know techniques of fitting a garment (fabric pattern). Removing fullness by alteration tucks. Correcting wrinkles by alteration darts. Re-defining lines—re-locating darts. Cutting and spreading to increase width and length. Manipulating grain to improve balance.</td>
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<td></td>
<td>(B) Paper pattern alteration</td>
<td>To know the principles and techniques of pattern alteration: Lengthen and shorten between points of body articulation. Draw transitional lines after alteration is made. Cut and spread to add width and length over body curve. Cut through pattern to dart or to opposite edge to spread or overlap. Alter within pattern to preserve design lines. Follow grainline in cutting pattern for alteration when possible.</td>
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<tr>
<td>Content</td>
<td>I Principles</td>
<td>II Critical Standards</td>
<td>III Applications</td>
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<tr>
<td>Design and fabric coordination</td>
<td>To know the determining factors in good fabric-design coordination. Characteristics of one influence the choice of the other.</td>
<td>To recognize good coordination of fabric and design.</td>
<td>To choose pattern appropriate to fabric.</td>
</tr>
<tr>
<td>Organization of work</td>
<td>To know the logical sequence of work in garment construction. Unit method—complete units of garment before assembling.</td>
<td>To distinguish between good and poor combinations.</td>
<td>To choose fabric appropriate to pattern.</td>
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<tr>
<td></td>
<td>In constructing garment progress from one step to another in logical sequence. Use time and equipment efficiently.</td>
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</table>
Students can learn as well where television is used by the teacher as in the conventional classroom situation; frequently, they can learn better.

The proper use of television provides new incentive for students to assume more responsibility in learning.

Television is not a self-contained educational entity, but an instrument which is significant only in the particular educational context in which it is employed.

The use of television can improve the total program of instruction.

Effective television teaching demands more preparation and the assistance of more specialized personnel than does conventional instruction.

Television is such a versatile, dynamic, and new medium that its educational use not only encourages but demands a continuous appraisal of the ways in which it is or may be utilized.

The full capacity of the television medium for transmitting information, both visual and aural, in a great variety of forms and patterns, has not yet been realized. It is suspected that the capacity of television to transmit ideas greatly exceeds human capacity to absorb them.

The majority of research projects in educational television have been concerned with acquisition and

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9 Ibid., pp. 10, 11.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>I Principles</th>
<th>II Critical Standards</th>
<th>III Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination of fabric and design with construction technique</td>
<td>To know possible choices of construction techniques.</td>
<td>Discrimination in choice of construction technique for fabric and design.</td>
<td>To construct a garment using the best choice of technique.</td>
</tr>
<tr>
<td></td>
<td>To know proper relationship of construction technique to fabric: Minimize bulk Prevent fraying Handling fullness Scale and intricacy of detail Transparency</td>
<td>To recognize and appreciate appropriate construction techniques for fabric and design of garment.</td>
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<tr>
<td></td>
<td>To know proper relationship of construction technique to design: Tailored, for activity and durability. Dressy, for effect or appearance</td>
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<tr>
<td>Construction techniques</td>
<td></td>
<td>To develop critical standards of workmanship.</td>
<td>To exercise accuracy and neatness in workmanship.</td>
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<td></td>
<td></td>
<td>To distinguish between poorly-made and well-made garments.</td>
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<tr>
<td>Construction techniques (continued)</td>
<td>Objectives</td>
<td>I Principles</td>
<td>II Critical Standards</td>
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</tr>
<tr>
<td>Pattern layout and cutting</td>
<td>To know the steps in preparing fabric for cutting and to know proper cutting technique.</td>
<td>To recognize:</td>
<td>Accurate cut</td>
</tr>
<tr>
<td>Darts and exposed seams</td>
<td>To know the technique of making a well-tapered, smooth dart.</td>
<td>Proper grain</td>
<td>Good stitching</td>
</tr>
<tr>
<td>Enclosed seams</td>
<td>To know the kinds of seams and the technique for making them.</td>
<td>Appropriate seam and finish</td>
<td>even correct stitch length</td>
</tr>
<tr>
<td>Linings and interfacings</td>
<td>To know the principles and techniques of making flat, smooth edges.</td>
<td>Appropriate lining and/or interfacing</td>
<td>Neatly applied fastener</td>
</tr>
<tr>
<td></td>
<td>To know the technique of applying each kind.</td>
<td>Appropriate type of closing</td>
<td>Appropriate finishes</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Well-executed finishes</td>
</tr>
<tr>
<td>Construction techniques (continued)</td>
<td>Objectives</td>
<td>I Principles</td>
<td>II Critical Standards</td>
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<tr>
<td>Closings and fasteners</td>
<td>To know the methods of making buttonholes, applying zippers, and applying other fasteners.</td>
<td></td>
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<tr>
<td>Finishes (hems, facings, seam finishes, etc.)</td>
<td>To know the methods of finishing to produce a smooth, durable effect.</td>
<td></td>
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<tr>
<td>Pressing</td>
<td>To know techniques of pressing to accomplish smooth results without over-pressing.</td>
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APPENDIX B

Home Economics 431: Daily Schedule
<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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</thead>
<tbody>
<tr>
<td>1st</td>
<td>Self-analysis size and shape (Mechanics of course)</td>
<td>Principles of Optical Illusion</td>
<td>Value and Color</td>
<td>Minimizing figure irregularities</td>
<td>Color</td>
</tr>
<tr>
<td>2nd</td>
<td>Color and texture</td>
<td>Correlation of design and fabric</td>
<td>Problem on choosing design and color for an individual</td>
<td>Costume: a design composition</td>
<td>Selection of pattern for gingham</td>
</tr>
<tr>
<td>3rd</td>
<td>Layout and cutting</td>
<td>Pattern differences</td>
<td>Marking, stay-stitching and pinning</td>
<td>The well-fitted garment blouse</td>
<td>Assembling Basting</td>
</tr>
<tr>
<td>4th</td>
<td>Fitting blouse of gingham</td>
<td>Principles and techniques of fitting blouse and skirt</td>
<td>Fitting skirt of gingham</td>
<td>Principle and technique of fitting sleeves</td>
<td>Fitting sleeve of gingham</td>
</tr>
<tr>
<td>5th</td>
<td>Class approval and over-all check of completed gingham</td>
<td>Principles of pattern alteration</td>
<td>Ripping and pressing</td>
<td>Pattern alteration (cont.) and use of tag pattern to alter</td>
<td>Making the tagboard pattern</td>
</tr>
<tr>
<td>Week</td>
<td>Monday</td>
<td>Tuesday</td>
<td>Wednesday</td>
<td>Thursday</td>
<td>Friday</td>
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<tr>
<td>6th</td>
<td>Preparation of fabric for making</td>
<td>Planning the dress</td>
<td>Layout and cutting</td>
<td>Pattern to fabric interpretation</td>
<td>Cutting and Marking</td>
</tr>
<tr>
<td></td>
<td>Pattern alteration, using tag</td>
<td>Organization of work</td>
<td></td>
<td>Methods of marking</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>Staystitching and pinning</td>
<td>Preparing for the first fitting</td>
<td>Basting and first fitting of dress</td>
<td>Linings and interfacing</td>
<td>First fitting</td>
</tr>
<tr>
<td></td>
<td>Pressing suggestions</td>
<td></td>
<td></td>
<td>Pressing</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td>Stitching and pressing</td>
<td>Buttonholes and other types of closings</td>
<td>Buttonholes</td>
<td>Collars and necklines</td>
<td>Collars and facings</td>
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<tr>
<td></td>
<td>Lining and interfacing</td>
<td></td>
<td>Lining and interfacing</td>
<td>Pressing</td>
<td></td>
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<tr>
<td>9th</td>
<td>Facings</td>
<td>Sleeves</td>
<td>Set in sleeves</td>
<td>Waistlines and zippers</td>
<td>Waistline</td>
</tr>
<tr>
<td></td>
<td>Preparation of sleeves</td>
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<tr>
<td>10th</td>
<td>Zipper</td>
<td>Hems and finishing</td>
<td>Hems</td>
<td>The finished dress</td>
<td>Evaluation</td>
</tr>
<tr>
<td></td>
<td>Have hemline marked</td>
<td>Pressing</td>
<td></td>
<td>(Mechanics of course)</td>
<td></td>
</tr>
</tbody>
</table>

* MHF 2-hour laboratory period
** TTh 1-hour lecture period (or 30-minute TV presentation)
APPENDIX C

Specimen Questions from Objective Test
Specimen Questions from the Objective Test

True or false statements.
If the statement is true, circle the T at the left.
If the statement is false, circle the F and write in the blank provided the word or words that, substituted for the underlined word, would make the statement true.

1. T F ______ Chroma refers to the name of the color.

... Mark an X in the space provided if you believe the statement is true. Mark an O in the space if you believe the statement is false in terms of a well-fitted garment.

_____ 1. The side seam of the skirt hangs perpendicular to the floor from hip to hem.

There are certain general rules or principles which may be followed in pattern alteration, ... Mark your choice with an X to the left.

1. A rule which indicates the best choice of location for lengthening or shortening a pattern:

_____ a. Lengthen or shorten a pattern at the hem, or lower edge.

_____ b. Lengthen or shorten a pattern in the middle of the pattern.

_____ c. Lengthen or shorten a pattern where the change is needed, and between points of body articulation.

In making any garment there is a logical sequence of work ... For each question indicate which one of the processes, A, B, or C, needs to be completed first by placing an X in front of your choice.

1. _____ a. Make bound buttonholes.

_____ b. Attach interfacing to bodice.

_____ c. Attach facing to bodice.
APPENDIX D

Specimen Question from Choice-of-Picture Test
WHICH DRESS DESIGN (A OR B) WOULD BE THE BETTER CHOICE
FOR A SHORT, HEAVY FIGURE?
retention of factual information. In many cases the measure of effectiveness has been limited to this factor—not as it relates to the capacity or best use of the medium of television, but as it compared with other media of communication, usually a live teacher in a regular classroom.\textsuperscript{10}

Some experiments have measured achievement of psychomotor skills; a few have investigated improvement of critical thinking ability; and practically none has attempted to evaluate the development of appreciation or discriminating standards. There are many questions to be answered about the medium of television and its potential role in these latter levels of learning.\textsuperscript{11}

Large sums of money have been allocated to school systems and institutions of higher learning to finance projects involving experimental work with new teaching aids. National foundations, as well as the federal government, have played important roles in granting support to this kind of research.

Both the Ford Foundation and the Fund for the Advancement of Education, an organization established by the


APPENDIX E

Instruction Page from Performance Test
This part of the test gives you an opportunity to put into practice principles and techniques of clothing construction. Following the instructions below, work steadily to complete as much of the project as possible in the allotted time. Use your own small sewing equipment, and any machine or ironing board that is available. When you have finished or when the time is up, put your work in the envelope along with the remaining fabric pieces and the pattern. Be sure your name is on the envelope and on the test and hand both of them in.

You are to construct the shaded portion of the dress shown in the diagram on this page. On the following pages you will find pattern pieces to use for cutting a front yoke, a back yoke, a front facing, and a back neck facing from the gingham provided. Remember you are working with only one side or one-half of the yoke of the dress, so cut only one piece of gingham with each pattern piece.

Using the best technique that you know, assemble the right side of the yoke. Observe the notches and other markings on the pattern. The shoulder seam and the finished neck edge (from CB to notch 5) are the parts to be completed. You need not finish the edge of the facing, nor do you need to apply a seam finish to the shoulder. Also omit making a buttonhole.
Checklist for Evaluation of Performance Test

<table>
<thead>
<tr>
<th>Technique or Application of Principle</th>
<th>Possible</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting pieces: on grain</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Marking</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Ease on shoulder seam</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Even stitching and accurate seam allowance</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Proper stitch (length and tension)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Shoulder seams open</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Facing seam trimmed and open</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Trimming and grading of seam</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Clipping concave curve</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Clipping convex curve</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Clipping seam allowance and ending enclosed seam at notch</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Making facing smaller to conceal facing and seam</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Working turned seam out to edge</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Understitching</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Pressing</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Total score 100
Evaluation of the Collar

___ Collar is cut on grain
___ Smooth at edge (even stitching)
___ Good corner or curve
___ Collar is same on right and left side
___ Seam at edge of collar graded
___ Seam at edge of collar notched to fit enclosed area
___ Outer seam is worked out to edge of collar and rolls to under side
___ Understitched
___ Top collar large enough to allow for roll and to conceal seam
___ Interfacing applied to under collar
___ Collar centered on garment in front
___ Collar centered on garment in back
___ Neckline seam trimmed
___ Neckline seam clipped
___ Facing smooth--fits garment
___ Facing does not show at neckline
___ Free edge of facing finished without bulk
___ Free edge of facing smooth
___ Free edge of facing, tacked at shoulder seam
___ Choice of type of facing suited to garment.
APPENDIX G

Specimen Question from Problem-Solving Test
Specimen Question from Problem-Solving Test

**Figure Variations and Pattern Alterations**

At the front of the room there are drawings illustrating four figure variations. A standard pattern fits the figure represented to the left.

What is the figure irregularity shown in each illustration? (Fill in the blanks below.) Which of the three pattern alterations shown would be the best change to make the pattern fit the figure as it appears to the right? (Circle your choice below.)

1. Figure irregularity ____________________
   
   A. B. C.
Overlap
APPENDIX H

Pre-College Experience Sheet
Home Economics 431
Pre-college Experience in Clothing Construction

Name: _____________________  Rank: Fr  Soph  Jr  Sr

College major: ________________

How much clothing did you take in junior and senior high school home economics?

<table>
<thead>
<tr>
<th>Grade (8th, 9th, etc) or semesters</th>
<th>No. of units (in unit or sem.)</th>
<th>No. of Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How much 4H club clothing have you had?

<table>
<thead>
<tr>
<th></th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>3</td>
</tr>
<tr>
<td>1 project</td>
<td>4</td>
</tr>
<tr>
<td>2 projects</td>
<td>more than 4</td>
</tr>
</tbody>
</table>

What other instruction have you had in clothing construction? (Singer sewing course, design school, etc. __________

How much clothing construction have you done at home?

<table>
<thead>
<tr>
<th></th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>one or two</td>
</tr>
<tr>
<td>all of own clothes</td>
<td>years</td>
</tr>
<tr>
<td>some of own clothes</td>
<td>years</td>
</tr>
<tr>
<td>approximate average</td>
<td>number of garments per year</td>
</tr>
</tbody>
</table>

Have you constructed clothing or made alterations for other people?

<table>
<thead>
<tr>
<th></th>
<th>Number of garments</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>approximate number</td>
</tr>
</tbody>
</table>

Ford Foundation in 1951, have "sought to encourage, stimulate, and spread with their interest and funds the growing movement to meet the national need for more and better education."\(^{12}\)

The following excerpt from one of a series of booklets on activities supported by the Ford Foundation is evidence of their position.

Of the new teaching tools, none has had a greater impact than television on the schools' ability to utilize the skills of their best teachers to greatest advantage. The usual pattern of instructional television involves cooperation between the television teachers and the classroom teachers in planning and teaching courses and is, in effect, a form of team teaching, with similar implications for variations in class size and flexible scheduling.

\[\ldots\] experiments in direct instruction by television are being carried out under grants and appropriations totaling $17.3 million from the Ford Foundation and the Fund for the Advancement of Education . . . .\(^{13}\)

Included in the National Defense Education Act, passed by Congress and signed into law in 1958, was provision for federal funds to be used for research in the area of communication media. Title VII authorized funds to extend over four years for a program of research and

\[\ldots\]


\(^{13}\) Ibid., p. 32.
APPENDIX I

Schedule of Lectures for
Winter Quarter 1962
and
Spring Quarter 1962
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 2</td>
<td>Introduction</td>
</tr>
<tr>
<td>January 4</td>
<td>Use of design elements in dress</td>
</tr>
<tr>
<td>January 9</td>
<td>Design and figure; purpose and personality</td>
</tr>
<tr>
<td>January 11</td>
<td>Design and fabric co-ordination; ready-to-wear</td>
</tr>
<tr>
<td>January 16</td>
<td>Effects of cut of design on fit and comfort</td>
</tr>
<tr>
<td>January 18</td>
<td>Recognizing good fit; fitting the blouse</td>
</tr>
<tr>
<td>January 23</td>
<td>Blouses (cont.); fitting the skirt</td>
</tr>
<tr>
<td>January 25</td>
<td>Skirts (cont.); fitting the sleeve</td>
</tr>
<tr>
<td>January 30</td>
<td>Pattern alteration</td>
</tr>
<tr>
<td>February 1</td>
<td>Mid-term exam</td>
</tr>
<tr>
<td>February 6</td>
<td>Organization of work; the unit method</td>
</tr>
<tr>
<td>February 8</td>
<td>Marking; interpreting pattern markings; staystitching</td>
</tr>
<tr>
<td>February 13</td>
<td>The first fitting; features to be finished; pressing seams and pleats</td>
</tr>
<tr>
<td>February 15</td>
<td>Linings and interfacings</td>
</tr>
<tr>
<td>February 20</td>
<td>Interfacings; buttonholes and closings; pressing curved surfaces</td>
</tr>
<tr>
<td>February 22</td>
<td>Collars; enclosed seams</td>
</tr>
<tr>
<td>February 27</td>
<td>Sleeves; waistline stay and joining</td>
</tr>
<tr>
<td>March 1</td>
<td>Zippers and other plackets; belts</td>
</tr>
<tr>
<td>March 6</td>
<td>Hems and finishing</td>
</tr>
<tr>
<td>March 8</td>
<td>Model completed dresses</td>
</tr>
</tbody>
</table>
Home Economics 431
Schedule of Lectures
Spring 1962

March 27  Introduction and preview of things to come
March 29  Aesthetics of clothing--use of design elements in dress
April  3  Optical illusion in dress
April  5  Fabric and design coordination; fabric and construction coordination
April 10  Effect of cut of design on fit and comfort; the well-fitted garment
April 12  Fitting and pattern alteration
April 17  Fitting and pattern alteration
April 19  Fitting and pattern alteration
April 24  Beginning the dress--organization of work, etc.
April 26  Marking--interpreting pattern markings; stay-stitching
May  1  Linings and interfacings
May  3  Free day
May  8  First fitting--features to be finished--pressing seams and pleats
May 10  Buttonholes and other closings; pressing curved surfaces
May 15  Collars and enclosed seams
May 17  Sleeves
May 22  Waistline stay--joining of waist to skirt; belts
May 24  Zippers and other plackets
May 29  The finishing touch--hems, fastenings, etc.
May 31  The completed costume, a design composition
APPENDIX J

Specimen Note Sheets
Home Economics 431
Lesson 6
Solving Fitting Problems

Readings
Text: Chap 5, Part Four  (Study Carefully)

Recognizing factors of fit

Changing length on only part of figure
(Shorten back blouse, but not side seam nor front)

Alteration dart on the figure

Truing the alteration

Altering the pattern

Greater curve--larger dart
Recognizing need for more shape or darting

Slash fabric pattern

Insert fabric for expansion

Change in shape of piece

Altered pattern
Transferring dart from one position to another

Making 2 darts instead of one
APPENDIX K

Student Television Evaluation Sheets
Home Economics 431 by Television

Content (what you see)

Pace or timing (how much you see)

Carry-over (using what you see)
HOME ECONOMICS 431 BY TELEVISION

1. In general, do you feel that Home Economics 431 by television is successful? Yes ____ No ____

2. Was there one part of the course more successful or effective than other parts? Yes ____ No ____. If yes, which part? ____________________________

3. Have you had other OSU courses by television? Yes ____ No _____. If yes, how does this course compare? Better ____, the same ____, not as good ____. Can you account for this difference if there is one? __________________________

4. Would you like to see other Home Economics courses taught via TV? Yes ____ No _____. If yes, what one(s)? (It could be one you've already had) ______

5. Have the note-taking sheets been helpful? Good ____ Average ____ Little or no help ____. Any suggestion to make them more helpful? __________________________

6. Would you like the note sheets and laboratory instruction in the form of a lab manual? Yes ____ No ____

7. Did you read the assignments before the lectures? Always ____ Almost always ____ Usually ____ Seldom ____ Never ____

8. How many times did you miss lecture for reasons other than illness? ____
9. Do you feel any differently about attendance at a TV lecture than you do when the lecture is presented in the usual manner? Yes ____ No ____

10. Did you attend the techniques studio? Yes ____ No ____
    If yes, how many of the six sessions? ____

11. Do you consider yourself a beginner? Yes ____ No ____

12. Were you one of the persons to whom attendance to Technique Studio was suggested? Yes ____ No ____

13. If the video tape were re-run later in the day and you could see the lesson a second time, would you make an effort to do so? Yes ____ No ____

14. If there were one additional class period in the quarter what would you suggest as the subject matter to be covered? ________________________ If a second one were added what would you like to see? __________
experimentation in more effective utilization of television, radio, motion picture, and related media for educational purposes.\textsuperscript{14}

Final conclusive evidence of the growing use of television as a medium of instruction at the college level is the increase in the number of colleges and universities offering credit for televised courses. Early in 1961 about three hundred institutions of higher learning gave credit for such courses while a year earlier there were one hundred eighty-six, and the year before that only eighty-seven.\textsuperscript{15}

The list of courses taught successfully by television has become long and diverse. Harold F. Niven, Jr., as part of the report on his doctoral research in 1958, gave a partial listing of courses that have been taught, completely or in part, by instructional television in institutions of higher education. This list included 162 different courses in thirty-nine departments. Only two Home Economics courses were included in the list, neither of which was in the field


BIBLIOGRAPHY

Books


Articles and Periodicals


Books


Booklets (Continued)


Letters

The Woman's College of the University of North Carolina. Letter from Mrs. Josephine S. Foster, Assistant Professor of Home Economics. April 14, 1961.


Unpublished Material


I, Esther Anne Meacham, was born in Acton, Indiana, July 29, 1921. I received my secondary-school education at Arsenal Technical High School in Indianapolis, Indiana, and my undergraduate training at Indiana University, which granted me the Bachelor of Science degree in 1947. From Michigan State University, I received the Master of Arts degree in 1952. While in residence there I was a research assistant and a teaching assistant in the Textiles, Clothing, and Related Arts Department. For the next four years I held the position of Instructor of Home Economics at Michigan State University. From 1955 to 1959 I was an Assistant Professor of Home Economics at the University of Nebraska, and during the 1959-60 school year I was an Associate Professor of Home Economics. In 1960 I was appointed a teaching assistant in Home Economics at The Ohio State University. I held this position for one year and was appointed General Foods Fellow for the next year while completing the requirements for the Doctor of Philosophy degree.

I have accepted a position as Associate Professor of Home Economics at The Ohio State University.
of clothing. This paucity perhaps is due in part to the fact that Home Economics has not felt the pressures of increased enrollment to the degree that other departments have. It must be pointed out, however, that all instructional television is not confined to classes with large enrollments. A case in point is the wide-spread success of closed-circuit television in medical and dental schools where admissions are controlled and enrollments limited. The advantage of television, of course, is that every student in the class can receive the same instruction at the same time with an "over the shoulder" view.

Charles A. Siepmann, in his book TV and Our School Crisis, makes the prediction that within a quarter of a century every medical center in the country will be giving instruction by closed-circuit television. He feels that this is a safe assumption to make since the superiority of this type of teaching over the conventional method is obvious and beyond reasonable dispute for this particular situation.

Although Mr. Siepmann does not specify that this will be color television, he reports in another work that a color

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17 Adams, Carpenter, and Smith, p. 23.
18 Siepmann, TV and Our . . ., p. 123.
television system was installed in the medical school at the University of Kansas as early as 1951.¹⁹

Since a great deal of emphasis in Home Economics is placed on making application of principles and techniques in the solving of problems, the "over the shoulder" view should be advantageous to the Home Economics student as well as the medical or dental student.

Effective group instruction has, in fact, been one of the concerns in clothing courses which are predomin­antly oriented toward student activity in the laboratory. To present certain information or instruction to each small laboratory section means repeating the same thing two or three times at best. For demonstrations of fine detail or intricate technique, it is sometimes necessary to repeat the procedure even more times for the benefit of those who were not close enough to see adequately the first time. Although very helpful to the student receiving the instruction, the repetition becomes mechanical and uses the teacher's time, talent, and training in a very wasteful way. Also, a two-hour laboratory period provides opportunity for more effective use of student time if it is not cut short by a formal presentation. Of course, some group instruction is essential to the progress of the class. Hence, a

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separate lecture hour could be a valuable asset to the teaching of a course of this kind. It is possible that television is a medium through which a goal of more effective group instruction could be realized in Home Economics classes.

This study was designed to determine whether a course in clothing which combines lecture and laboratory activity can be taught more effectively through the use of instructional television.

The course, Clothing: Principles of Construction (Home Economics 431) at The Ohio State University, includes a unit of work on design, one on pattern alteration and fitting, and a final unit on clothing construction. This course was an appropriate choice for the study since the content of these units was adaptable to television presentation and provided opportunity to compare effectiveness of medium of presentation in relation to more than one type of learning.

Hypotheses

The following hypotheses were made in terms of student achievement with face-to-face teaching as compared to presentation via the medium of television.

Major hypothesis: In terms of the overall objectives of the course, students enrolled in the Home Economics 431 experimental class (instruction by television) will show achievement
as great as or greater than those enrolled in the Home Economics 431 control class (face-to-face lecture).

Sub-hypothesis I: There will be no significant difference between the mean gain from pre-test score to post-test score measuring acquisition of factual knowledge of the students in the experimental section and the students in the control section.

Sub-hypothesis II: The mean gain on tests measuring development of critical standards in the experimental section will be as high as or higher than the mean gain in the control section.

Sub-hypothesis III: The mean gain on tests measuring performance or ability to apply principles in the experimental section will be as high as or higher than the mean gain in the control section.

Sub-hypothesis IV: The mean scores of the tests measuring ability to analyze and solve problems in the experimental section will be as high as or higher than the mean score in the control section.

Sub-hypothesis V: Achievement as measured by the mean grade on laboratory performance in the experimental section will be as high as or higher than the mean grade in the control section.

Assumptions

In designing this study and stating the preceding hypotheses, certain assumptions were made. It was assumed, for example, that effectiveness of teaching can be assessed in terms of student learning or achievement. It was further assumed that instruments were available or could be devised which would measure student achievement and that
THE RELATIVE EFFECTIVENESS OF FACE-TO-FACE LECTURE
VERSUS INSTRUCTIONAL TELEVISION IN A
COLLEGE CLOTHING COURSE

DISSertation
Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Esther Anne Meacham, B. S., M. A.

The Ohio State University
1962

Approved by

[Signature]
Adviser
School of Home Economics
the scores of such testing instruments could be statistically analyzed.

**Limitations**

In considering a practical execution of this research design, plans were made relating the details of this study to the plan and schedule of instructional television already in existence on The Ohio State University campus. Investigation revealed the willingness of the personnel of the Telecommunication Center to cooperate in the production of the series in the TV studio and to transmit the lessons via UHF open-circuit over WOSU-TV. During spring quarter 1961, arrangements were made for including Home Economics 431 in the schedule for spring quarter 1962. Following the pattern of other university courses taught via open-circuit television, two thirty-minute periods a week, starting on the hour, were scheduled throughout the quarter. From March 26 through June 1, 1962, Home Economics 431 lessons (under the series name "Fabric to Fashion") were broadcast from 1:00 to 1:30 P.M. on Tuesday and Thursday.

Thus the facilities used in the television productions were limited to those available at WOSU-TV at the time assigned for video tape recordings in the studio. The limitation of a monochrome camera chain meant that sequence of lecture and laboratory work had to be arranged in such a way that the study of color in the first unit of work could be
taught in the laboratory classroom. It also meant that the television presentations excluded the showing of any visuals involving the use of the film chain since WOSU-TV was on the air at the time the programs were recorded in the studio.\textsuperscript{20}

Other limitations concerning the course itself were recognized and accepted. The content of the course was limited to that included in Home Economics 431 at the time it was chosen for experimental purposes. The number and selection of students participating in the study was limited according to the enrollment in regularly scheduled class sections of Home Economics 431 at The Ohio State University. The study extended over two quarters (winter 1962 and spring 1962) in order to maintain usual size group for the lecture period. Another limiting factor which was involved in the effectiveness of teaching was the human or personal element introduced by the teachers who cooperated in the study.

\textsuperscript{20} Definitions included in "Definition of Terms" at the beginning of Chapter III.
CHAPTER II

REVIEW OF LITERATURE

Considering the fact that the history of instructional television is relatively short, the amount of literature relating to its development is voluminous and covers a fairly wide range of topics. To attempt to review all the literature in this field is not feasible nor apropos since only a portion of it is applicable to the problem at hand. Therefore, in this chapter the writer proposes to mention briefly some of the studies in which the procedure or the results have had a bearing on the development of this study and to describe in greater detail those experiments which have involved the teaching of clothing by means of television.

Experimental Studies in Instructional Television

The most extensive program in the use and evaluation of televised instruction in higher education was begun at Pennsylvania State University in 1954.¹ The general

objectives and approach to the project as it was first conceived were directed toward increasing the efficiency and quality of instruction. A program was outlined and presented to the Fund for the Advancement of Education; and although the Fund was interested in the plans, there were phases of disagreement and a counter-proposal was made.

What was wanted [by the Fund] was a realistic demonstration using selected courses taught as usual for an entire semester over closed-circuit television.\(^2\)

This reaction to the original proposal eliminated the possibility of research on the effectiveness of methods. The emphasis was on extension of usual teaching to large numbers of students rather than maximum improvement of teaching in courses with limited enrollments. To meet the approval of the Fund a new proposal had to be developed.

Incidents such as this may well account for the direction taken by educational television research, since those who are instrumental in planning research programs are frequently bound by the views of the agency underwriting the project. Considering the urgency of the problems of increased numbers of students and insufficient numbers of

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teachers which confront higher education, an interest in a possible solution is understandable.

For the Pennsylvania State University project television equipment was set up in a regular classroom and the televised teaching was kept as similar as possible to the traditional classroom lecture situation. There was no studio and thus no use was made of production facilities and techniques.

One of the courses selected for the project was General Chemistry, considered as a representative physical science course of basic importance. Instruction in this course included three parts: lecture-demonstration, recitation, and laboratory work. Some concern was shown over the importance of color in chemistry and the limitation of black and white television for presenting demonstrations in which color change is involved. The faculty members of the Chemistry Department were willing to take the risk and undertake experimental instruction. During the first semester in which TV was used, the color problem was still considered a disadvantage but not critical enough to terminate the experiment. Thomas Wartik, Assistant Professor, in expressing his view of the instructional television program in Chemistry stated—

The lack of color, I felt, was our most serious weakness. In order to minimize problems involving color, it was necessary (on a number of occasions) to plan demonstrations which did not utilize it; thus, even the
lecture room students were deprived of many color experiences they should have had.

I believe that, all other things being equal, the only instructional advantage—and it was a real one—of television viewing lies in its ability to magnify lecture demonstrations which would normally be difficult or impossible to see.3

In this brief statement, Mr. Wartik points out both a weakness and a strength of the use of television for classroom instruction. So it is with any medium of communication or with any innovation in teaching method. There is always the necessity of weighing the advantages against the disadvantages and coming to a decision of procedure to be followed or medium to be used.

At the conclusion of two semesters of the use of closed-circuit television for General Chemistry, the Chemistry Department decided to test out the "demonstration magnifier function" of television.4 The chemistry lectures were presented in an auditorium with a seating capacity of 350. One camera was used to televise small apparatus or magnify detail of the demonstration and six receiving sets were located at appropriate places in the auditorium to

3 Ibid., pp. 55-56.

provide a good view for all students. The chemistry instructors believed this system would allow the benefits of direct viewing where color was important and yet would provide a close-up view for all students in a large class. In general, it was felt that the system worked satisfactorily, although its potential was not utilized as fully as possible.

At the end of the semester in which this variation was used, the following conclusion was drawn.

It is clear that lack of color is the largest handicap confronting the use of TV in chemistry, that TV as a demonstration magnifier was most useful for small apparatus (of which only a few instances occurred in this course), and most helpful for those toward the rear of the room.5

The problem of color, of great concern to the Pennsylvania State University chemists, is also one faced by the teacher of clothing, since color plays such an important part in the selection and satisfaction of wearing apparel. In the planning of this study the limitation of black and white television was recognized and lecture-laboratory scheduling was adjusted accordingly.

Another variation in the Pennsylvania State University investigation which has a bearing on the procedure followed in the study here reported was the provision of classnotes for students. In considering the problem of

5 Ibid.
student complaints of difficulty in taking notes during a televised presentation (in General Chemistry), the conclusion was reached that it was an unsound practice for students to divide their attention in any kind of lecture between taking notes and trying to follow the instructor, especially when the presentation moved at a rapid pace. During the next semester the students were provided with mimeographed outlines of the topics to be covered during the lecture. These pages also gave references to the textbook and provided other information not readily available to the students. The note sheets, which were distributed as the students entered the classroom, generally did not exceed two pages. Student response to this procedure was favorable and the practice of giving the students lecture outlines was extended to other courses.6

Still another variable related to television class management was provision for discussion and question-answer sessions. The plan of following a thirty-five minute television lecture by fifteen minutes of discussion in a fifty-minute class period (in General Psychology) was one variation. Although this arrangement was not entirely satisfactory to the faculty members involved, the students had a slightly better than neutral attitude toward it.7

6 Ibid., pp. 49-50.
7 Ibid., p. 27.
A similar arrangement to the one described above was followed for the Health Education 400 course at The Ohio State University. A thirty-minute telecast was followed by eighteen minutes of question-answers or discussion in a forty-eight-minute class period. An outline of the lesson was provided to the students for taking notes during the television presentation. 8 Although this arrangement was later changed, it did suggest a possible satisfactory arrangement for Home Economics 431 with its two lecture periods a week plus the laboratory experience.

During the time of the investigation of closed-circuit television for classroom instruction at The Pennsylvania State University, other uses for the system were explored. The College of Home Economics found closed-circuit television useful for training students who were preparing to give demonstrations for home makers over commercial television stations. A second use, which is of interest for this writing, was to relay demonstrations, such as the use of new types of sewing machines in clothing construction, to large viewing rooms. The results were very satisfactory and the generalization was made that "this use of television--that

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8 The researcher observed a Health Education class in session at The Ohio State University during the 1960-61 school year.
of 'magnifying' small objects or demonstrations so that they can be seen by many people—is one of the most obvious uses of television."  

Teaching Clothing By Television

In the early 1950's, when instructional television was in its early stages of development, a few experiments were conducted with the use of television in teaching clothing. These studies were concerned primarily with clothing construction and were developed with the homemaker in mind as the potential viewer. The first such series, "Let's Make a Dress," was produced by the staff of the Office of Information and the Textiles and Clothing Division of the Bureau of Human Nutrition and Home Economics and shown over station WBNW (Washington, D. C.) in the spring of 1950. The series consisted of eleven twelve-minute programs scheduled twice a week at an afternoon hour.

Meredith C. Wilson and Edward Q. Moe of the Department of Information of the United States Department of Agriculture directed a study (1) to evaluate the "Let's Make a Dress" series of programs and (2) to develop an evaluation procedure of possible general application. The audience for the series was determined by the number of women who

9 C. R. Carpenter and L. P. Greenhill, Project Number One, p. 78
ACKNOWLEDGMENTS

The writer wishes to express sincere appreciation to those who helped to make this study possible:
Dr. D. Lois Gilmore, her adviser, who directed the study with enthusiasm and wisdom; Dr. Egon Guba and Dr. I. Keith Tyler, who gave generously of their time and counsel as members of her committee; Miss Mary Millican, who cooperated in the teaching responsibilities; Dr. Dorothy Scott, Director of the School of Home Economics, who encouraged curricular experimentation; Mr. Hubert Smith, who directed the series of television lessons; other WOSU-TV personnel who cooperated in the production of the series; eighty-three students in Home Economics 431, who were subjects in the study; understanding friends and relatives; and to the General Foods Corporation who provided the fellowship which made this year of full-time study financially possible.
requested the USDA bulletin, "Making a Dress at Home," which was offered prior to the first lesson. From this number (974) a sample of 251 women was interviewed. Results of the interview responses revealed that

the television demonstrations supplemented by the bulletin were highly effective in teaching new dressmaking ideas and improved practices. That real learning took place is evidenced by extensive use of the new knowledge within the 5-week period immediately following the "Let's Make a Dress" series of television programs. 10

In the spring of 1951, a series called "Make a Dress--TV" was presented by the Agricultural Extension Service at Iowa State College over WOI-TV. Slightly over 3,000 women enrolled for the series by furnishing the following information: name, address, rural or town residence, and degree of sewing skill (little, some, a lot). The nine thirty-minute filmed programs included in the series gave the step-by-step procedure in making a dress and were shown twice a week at 2:30 P.M. with one live program as the finale. The overall purposes of the project were these.

1. To find out how effectively television could be used in teaching a homemaking skill such as making a cotton dress.

2. To take extension teaching directly into the home of the homemaker who may or may not

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have been attending regular extension meet-
ings.\textsuperscript{11}

In terms of evaluating effectiveness, one of the secondary objectives proposed was to determine the degree of learning by

Number of participants who followed demonstrations and completed a dress.

Number of participants who started a dress but did not complete it. Also stage at which construction was stopped.

What new understanding and techniques were acquired and what new practices were used by homemakers who watched the program.\textsuperscript{12}

A field study was planned to collect data pertinent to the evaluation of objectives. A comprehensive questionnaire was worked out to use in interviewing women who were selected from among the 1,831 women who enrolled for the series prior to the first telecast. A random sample was drawn, stratified on the basis of location of residence and degree of sewing experience (according to homemaker's interpretation). The findings reported were based on information from 364 respondents.\textsuperscript{13}

Recorded in the Project Results concerning the fulfillment of these objectives were the following observations.

\textsuperscript{11} Agriculture Extension Service, Iowa State College, "Make a Dress--TV" (Ames, Iowa: Iowa State College, 1952), p. 2. (Mimeographed.)
\textsuperscript{12} Ibid., p. 3.
\textsuperscript{13} Ibid., pp. 10, 11.
Proof of possible learning, in other than a controlled classroom situation, rests largely on understanding and use.

To what degree learning by TV can be fully measured is open to question. On the basis of present indications, a sizeable number of women did, however, receive from TV a better knowledge of clothing construction processes which they, in turn, put to use.\(^{14}\)

A part of the field study was more fully reported in the Master's thesis of Elsie K. Williams in 1953. Williams' study attempted to answer two questions:

1. How effective was the "Make a Dress--TV" series in teaching clothing construction to women?

2. Were there any differences in the effectiveness of four teaching methods used in presenting the "Make a Dress--TV" series?\(^{15}\)

The estimated helpfulness (or effectiveness) of the series was based on the women's responses concerning the following items: number of programs viewed, opinion of helpfulness of series, satisfaction with the fit of the dress, the general appearance of the finished dress, and the ease of making the dress.

The findings revealed that the size of audience decreased with each successive program and there was a

\(^{14}\) Ibid., p. 14.

positive relationship between number of programs viewed and reaction to helpfulness of the series. Only about one-third of the women actually made a dress, but of those who did 93 per cent were satisfied with the fit, 98 per cent were satisfied with the general appearance, and 80 per cent considered the dress easy to make.16

The four teaching methods represented in the study involved aids in addition to the TV presentations. One group of women received the television instruction only; a second group received television instruction plus personal encouragement from the county home economist; the third group received a supplementary booklet; and the fourth or last group received both the booklet and encouragement from the county home economist in addition to the television instruction.

Williams referred back to the study reported by Wilson and Moe in which all women received supplementary printed material, raising the question of the relationship of this additional material to the measure of effectiveness of the series.17

In the Iowa State study over 60 per cent of the women who received the supplementary material indicated

16 Ibid., p. 73.
17 Ibid., p. 10.
that it aided them in understanding the television demonstrations. Help and encouragement given by the county home economist were not consistent enough to reveal effectiveness. It was found that the combination of all teaching media was effective in influencing the women to watch the programs. An average of 20 per cent more women in the fourth group (the group receiving both the booklet and encouragement from the county home economist) than in any other group saw each of the processes demonstrated.\textsuperscript{18}

The study further revealed that a high percentage of the women in each group understood each of the representative processes tested before seeing the demonstration on television.

The "Make a Dress--TV" experiment was cited in the Pennsylvania State University research project report as one of the first ventures in teaching by television sponsored by an institution of higher education. The point was made that "there was no attempt at this time to make a comparison with regular classroom instruction."\textsuperscript{19}

Following a series of programs on "Tailoring a Coat," presented early in 1953 over station WTMJ-TV in Milwaukee, Josephine Pollock and Gladys Meloche conducted a study to

\textsuperscript{18} Ibid., p. 73.

\textsuperscript{19} C. R. Carpenter and L. P. Greenhill, \textit{Project Number One}, p. 72.
determine its effectiveness. This series included twenty-one fifteen- to twenty-five-minute telecasts presented once or twice a week over a period of sixteen weeks. The study was made to find out (1) how effective television is as a medium in teaching skills as difficult as those in tailoring a coat, (2) what kind of an audience the program reached, and (3) how television presentation can be made most effective. A personal interview questionnaire was patterned after the one used by Wilson and Moe. The sample interviewed for the study included 156 women who lived in and around Milwaukee and who had been one of the more than 8,000 who wrote to the station for a leaflet on tailoring. This program was intended for the home viewers and, in terms of its purpose, was considered successful. There was no accurate measure made of the achievement of the viewers.

In the past few years there again have been a few series of presentations in clothing developed for instructional purposes. As in the earlier studies reviewed, Home Economics Extension took the lead in carrying out experiments of this kind. In the fall of 1959, the Michigan Extension Service presented a series of six ten-minute demonstrations on "Making a Skirt" with WXYZ-TV in Detroit.

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as the participating station. The research department for television station WMSB on the Michigan State University campus did a follow-up survey with the cooperation of Extension Agents in Home Economics from the counties in the Detroit area. Evaluation of the series, similar in technique to earlier studies, was made through a questionnaire sent out to the viewers. Further study of effectiveness was made by conducting personal interviews. The entire project was considered successful since the responses of the viewers indicated satisfaction with the series of lessons and reported finding them helpful. A large number of the women were "new contacts" outside the Extension group members which was evidence that television as a means of communication does extend the Extension services to a greater number of women.

The Extension clothing specialists at Cornell developed a course of six lessons planned around the construction of children's clothing. "Sew for Growth" was first presented on television over WNBF-TV in weekly broadcasts of fifteen minutes each. The objectives for the series were to "explore the possibilities of using television as

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21 "Survey of Participants in 'Making a Skirt' Television Series, Prepared by Lois Korslund and Rosarita Hume" (Research Department WMSB-TV, Michigan State University, 1960). (Typewritten.)

a fully integrated teaching method in the Extension service textiles and clothing program and to determine the effectiveness of a television service as a supplement to county clothing programs. The apparent success of the series led to the reproduction of the lessons on film. The number and length of lessons were adjusted to result in a series of five films of approximately twenty-five minutes each.

Both of these series, "Making a Skirt" and "Sew for Growth," were planned for an audience of homemakers. The presentations were considered effective if the women who watched them could then construct a garment to their own satisfaction and helpful or effective if the viewers deemed them so. Effectiveness or success was also measured in terms of the number of viewers who participated in making a garment.

Another Extension service series originated in Cleveland, Ohio in the summer of 1961. "Modern Home Management," a non-credit telecourse, was conducted by the county and state Extension staff over WJW-TV. Six consecutive programs of the thirty-nine in the thirteen-week series were devoted to clothing. Those who enrolled for the course received a study guide including the titles of


24 The researcher previewed this series.
the programs and a brief indication of subject matter to be covered. Study questions and references were also included and bulletins were made available upon request.

The "Modern Home Management" series was considered successful, but no particular attention was given to evaluation of subject matter portions. Clothing ranked third in preference of the six areas of Home Economics presented.25

One of the very few television clothing series offered as a course for college credit was "Clothing for the Family," a telecourse offered by Woman's College of the University of North Carolina through WUNC-TV in the spring of 1961.26 Offered by the Extension Division, the course was open to advanced undergraduates in Home Economics, graduates in Home Economics, and teachers seeking certification renewal, and to homemakers for audit credit. The schedule of classes included two forty-five minute lectures (by television) a week and offered two semester hours of credit.

The plan for the course did not include classroom viewing, but the enrollees were required to complete assignments and to take an examination at the end of the course.


26 Letter from Mrs. Josephine A. Foster, Assistant Professor of Home Economics, The Woman's College of the University of North Carolina, April 14, 1961.
Forty-two persons enrolled in the course, and it was considered successful because of the number enrolled and because it was well received. Interest was expressed among the participants for another course offered by television.

The most comprehensive study of the use of television as a medium of communication in teaching clothing construction is underway at Washington State University. The students in the beginning construction course receive the lecture-demonstrations via kinescope projected on a movie screen. After viewing the film for an half-hour, the students go directly to the laboratory to repeat the work demonstrated. The films include demonstrations on the construction of a torn project (an apron), a sleeveless blouse, a straight skirt, a dress with set-in sleeves, and a dress with cut-in sleeves. A manual has been prepared to use with the kinescopes to eliminate the necessity of the viewer's taking notes. The primary advantage of the project as it now operates is that one instructor can successfully teach forty to sixty students in three laboratories whereas previously there had been one instructor for sixteen students. The straight demonstration method of presentation was used for the films, with advantage of the

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27 Letter from Dr. Mignon Perry, Chairman Clothing and Textiles Department, Washington State University, May 10, 1961.
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>TABLES</td>
<td>v</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Purpose of Study</td>
<td>2</td>
</tr>
<tr>
<td>Justification of Study</td>
<td>2</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>12</td>
</tr>
<tr>
<td>Assumptions</td>
<td>13</td>
</tr>
<tr>
<td>Limitations</td>
<td>14</td>
</tr>
<tr>
<td>II. REVIEW OF LITERATURE</td>
<td>16</td>
</tr>
<tr>
<td>Experimental Studies in Instructional Television</td>
<td>16</td>
</tr>
<tr>
<td>Teaching Clothing by Television</td>
<td>23</td>
</tr>
<tr>
<td>III. PROCEDURE</td>
<td>35</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>35</td>
</tr>
<tr>
<td>The Course Used in the Study</td>
<td>38</td>
</tr>
<tr>
<td>Preliminary Plans</td>
<td>39</td>
</tr>
<tr>
<td>Measures of Student Achievement</td>
<td>40</td>
</tr>
<tr>
<td>Techniques Studio</td>
<td>42</td>
</tr>
<tr>
<td>Development of Testing Instruments</td>
<td>43</td>
</tr>
<tr>
<td>The Class Groups Used in the Study</td>
<td>48</td>
</tr>
<tr>
<td>The Role of the Teachers in the Study</td>
<td>51</td>
</tr>
<tr>
<td>Medium Variation</td>
<td>53</td>
</tr>
<tr>
<td>Administering the Pre-Test</td>
<td>56</td>
</tr>
<tr>
<td>Administering the Post-Test</td>
<td>57</td>
</tr>
<tr>
<td>Statistical Treatment</td>
<td>58</td>
</tr>
<tr>
<td>IV. RESULTS OF THE STUDY</td>
<td>60</td>
</tr>
<tr>
<td>Criteria of Achievement</td>
<td>65</td>
</tr>
<tr>
<td>Correlation between Variables</td>
<td>71</td>
</tr>
<tr>
<td>Evaluation of the Experimental Medium</td>
<td>73</td>
</tr>
</tbody>
</table>

---

iii
close-up camera shots. Very little use was made of studio production techniques.

Assuming that the students' achievements in the course taught in this manner were satisfactory, it would appear that this project further substantiates the premise that television is an effective medium in the teaching of skills.

28 The researcher previewed two kinescopes from this series.
CHAPTER III

PROCEDURE

The design of this experiment involves the teaching of the same subject matter by different media, classroom lecture and television presentation to two different groups of students, and then comparing the effectiveness of the two media of instruction by measuring student achievement. This chapter gives an account of the procedure followed in carrying out the study. Included is a description of the course taught, an identification of the groups of students who were the subjects in the study, a definition of the role of the teachers, and a delineation of the variation in medium in teaching. A listing of definitions to be used in this study is provided at the outset. The development of the instruments to measure achievement is set forth, as well as a report of the administration of the test instruments. A résumé of the statistical treatment used is also presented.

Definition of Terms

1. Classroom lecture: The teacher presents the lesson directly to the group of students using either a straight lecture method or a demonstration technique. The students may ask questions at any time during the lecture. The
lecture lasts the full forty-eight minutes of the class period.

2. Television presentation: The lesson is pre-recorded on video tape in the television studio. The taped lesson is viewed by the students in the classroom through two twenty-one inch television receiving sets. The television presentation lasts thirty minutes. During the remaining eighteen minutes of the class period, the students may ask questions, participate in discussion or may be asked to solve a problem relating to the day's presentation. The television teacher is in charge of the activity in the classroom during the entire period.

3. Pilot group: Two sections of Home Economics 431, Autumn Quarter 1961. Tests were administered to this group of students for the purpose of a trial run.

4. Control group: Two sections of Home Economics 431, Winter Quarter 1962. This group of students was taught by classroom lecture.

5. Experimental group: Three sections of Home Economics 431, Spring Quarter 1962. This group of students was taught by television presentation.

6. Television teacher: The teacher who presents the lecture to the class (whether face-to-face or via television) and who leads the discussion in the classroom following the television lesson.

7. Laboratory teacher: The teacher who is in charge of laboratory activity.

8. Techniques studio: An extra laboratory period scheduled once a week for six weeks during each quarter. Instruction and opportunity for practice in the basic sewing techniques are provided. Attendance is suggested, but not required, to those girls who score ten or less on the performance pre-test. Any student enrolled in Home Economics 431 may attend the number of sessions she chooses.
9. **Pre-test**: A test (or series of tests) administered at the beginning of the quarter to determine the knowledge and ability of the students before taking Home Economics 431.

10. **Post-test**: A test (or series of tests) given as a final examination at the end of the quarter to determine the knowledge and ability of the students after taking Home Economics 431.

11. **Gain**: The difference in the score made on the post-test and the score on the pre-test.

12. **Live**: Direct transmission of a studio program at the time of origin.  

13. **Set**: Proper arrangement of scenery and properties to indicate the locale and/or mood . . .

14. **Film chain**: The television film chain consists of at least one film projector, a slide projector, an opaque telop projector, a multiplexer, and a television film camera.

15. **Camera chain**: Television camera and associated equipment . . .

16. **Telop projector**: Opaque television projector.

17. **Telop**: Opaque photograph or drawing projected by the telop projector.

18. **Dissolve**: Gradual transition from one picture to another whereby the two pictures overlap briefly.

19. **Racking**: Operating the focus knob on the camera (thereby racking the camera tube closer or farther away from the stationary lens).

20. **Visuals**: Illustrative materials used in television production.

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1 Herbert Zettl, *Television Production Handbook* (San Francisco: Wadsworth Publishing Co., Inc., 1961). Definitions 12 through 23 were taken from this source.
21. **Studio card**: An 11" x 14" card cut from illustration board used for line drawings, lettering, or mounting of pictures to be used on camera.

22. **Super card**: Studio card made from black illustration board with white lettering or artwork. The super card is used when the lettering or art work is shown superimposed over an object or live action.

23. **Studio card with pull strip**: A means of achieving animation by pulling a cardboard strip behind a cutout area in the studio card.

**The Course Used in the Study**

Home Economics 431 is a course in clothing construction planned to give the student an understanding of the principles of harmonious costume, the well-fitted garment, and garment construction (Appendix A). Prerequisites for the course are (1) a five-credit Fine Arts course, Fundamentals of Art; and (2) a five-credit Home Economic course, Selection of Clothing and Textiles. Home Economics 431 is required in each of the following curricula: General Home Economics, Home Economics Education, Home Economics in Business (Option II), and Clothing and Textiles. Students in other Home Economics curricula may choose to take the course and students from other colleges on the campus may enroll in Home Economics 431 as an elective. It is a five-credit course with two 48-minute lecture periods each week and three two-hour laboratory periods.
Preliminary Plans

After it had been decided to use the course Home Economics 431 for the study, the researcher met with the members of the textiles and clothing staff to discuss the general outline and objectives of the course in light of the design of the study. Some changes had been made in the content of the course during the preceding year, and a few further changes were agreed upon at the time of this meeting. It was decided that an assistant professor, who had taught the course in previous quarters, would cooperate in the study by sharing teaching responsibilities with the researcher (see section on Role of the Teacher in the Study).

For implementation of the objectives of the course these two teachers worked out a calendar and sequence of work applicable to all three school quarters involved (Appendix B). The only special consideration given in terms of the study was the arrangement of study topics to include "color" in the laboratory period rather than the lecture period. (See further explanation in section on television method or techniques.) For purposes of evaluation, the researcher spelled out the objectives of the course in greater detail (Appendix A), stating them in terms of expected student behavior and charting them with content of the course.
Plans for evaluation techniques were completed before the beginning of fall quarter 1961, and arrangements were made to use the fall quarter Home Economics 431 classes in a pilot run of the testing instruments, the winter quarter for the control group, and the spring quarter for the experimental group.

**Measures of Student Achievement**

In order to measure student achievement in terms of the objectives of the course, three tests were devised and one other chosen to administer to the group of students at the beginning and at the end of the quarter. A paper-and-pencil objective test was designed to measure acquisition of facts. To measure the development of critical standards a choice-of-picture test was assembled using illustrations of clothing and swatches of fabric and setting up choices relating to quality of design, becomingness and use of color, and appropriateness of texture and weight of fabric for design and vice versa.

Another means of measuring standards of design appraisal was the use of the Maitland Graves Design Judgment Test, published by the Psychological Corporation in New York. This test was devised to

... measure certain components of aptitude for the appreciation or production of art structure. The test accomplishes this measurement by evaluating the degree to which
a subject perceives and responds to the basic principles of aesthetic order—unity, dominance, variety, balance, continuity, symmetry, proportion, and rhythm.  

Typical items from this test and an analysis of them may be found in the book The Art of Color and Design by Maitland Graves.  

The third evaluation instrument prepared for this study was a performance test to discover the student's ability to apply principles as well as her aptness at problem-solving. The test included pattern and materials to construct a portion of a dress which was illustrated on the first page of the test.

Still another set of problems involving pattern alterations was planned but not used in its intended form because the pilot study revealed that it was beyond the ability of the majority in the group.

A description of the development of these instruments will be found later in this chapter.

The final measure of ability to apply principles was stated in terms of an evaluation of the laboratory project which was completed during the last half of the


quarter. This project was the construction of a dress, and the final measure of achievement recorded for it was the weighted arithmetic mean of three letter grades (translated to point value). The first letter grade, making up thirty-five per cent of the final project grade, represented an evaluation of the choice of fabric and design in relation to each other and in terms of the individual, and the choice of accessories to be combined with the dress to complete the costume. The second letter grade, accounting for forty per cent of the final project grade, was a measure of ability to apply fitting principles successfully; and the remaining letter grade, or twenty-five per cent of the project grade, indicated ability to apply principles of construction.

Techniques Studio

Both the records on the experience sheet, which the students filled out at the beginning of the quarter, and the results of the performance test at the opening of fall quarter pointed up the fact that there were several students in the group who were unskilled in clothing construction. Since these students would be at a disadvantage throughout the course, provision was made for them to receive additional instruction in construction techniques. A techniques studio, established at the time of the pilot
study during the fall quarter, provided a series of additional instruction and laboratory periods giving the students an opportunity to receive remedial help if they desired to take advantage of it. Attendance was not required, though it was suggested to the students who made low scores on the performance test. The same opportunity was provided to students in the control group of the winter quarter and the experimental group of the spring quarter.

**Developing the Testing Instruments**

**Paper-and-pencil objective test.**—An objective test was prepared to check the student's knowledge before and after the experiment. Some items for the test were taken from examinations used for the course in previous quarters and thought to be a fair measure of knowledge. All items on the test were taken directly from the content of the course as set up in terms of the objectives. The test was first given to the pilot group at the beginning of the fall quarter 1961. The test then included 154 items and was given to thirty-six students. After the tests were scored, an evaluation of items was made and several changes followed. One section of the test, which had required written statements, was changed to a series of more objective multiple choice questions. Possible responses from which to choose the best answer were suggested by the writing done on the pilot pre-test. Other questions, which required a definite
## CONTENTS (Continued)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS</td>
<td>86</td>
</tr>
<tr>
<td>Summary</td>
<td>86</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>89</td>
</tr>
<tr>
<td>Conclusions</td>
<td>92</td>
</tr>
<tr>
<td>Recommendations</td>
<td>98</td>
</tr>
<tr>
<td>APPENDIXES</td>
<td></td>
</tr>
<tr>
<td>A Home Economics 431: Objectives</td>
<td>108</td>
</tr>
<tr>
<td>B Home Economics 431: Daily Schedule</td>
<td>117</td>
</tr>
<tr>
<td>C Specimen Questions from Objective Test</td>
<td>120</td>
</tr>
<tr>
<td>D Specimen Question from Choice-of-Picture Test</td>
<td>122</td>
</tr>
<tr>
<td>E Instruction Page from Performance Test</td>
<td>124</td>
</tr>
<tr>
<td>F Score Sheets</td>
<td>126</td>
</tr>
<tr>
<td>G Specimen Question from Problem-Solving Test</td>
<td>129</td>
</tr>
<tr>
<td>H Pre-College Experience Sheet</td>
<td>132</td>
</tr>
<tr>
<td>I Schedules of Lectures for Winter Quarter 1962 and Spring Quarter 1962</td>
<td>134</td>
</tr>
<tr>
<td>J Specimen Note Sheets</td>
<td>137</td>
</tr>
<tr>
<td>K Student Television Evaluation Sheets</td>
<td>140</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>144</td>
</tr>
<tr>
<td>AUTOBIOGRAPHY</td>
<td>148</td>
</tr>
</tbody>
</table>
right or wrong response, were retained or rejected according to the degree of discrimination revealed between high ranking students and low ranking students. 4

The revised test was given to the pilot group as a final examination. On the basis of the results, a few more items were omitted and others re-worded for clarity. The resulting test, which was used for the study, included thirty true-false items, twenty-nine matching items, nineteen blanks to be filled in, and twenty-four multiple choice items, making a total of 102 points (Appendix C).

**Choice-of-picture test.**—An instrument to measure the ability to distinguish quality of design and construction techniques was devised in the form of a choice of picture test. Illustrations from fashion magazines and pattern books were selected to represent good and poor use of design elements. The pictures were mounted in pairs in manila folders, and an appropriate question asked in relation to the illustrations shown, e.g., "Which illustration, A or B, shows the better use of form in the costume?" Other folders included one illustration and two swatches of fabric, and the question was asked, "Which fabric, A or B, would be a better weight and texture for making the

---

costume in the illustration at the right?" Or the question might be reversed with one piece of fabric and more than one costume picture, with the choice to be made in terms of appropriate design for the piece of fabric. This test, as first given to the pilot group at the beginning of the fall quarter, was made up of twenty-three folders. Another six questions were presented to the pilot group at the beginning of a later unit of work, making a total of twenty-nine choices in the test. Validity for the items on this test was established through the agreement of a panel of experts.¹

No set of pictures was used unless the three members of the panel independently agreed on the better choice. After the test was given experimentally as a pre-test, an item analysis was made and the fifteen questions showing the greatest amount of discrimination were selected for use in the study. The fifteen questions chosen were presented to the pilot group as part of the final examination (Appendix D).

Performance test.—A performance test was developed to measure the student's ability to apply principles of clothing construction. Pieces of pattern and instructions were provided for constructing the shoulder and neckline

¹ Members of the panel included the Head of the Department of Textiles and Clothing, the Assistant Professor who did the laboratory instruction, and the researcher, all of whom have had training and experience to qualify them as experts in this subject.
area of a dress (Appendix E). When the test was given to the pilot group at the beginning of the fall quarter, the materials provided and instructions given included the use of interfacing. The test in that form took too long and appeared to be too involved and, therefore, frustrating to the students who took it. Therefore, for use in the study the test was modified omitting the mention or use of interfacing. The work done on the performance test was evaluated according to a score sheet made up for this purpose (Appendix F).

A second test, to measure the student's ability to apply principles of pattern alteration, was planned and presented to the pilot group as a pre-test at the beginning of the unit on fitting. Four pairs of figure silhouettes were displayed at the front of the room with the figure on the left representing the figure for which the standard pattern was made and the figure on the right showing some irregularity or variation. The student was asked to identify the irregularity and then, using the fourth-size pattern pieces provided, make an alteration that would make the pattern fit the figure on the right. The accomplishment of the required alterations appeared to be so far beyond the ability of some students that they were too much discouraged to try. Five of the thirty-four students to whom it was given did not attempt it at all and four others attempted only one alteration. A change was made in the test to try
to challenge the students to answer it. Using answers given by students in the class who did endeavor to make a satisfactory alteration, the test was revised to multiple choice questions. Three large illustrations of possible alterations for each variation were made and posted with the silhouettes. Again the student was asked to identify the variation and then choose the best alteration to use to make the pattern fit the figure on the right (Appendix G). The students were able to cope with the problem in this form, but it was realized that it was no longer a test of ability to apply a principle or solve a problem. The test was given in this form as part of the pre-test for the control group and the experimental group and was given in its original form at the end of the course as part of the post-test or final examination. The total possible score for this test, in its problem-solving form, was twenty. One point was given for correctly identifying each of the four figure variations and a total of four points given for each alteration. A partial score of one, two, or three was given for partial solving of a problem.

It was decided that no post-test or final examination would be given to determine achievement in ability to apply principles of design, fitting, and clothing construction. Instead, an evaluation of laboratory work was to be made. In order to arrive at a comparable score to that of the
performance pre-test, a score sheet (Appendix F) was made to check the collar of the garment made as the laboratory project or to check a collar which had been made as a laboratory problem in the cases where there was no collar on the dress. The items on this score sheet, or the application of principles they represent, are similar to the items on the score sheet for the performance pre-test.

The Class Groups Used in the Study

In choosing these two groups for the study, no attempt at selectivity was made; and, therefore, no opportunity for matching groups was presented. Each group included the students who, in the normal process of scheduling, registered for the course in one of the two quarters that were included in the research plan. In measuring individual differences of students within the groups and thus to identify the difference between the two groups, three factors were considered: the percentile rank of the student on the Ohio State Psychological Examination, which is administered to all students who enter the university; the cumulative point-hour ratio at the end of the quarter preceding the quarter when registered for Home Economics 431; and an evaluation of training and experience gained prior to registration for the course.

The percentile rank of students on the Ohio State Psychological Examination, of course, ranges from 0 to 99.
This information for each student was obtained from the student's record card, filed in the school office.

The cumulative point-hour ratio represents a student's academic standing expressed in terms of points. The point values of the letter grades are: A—4 points, B—3 points, C—2 points, D—1 point, and E—no points since it is the mark indicating failure. The number of points a student has earned is the product of the credit hours multiplied by the point value of the grade. The point-hour ratio is computed by dividing the total number of credit hours the student has accrued into the total number of points. This information was available also from the student's record card. The cumulative point-hour ratio ranges from 0.75 to 4.00, 0.75 being the minimum scholastic requirement to continue beyond the first or second quarter at the university, and 4.00 being the highest possible scholastic attainment.

The information necessary to make an evaluation of experience was supplied by the students at the beginning of the quarter (Appendix H). The following scale of weights was assigned to the activities checked on the form:

Clothing unit in junior or senior high school Home Economics .......... 2
Singer Sewing course or other formal instruction in clothing .......... 2
Clothing project in 4-H .......... 1
Construction of some clothing for own wardrobe (per year) .... 1
Construction of most
clothing for own
wardrobe (per year) . . . 1½
Construction of all
clothing for own
wardrobe (per year) . . . 2
Construction of clothing
for others (for each
five garments) . . . . . 1

The numbers computed on the basis of these weights varied
from 0 for no experience up to 32 for several accumulated
experiences.

Control group.--The control group, those taught in
the classroom, was made up of girls who registered in two
sections of Home Economics 431 for the winter quarter of
1962. Of the thirty-six who started the quarter's work,
three withdrew from the course. Thus, the control group in­
cluded thirty-three students: two freshmen, twenty-two
sophomores, eight juniors, and one senior. All were en­
rrolled in the School of Home Economics except one sophomore
who was from the College of Arts and Sciences.

Experimental group.--The experimental group, those
taught by television, was made up of girls who registered
in three sections of Home Economics 431 for the spring quar­
ter of 1962. This group included ten freshmen, twenty-eight
sophomores, and twelve juniors. Also enrolled was one grad­
uating senior from the College of Education who finished the
quarter's work early and did not participate in the final
testing. Of the fifty girls included in the experimental
group of the study, all were Home Economics students except two who were enrolled in the College of Arts and Sciences (Table 1).

Table 1

NUMBER AND PERCENTAGE DISTRIBUTION BY RANK OF STUDENTS IN THE CONTROL GROUP AND THE EXPERIMENTAL GROUP

<table>
<thead>
<tr>
<th>Groups</th>
<th>Freshmen</th>
<th>Sophomores</th>
<th>Juniors</th>
<th>Seniors</th>
</tr>
</thead>
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<tr>
<td>Control</td>
<td>2</td>
<td>22</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Number</td>
<td>6</td>
<td>67</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>Experimental</td>
<td>10</td>
<td>28</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Number</td>
<td>20</td>
<td>56</td>
<td>24</td>
<td>0</td>
</tr>
</tbody>
</table>

The Role of the Teachers in the Study

In order to hold quality of teaching as nearly constant as possible throughout the study, all instruction was given by the same two teachers. These two teachers worked together planning and coordinating the lecture and laboratory work, cooperated on the development of the testing instruments, and collaborated in the evaluation of student achievement.

Television teacher.--The teacher for the lecture portion of the course was the researcher. Her responsibilities included administering and scoring the tests,
preparing and presenting two forty-eight minute lectures per week in the classroom for the control group, preparing and presenting two thirty-minute television lessons per week, taking charge of the lecture hours in the classroom, leading the discussions after the televised portion of the lesson for the experimental group, and preparing lecture outline sheets to be distributed to the students in the experimental group for the purpose of note-taking during the televised lesson. She also visited the laboratory sessions from time to time throughout both quarters and sat in on the presentation of material on color when it was scheduled for the laboratory hours.

Laboratory teacher.—The responsibility of the second teacher included directing the laboratory activity of three two-hour periods each week for each of the two sections of the control group and for each of the three sections of the experimental group, preparing and presenting lectures involving color and its use during the first two weeks of each quarter, and evaluating laboratory performance. She also sat in on the lectures of the control group assisting with the use of the opaque projector and helping with student models when they participated. During the spring quarter she assisted in the studio at the time the lessons were recorded and sat in on the televised lectures and subsequent discussions of the experimental group.
Medium Variation

The variable being tested in this study was the medium of communication and its effectiveness as a teaching tool as measured by achievement of students in a clothing class. With other aspects held as nearly constant as possible, the experimental group received class instruction by television rather than face-to-face lecture.

Control group.—According to the practice of several years, two sections of Home Economics 431 are combined for the lecture part of the course. Under this plan, the thirty-three girls of the control group met for two lecture periods per week in a conventional classroom (Campbell Hall 203) with a seating capacity of sixty. During the regularly scheduled 48-minute periods, nineteen lectures and one midterm examination were presented in the ten weeks of the quarter. The subject matter taught followed an outline and plan (Appendix I) made up by the lecturer and the laboratory teacher. The teaching itself was a face-to-face lecture presentation with such illustrative materials as could be brought into the room and shown to a group of that size. The opaque projector was used to show line drawings and fashion magazine illustrations for the first unit of work. A dress form or live model was used for demonstration purposes during the unit on fitting the dress. Dresses and previously constructed illustrative materials were used to make the
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Number and Percentage Distribution by Rank of Students in the Control Group and the Experimental Group</td>
<td>51</td>
</tr>
<tr>
<td>2.</td>
<td>Means and Tests of Significance of the Difference Between Means with the Sign of the Significant Regression Coefficients of Variables considered in Covariance</td>
<td>63</td>
</tr>
<tr>
<td>3.</td>
<td>Mean Scores of Experimental Group and Control Group on Six Criteria of Achievement</td>
<td>64</td>
</tr>
<tr>
<td>4.</td>
<td>Coefficients of Correlation Between Variables and Criteria of Achievement; Means and Standard Deviations of Criteria of Achievement</td>
<td>67</td>
</tr>
<tr>
<td>5.</td>
<td>Coefficients of Correlation, Means, and Standard Deviations of Variables</td>
<td>72</td>
</tr>
<tr>
<td>6.</td>
<td>Frequency Distribution of Home Economics Courses Suggested by Twenty-Five Students in the Experimental Group for Future Television Presentation</td>
<td>79</td>
</tr>
<tr>
<td>7.</td>
<td>Frequency Distribution of Topics Suggested by Thirty-Six Students in the Experimental Group for Additional Lectures</td>
<td>80</td>
</tr>
</tbody>
</table>
presentation of methods and techniques more effective visually throughout the final unit of work which was constructing the dress.

Experimental group.—Generally speaking, in quarters when there are three sections of this course offered, two sections are combined for the lectures and the third section with a second teacher remains separate, receiving instruction simultaneously with the larger group. This arrangement has been followed because thirty-six persons or the number of students in two sections was thought to be the maximum number which could benefit from illustrated lectures and demonstrations in a lecture classroom situation. Since adequate facilities for television viewing could be provided, this study was planned to include all three sections of fifty students in the experimental television group. Campbell Hall 203, the classroom used by the control group, became the receiving room with the installation of two twenty-one inch television receiving sets.

Following the same general outline of the course, and aiming at the same objectives, the televised lessons were planned to make the best possible use of the medium (Appendix I). No attempt was made to present a lecture identical to the one presented in the classroom the previous quarter but rather, through the use of production techniques, to create a presentation that would give the fullest impact of which the medium of television is capable.
In this attempt to utilize the television medium to its fullest advantage, numerous visual materials and effects were integrated into the production. These visuals included studio cards with line drawings or fashion illustrations, garments on half-size or full-size dress forms, ready-to-wear dresses displayed on hangers as they came from the racks of a local store, and previously constructed examples of techniques. Other illustrative materials to show techniques were constructed as demonstrations within the lesson. During the quarter, eighteen student models appeared on the television lessons. Special effects were created by the use of super cards and studio cards with pull strips. Extensive use was made of close-up camera shots, and transitions were often made by dissolving from one image to another. Music was added as background to strengthen the feeling or mood when desirable. On one occasion, a specific effect was produced by racking out of focus.

The studio set was planned to provide an appropriate and attractive background for the content of the course. In arranging visual materials to be used during the lesson, the aesthetic aspect was considered as well as logical sequence and convenience. A conscious effort was made to exemplify the principles of good design composition at all times.

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See definitions at the first of the chapter for these terms and others used in this subsection.
The lessons were prepared in advance and recorded on video tape in the WOSU-TV studio during the week preceding the dates to be viewed by the class. The researcher, who was the television teacher, was also in charge of the class during the entire lecture period. This arrangement provided an opportunity to observe the behavior and reaction of the students as they viewed the tape. A skeleton outline of each lecture, prepared by the television teacher, was provided to the students (Appendix J). After the half-hour televised lesson, the remaining eighteen minutes of the class period were used for questions and answers, discussion, or a quiz.

**Administering the Pre-Test**

The pre-test was given to both the control group and the experimental group one section at a time in the laboratory classroom (Campbell Hall 217) at a scheduled laboratory hour. The composite of tests to be given was confined to the two-hour period. The first few minutes were devoted to oral instructions and establishment of rapport by the television teacher. The entire group was then given the Graves Design Judgment Test, which is an untimed test but requires about twenty minutes. As each girl completed this test she was given the next test and allowed to start on it immediately. One half the group was given the materials and instructions for the performance test. The other half of the
class received the mimeographed paper-and-pencil test which also included the answer sheet for the choice-of-picture test. By dividing the group in this manner, the girls working on the performance test had access to sewing machines and pressing equipment at the time they were needed, and the girls in the other group could take turns looking at the pictures which were posted on a portable bulletin board for the choice-of-picture test. During the last fifty minutes of the period the groups of girls reversed activity and each girl took the remaining portion of the series of tests. The girls were told of the time limitations of the procedure and stopped their work at the appointed time whether it was completed or not. Some students completed the whole series of tests before the end of the time limit; others did not complete the performance test or the paper-and-pencil test. In spite of the amount of work to be accomplished in the two hours and the limited knowledge and experience of some of the students, a cooperative atmosphere prevailed.

Administering the Post-Test

The post-test was given to both the control group and the experimental group in the scheduled two-hour period for the final examination at the end of winter quarter and at the end of spring quarter. In each case, the entire group met together in the lecture room (Campbell Hall 203), completing the testing procedure within the assigned time.
The first few minutes were used for oral instructions by the television teacher. Some students (by choice) started with the Graves Design Judgment Test, while others started on the paper-and-pencil test. Included in the mimeographed test was an answer sheet to the choice-of-picture test and the instructions for the pattern alteration performance test. Each student was also given an envelope containing five pieces of fourth-size pattern to use for the latter test. The group had been instructed to bring scissors, scotch tape, and a ruler with them. The folders containing the pictures for the choice-of-picture test were displayed on a large table at the front of the room. The girls took turns going to the table to complete that part of the test. No time limit was called on any of the tests. Each student proceeded from one test to the other at her own rate. All students had completed all tests by the end of the examination hour.

Statistical Treatment

In comparing the achievement of the control group and the experimental group, the following variables were taken into consideration; the percentile rank on the Ohio State Psychological Examination, the cumulative point-hour ratio, the amount of experience in clothing construction prior to enrollment in Home Economics 431, and achievement on each of four pre-tests.
Achievement in acquisition of fact was measured by the gain on a paper-and-pencil objective test; development of critical standards was measured by the gain on the Graves Design Judgment Test and the gain on a choice-of-picture test. Attainment in problem-solving was measured by the score on a pattern alteration test. Growth in ability to apply principles was measured by the gain on a performance test and a further measure of achievement in applying principles was the grade assigned to a laboratory project.

A multiple regression procedure was used to determine the difference in achievement of the two groups as measured by the criteria of achievement, considering the seven independent variables in covariance. The value of t was calculated for each of the criteria to test the significance of difference between the two groups, and the sign of significant regression coefficients was recorded. Correlation coefficients were calculated and examined to ascertain significant relationships between variables and criteria of achievement considered individually.
CHAPTER IV

RESULTS OF THE STUDY

In this study, a comparison was made in achievement of two groups of students in a clothing course (Home Economics 431) at The Ohio State University: one taught by face-to-face lecture and one taught by television presentation. After a general discussion of the statistical procedure used, the results of this study are discussed in terms of achievement of the two groups as measured by six criteria, followed by a discussion of the correlation between variables. Both are based on statistical analysis of data calculated in the statistics laboratory of The Ohio State University. Further evaluation of the experimental situation, is presented according to student attitude and teacher reaction.

Data collected included the percentile rank on the Ohio State Psychological Examination, cumulative point-hour ratio, and an evaluation of previous experiences in clothing construction for each student in a control group and an experimental group. These values plus scores on four pre-tests were considered as variables in this study.
Achievement was measured by the difference between scores (or gain) from pre-test to post-test of a performance test, a paper-and-pencil objective test, a choice-of-picture test, and the Maitland Graves Design Judgment Test. Achievement also was measured by the score on a problem-solving test in pattern alteration and the grade for laboratory performance.

In comparing the achievement of a control group and an experimental group, it is necessary to determine whether differences (if any) between the two groups are due to the effectiveness of the course or due to known differences between the groups of students before they started the course. By use of a multiple regression procedure, these variables (known differences) between groups can be considered in covariance, or held constant, making it possible to compare the two groups, in light of each criterion, as though they were equal or like groups.¹

The result of this calculation not only reveals a measure of difference but also indicates which variables have a significant bearing on this difference. The measure of difference is recorded as a t value. A t value of zero means there is no difference between groups and the further

¹ A statistical treatment cannot make two unequal groups equal; however, the differences between two groups may be equated in order to compare the two groups as though they were equal.
the value deviates from zero the more significant the difference is. The indication of a variable relating significantly to the difference is revealed through a regression coefficient, recorded as a plus for a positive influence or a minus for a negative influence in the test of difference of a given criterion (Table 2).

In this study a comparison between the control group and the experimental group was made in terms of each of the six criteria of achievement. For example, considering the achievement of each group on the objective test, the mean post-test scores were 81.21 and 81.18 respectively for the control group and the experimental group. These numbers indicate a mean gain of 23.00 points over the pre-test score for the control group and a mean gain of 27.24 for the experimental group (Table 3).

Rather than independently comparing these two latter numbers, which represent points gained from knowledge acquired during the quarter, they were compared for possible difference taking into consideration the variations revealed by each of the seven variables. Thus, balancing or equating the background factors of one group with the other, the test of significant difference revealed a t value of 0.335 which does not deviate from zero enough to show any significant difference in achievement on this test. The two factors which seemed to be the most important as predictors of
Table 2
MEANS AND TESTS OF SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEANS WITH THE SIGN OF THE SIGNIFICANT REGRESSION COEFFICIENTS OF VARIABLES CONSIDERED IN COVARIANCE

<table>
<thead>
<tr>
<th>Criteria of Achievement</th>
<th>Expen Group</th>
<th>Control Group</th>
<th>t</th>
<th>df 74</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obj. Gain</td>
<td>27.24</td>
<td>23.00</td>
<td>0.335</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choice of Pic. Gain</td>
<td>0.68</td>
<td>0.45</td>
<td>-0.312</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graves Gain</td>
<td>7.88</td>
<td>4.79</td>
<td>0.295</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform. Gain</td>
<td>41.48</td>
<td>43.97</td>
<td>-1.322</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob. Solv. Test Score</td>
<td>11.50</td>
<td>11.33</td>
<td>0.776</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab. Perform. Grade</td>
<td>2.98</td>
<td>2.73</td>
<td>2.240**</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Variables listed below:
  A--Ohio State Psychological Examination
  B--Cumulative point-hour ratio
  C--Previous experience in clothing construction
  D--Objective pre-test
  E--Choice-of-picture pre-test
  F--Graves Design Judgment Test pre-test
  G--Performance pre-test

** Significant at 5% level.
CHAPTER I
INTRODUCTION

Television, while in no way the perfect answer to all problems of education, probably has invited more controversy, prompted more experimentation, and demanded more funds than any other one development in the academic picture. With its powerful impact on both the visual and auditory senses, it is growing in magnitude as an educational tool.

Although the use of television for instructional purposes, and the realization of its potential, has grown rapidly in the past decade, much of the emphasis in the early experiments has been on its electronic power to place the image and voice of the teacher before large groups of students and thus to extend and distribute instruction beyond the normal classroom. This concept of educational television remains in the minds of many people. They accept the medium in this light and overlook its potential for contributing to a more effective or satisfying process of learning.
Table 3
MEAN SCORES OF EXPERIMENTAL GROUP AND CONTROL GROUP ON SIX CRITERIA OF ACHIEVEMENT

<table>
<thead>
<tr>
<th>Name of test and total possible score</th>
<th>Mean Scores</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
<td>Gain</td>
<td></td>
</tr>
<tr>
<td>Objective test (102)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>53.94</td>
<td>81.18</td>
<td>27.24</td>
<td></td>
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<tr>
<td>Control</td>
<td>58.21</td>
<td>81.21</td>
<td>23.00</td>
<td></td>
</tr>
<tr>
<td>Choice-of-Picture (15)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>8.02</td>
<td>8.70</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>8.61</td>
<td>9.06</td>
<td>0.45</td>
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<tr>
<td>Graves Design Judgment Test (90)</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Experimental</td>
<td>59.86</td>
<td>67.74</td>
<td>7.88</td>
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<tr>
<td>Control</td>
<td>62.15</td>
<td>66.94</td>
<td>4.79</td>
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<tr>
<td>Performance test (100)</td>
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<tr>
<td>Experimental</td>
<td>29.34</td>
<td>70.82</td>
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<tr>
<td>Control</td>
<td>33.06</td>
<td>77.03</td>
<td>43.97</td>
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<tr>
<td>Problem-solving (20)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>*</td>
<td>11.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>*</td>
<td>11.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory Performance Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>*</td>
<td>2.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>*</td>
<td>2.73</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* No pre-test given.
achievement on the objective test were the cumulative point-hour ratio and the score on the objective pre-test—a high cumulative point-hour ratio, a high gain; a high objective pre-test score, a low gain—as shown by the regression coefficients (Table 2).

Following this same rationale, a comparison of the two groups was made for each of the criteria.

**Criteria of Achievement**

**Gain on the objective test.**—The paper-and-pencil objective test, which was devised to measure factual knowledge, was administered to both groups as a pre- and post-test. The experimental group had a mean gain of 27.24 points, from 53.94 to 81.18, on the 102-point test, and the control group showed a mean gain of 23.00 from a mean score of 58.21 on the pre-test to 81.21 on the post test. There was no significant difference between the two mean gains as revealed by a \( t \) value of 0.335 (Table 2). With the independent variables considered in covariance there was a significant positive relationship between the cumulative point-hour ratio and the amount of gain on the objective test. In other words, the higher the grade average of the student, the greater the improvement she showed on this test. There was also a significant negative relationship between the score on the objective pre-test and the amount of gain. That is to
say, those who started with a high measure of factual knowledge showed little gain.

Considering independent relationships between factors, there was a negative correlation, significant at the 1 percent level, between the pre-test on performance and the gain on the objective test, and a negative correlation, significant at the 5 percent level, between the amount of previous experience and gain on this test (Table 4). That is, considering none of the other factors involved, the higher a student scored on the performance pre-test and the more experience in clothing construction she had prior to enrollment in the course, the less improvement she showed on the test of factual knowledge.

Gain on the choice-of-picture test.—One of the tests prepared for this experiment was a choice-of-picture test to measure development of critical standards in clothing selection and construction. On the fifteen picture choices the experimental group showed a mean gain of 0.68, from a pre-test mean score of 8.02 to a post-test mean score of 8.70, and from pre- (8.61) to post-test (9.06) the control group gained an average of 0.45 (Table 3). A t value of -0.312 indicated no significant difference between the mean gains of the two groups (Table 2).

With the variables considered in covariance the only significant relationship that appeared was a negative regression coefficient with the choice-of-picture pre-test.
Table 4

COEFFICIENTS OF CORRELATION BETWEEN VARIABLES AND CRITERIA OF ACHIEVEMENT; MEANS AND STANDARD DEVIATIONS OF CRITERIA OF ACHIEVEMENT

<table>
<thead>
<tr>
<th>Variables*</th>
<th>Mean</th>
<th>Stand. Dev.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obj. Gain</td>
<td>25.55</td>
<td>10.29</td>
<td>-0.20</td>
<td>-0.05</td>
<td>-0.26</td>
<td>-0.84</td>
<td>0.01</td>
<td>-0.21</td>
<td>-0.37</td>
</tr>
<tr>
<td>Choice of Pic. Gain</td>
<td>0.59</td>
<td>2.26</td>
<td>-0.11</td>
<td>0.04</td>
<td>-0.03</td>
<td>0.05</td>
<td>-0.59</td>
<td>0.17</td>
<td>0.05</td>
</tr>
<tr>
<td>Graves Gain</td>
<td>6.65</td>
<td>14.93</td>
<td>-0.05</td>
<td>0.03</td>
<td>-0.02</td>
<td>-0.13</td>
<td>-0.05</td>
<td>-0.54</td>
<td>-0.02</td>
</tr>
<tr>
<td>Perform. Gain</td>
<td>42.47</td>
<td>18.57</td>
<td>-0.06</td>
<td>0.07</td>
<td>0.01</td>
<td>-0.05</td>
<td>0.04</td>
<td>-0.07</td>
<td>-0.38</td>
</tr>
<tr>
<td>Prob. Solv. Test Score</td>
<td>11.43</td>
<td>4.09</td>
<td>0.22</td>
<td>0.21</td>
<td>0.41</td>
<td>0.51</td>
<td>0.01</td>
<td>0.15</td>
<td>0.36</td>
</tr>
<tr>
<td>Lab. Perform. Grade</td>
<td>2.88</td>
<td>0.70</td>
<td>-0.04</td>
<td>0.22</td>
<td>0.43</td>
<td>0.37</td>
<td>0.00</td>
<td>0.01</td>
<td>0.47</td>
</tr>
</tbody>
</table>

* Variables listed below:
A—Ohio State Psychological Examination
B—Cumulative point-hour ratio
C—Previous experience in clothing construction
D—Objective pre-test
E—Choice-of-picture pre-test
F—Graves Design Judgment Test pre-test
G—Performance pre-test

Note: 0.28 significant at the 1 per cent level.
      0.22 significant at the 5 per cent level.
The same significant relationship was apparent in the correlation coefficient (Tables 2 and 4). Again, as with the objective test, the higher the score the student had on the pre-test, the less she gained.

**Gain on the Graves Design Judgment Test.**—A second test used in this study to measure critical standards was the Maitland Graves Design Judgment Test. This test includes ninety pairs or groups of design compositions, with the instruction to choose the more pleasing one. The students in the experimental group made a mean gain of 7.88 (pre-test 59.86, post-test 67.74) and the control group gained an average of 4.79 points (pre-test 62.15, post-test 66.94) on the test (Table 3). These gains reveal no significant difference between the two groups with a t of 0.295 (Table 2). The only significant relationship involved in this test is a negative regression coefficient and correlation coefficient between the pre-test and the amount of gain (Tables 2 and 4).

**Gain on the performance test.**—As one means of measuring ability to apply principles, the students in this study were scored on their performance in the construction of a portion of a dress. A perfect score was represented by 100 points. The students in the experimental group showed a mean gain of 41.48 points (from 29.34 to 70.82) and those in the control group a mean gain of 43.97 (from
The difference between the two was not significant as disclosed by a t value of -1.322 (Table 2). With the variables considered in covariance this test, like the objective test, showed a significant positive relationship to the cumulative point-hour ratio. All factors considered, the higher a student's cumulative point-hour ratio the greater the gain she showed on this test of application of principles. With this test, as with the other three tests discussed, there was a significant negative relationship between the pre-test score and the amount of gain whether considered independently or in relation to other variables.

Score on the problem-solving test.--This test, involving the ability to recognize and solve problems relating to pattern alteration, was given only at the end of the quarter. The total possible score was 20 points. The students in the experimental group exhibited a mean score of 11.50 while the students in the control group showed a mean score of 11.33. There was no significant difference between the two with a calculated t value of 0.776 (Table 2). Considering all the stated variables, positive relationships of significant proportion appeared between the achievement on this test and two of the variables: the amount of previous experience the student had and the score on the objective pre-test. This is to say, students who had experience in
clothing construction before taking this course and those who scored high on the objective pre-test made higher scores on the problem-solving test.

Considering the variables singly in relation to the achievement on this test, there was a significant positive correlation at the 1 per cent level with the amount of experience, the score on the objective pre-test, and the score on the performance pre-test. There was also a significant positive correlation at the 5 per cent level with the percentile rank on the Ohio State Psychological Examination (Table 4).

**Grade on laboratory performance.**—A final measure of achievement in Home Economics 431 was reported by the grade on the laboratory project, completed during the last five weeks of the course. The evaluation of this project, recorded as the point value of the letter grade received, included measures of ability to apply principles of design composition, fitting, and construction in the making of a dress. The mean grade of the students in the experimental group was 2.98 and the mean grade in the control group was 2.73. The difference of the means was found significant at the 5 per cent level with a t value of 2.246 favoring the experimental group (Table 2). Significant also were the regression coefficients relating this grade to the objective pre-test and the performance pre-test. Students
who scored high on the objective and performance pre-tests received higher grades on laboratory performance.

Relating this criterion of achievement with each variable singly, a positive correlation appeared between it and the amount of previous experience, the objective pre-test score, and the performance pre-test score, significant at the 1 per cent level. At the 5 per cent level there was a significant positive correlation between laboratory performance and cumulative point-hour ratio (Table 4).

Correlation Between Variables

In an examination of the seven variables and the relationship of each with the other six, a number of positive correlations were in evidence. Most striking among them was the relationship of the objective pre-test score to five other variables: four significant at the 1 per cent level and one significant at the 5 per cent level. The highly significant correlations included the percentile rank on the Ohio State Psychological Examination, cumulative point-hour ratio, amount of experience, and score on the performance pre-test. The correlation with the score on the Graves Design Judgment Test was also significant (Table 5).

The Graves Design Judgment Test showed no correlation significant at the 1 per cent level, but coefficients significant at the 5 per cent level appeared between it and
Table 5

COEFFICIENTS OF CORRELATION, MEANS, AND STANDARD DEVIATIONS OF VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.00</td>
<td>0.60</td>
<td>-0.13</td>
<td>0.37</td>
<td>0.32</td>
<td>0.24</td>
<td>-0.01</td>
</tr>
<tr>
<td>B</td>
<td>1.00</td>
<td>0.04</td>
<td>0.30</td>
<td>0.15</td>
<td>0.23</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>1.00</td>
<td>0.40</td>
<td>0.15</td>
<td>-0.01</td>
<td>0.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
<td>0.13</td>
<td>0.25</td>
<td>0.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>1.00</td>
<td>-0.02</td>
<td>0.09</td>
<td></td>
<td></td>
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<tr>
<td>G</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean 53.55 2.43 13.74 55.64 8.25 60.77 30.82

Stand. Dev. 27.52 0.48 8.32 11.50 1.90 15.73 18.42

Variables listed below:
A--Ohio State Psychological Examination  
B--Cumulative point-hour ratio  
C--Previous experience in clothing construction  
D--Objective pre-test  
E--Choice-of-picture pre-test  
F--Graves Design Judgment Test pre-test  
G--Performance pre-test

Note: 0.28 significant at the 1 per cent level.  
0.22 significant at the 5 per cent level.
the Ohio State Psychological Examination, cumulative point-hour ratio, and the objective pre-test (Table 5).

Two other correlation coefficients significant at the 1 per cent level, in fact the highest coefficients in this group, were between the cumulative point-hour ratio and the Ohio State Psychological Examination and between the amount of experience and the performance pre-test.

**Evaluation of the Experimental Medium**

The scope of this study encompasses the consideration of effectiveness of teaching by means of television, measured in terms of student achievement. This is not to say that other considerations are unimportant. No experiment in teaching method can be deemed successful or unsuccessful without considering the reaction of the students to it. For in the final analysis, the student is the *raison d'etre* of all teaching situations. Second in importance only to the reaction of the student, is the reaction of the teacher.

**Student evaluation.**—On two occasions in the ten weeks of the quarter, during the time the experimental medium was in use, the students were asked to give their reactions to Home Economics 431 by television. The first request was made to them at the first lecture session of the sixth week of the quarter, which meant they had completed one half the quarter's work. The questionnaire used (Appendix K) was
Purpose of the Study

The purpose of this study was to determine whether the use of instructional television can increase the effectiveness of teaching a college course in clothing by motivating the student to self-activity in developing critical standards, in analyzing and solving problems, and in making applications of principles as well as acquiring factual information. The intention behind the design of the study was not to substitute the medium of television for a direct channel of communication but to make maximal use of television production in promoting the overall objectives of the course. In other words, this study incorporated the use of instructional television rather than televised instruction.

Justification of the Study

Charles A. Siepmann, in his book TV and Our School Crisis, made the following statement concerning the crisis of increased school enrollments and inadequate teachers.

Television, we hold, while not the deus ex machina to "solve" the crisis, is one indispensable tool that we can and must use to extricate ourselves from the grave trouble we are in, but of which all too few still seem to be aware.¹

very simple in form, suggesting the kind of information wanted and yet giving latitude for a candid answer.

In general, the responses were favorable toward the television presentation. However, tabulation of the responses did reveal that one-fourth of the forty-eight students who filled out the form found the pace to be too fast or felt that insufficient time was given to some subject matter topics. Eight persons, or 17 per cent of the group, objected to the fact that they could not ask questions during the lecture. One student, although she also made favorable comments, protested with this statement, "I do not care for the television series because the student is unable to ask questions during the lecture." On the other hand, another student felt that such a thing could be an advantage. She stated, "The television course may give us a chance to cover more than the regular lecture because no questions can be asked until the lecture is finished." Four of the forty-eight students expressed the feeling that they would rather have a classroom lecture. Some of the comments, both pro and con, were as follows:

Comments favoring television lectures

In the TV lectures I think we have an opportunity to see operations and illustrations much more clearly than we could by classroom demonstration.

I think what is seen on TV is very helpful and feel that the whole class sees the same thing at the same distance whereas if it were a live lecture there would be things that some people would miss.
It seems easier to see what is going on than it would be without TV.

I think it's possible to see more during a lecture this way.

The TV presentation does give us all an opportunity to be able to see just what you are doing, especially with the close-up shots. Of course, I haven't seen the normal lecture, but I do feel this TV type is advantageous.

Good--It shows very clearly the examples of what the lecture is about. It applies the principles and lets us see how it is to be done or what it should look like.

I feel that by teaching 431 on television we have a chance to see more than if you were to lecture in the classroom.

I believe that by using the TV lecture the students are able to see many more meaningful examples and illustrations than would be possible in the classroom. I especially like the method of lecture on TV followed by a class period to clear up any questions.

Unfavorable comments about television lectures

If you have not handled fabric, it is harder to visualize the techniques shown as compared with seeing it done in the laboratory.

I would like it better in person where we can really see what is going on.

I feel that the content is good, but the actual demonstrations in the classroom would make it more clear. Seeing the material and technique at a closer range and in perspective.

I have trouble seeing exactly how something is done. Seeing pictures and seeing it in life is quite different. I get the general things on TV, but have trouble with the details.
Questioning the students at this particular time was done with the intent of improving the use of the medium and correcting undesirable practices, if possible, through the remainder of the quarter. Several students asked that illustrative material used on the television lessons be brought to the laboratory to be seen after viewing the lesson in which it had been used. This request was granted when possible. Some materials were used progressively from one lesson to another and, therefore, no longer were available in the same stage at the time the lesson was seen in the classroom.

After reviewing the questionnaires, the suggestion was made to the class that they make some kind of a mark on their note sheet to help them recall a question they may have had during the lesson. This practice appeared to help overcome the problem of being unable to ask questions during the lecture.

During the last week of the quarter, the members of the television class were asked to fill out a questionnaire with more specific questions to be answered (Appendix H). Again, forty-eight students were present to fill out the form; and again, the response was favorable toward the television presentation. Of those who responded, ninety-two per cent, or forty-four, said "yes" the course was successful as taught by means of television. Four, or 8 per cent, responded "no."
Thirty-four of the forty-eight students, or 71 per cent, had been enrolled in other Ohio State University courses by television. Of the thirty-four who had been in other television classes at Ohio State, 70 per cent stated that Home Economics 431 was better by comparison; 18 per cent thought it the same as others; and 12 per cent thought it not as good, although their statements which followed did not support this view.

Twenty-two of the twenty-four students who checked this course as being better than other Ohio State University television courses made statements accounting for the difference. Their responses could be grouped into four categories. Thirteen indicated in one way or another that the subject matter of Home Economics 431 is adaptable to television presentation. Four comments reflected a personal interest in the subject matter; three expressed appreciation of the plan for discussion and questions immediately following the lecture; and two mentioned quality of teaching, efficiency, and organization.

Those checking "not as good" made these comments (which seemingly did not support this view):

I am more interested in the subject and so is the instructor.

This course is more interesting to begin with--the subject.

It was math and I felt we needed more time for questions. In this case I think it is much easier to see the work done on TV than if it were done before us in class.
The show was cold. I did not have the instructor on TV as a guidance teacher in the classroom.

Twenty-five students, or 52 per cent of the group filling in the questionnaires, responded that they would like to see other Home Economics courses by television. Sixteen of the girls, or one-third of the group, checked "no" they would not like to see other Home Economics courses taught by television while seven did not respond to this question.

Other Home Economics courses suggested for television presentation and frequency with which each was mentioned are shown on Table 6.

There were no excessive absences from the lectures of the television section of this study except for one student who also was absent on the day the questionnaires were answered. All the comments which followed the question concerning attitude about attendance were to the effect that promptness and attendance were more important for a course taught by television.

Early in the questionnaire the question was asked if any part of the course was thought to be more successful or effective. Twenty persons checked "yes" and twenty-two persons checked "no." Eighteen of those who checked an affirmative answer finished the question by indicating which part was more effective. Eight rated the first unit of the
course, or the portion on design, as more effective on television. At the end of the questionnaire the students were asked to make suggestions for possible additional subject matter for the course in future quarters. Sixty-one responses were given; thirty-one, or half, of the topics mentioned could be classified as belonging in the first unit of the course or, in other words, they related to design and selection of clothing. Twenty-four responses could be classified as dealing with clothing construction, four students suggested fitting and alteration, and two people expressed an interest in adding something about the care of clothing (Table 7).

Table 6
FREQUENCY DISTRIBUTION OF HOME ECONOMICS COURSES SUGGESTED BY TWENTY-FIVE STUDENTS IN THE EXPERIMENTAL GROUP FOR FUTURE TELEVISION PRESENTATION

<table>
<thead>
<tr>
<th>Name of Course</th>
<th>Total number of times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>The House</td>
<td>7</td>
</tr>
<tr>
<td>Fundamentals of Nutrition</td>
<td>6</td>
</tr>
<tr>
<td>Selection of Clothing and Textiles</td>
<td>5</td>
</tr>
<tr>
<td>Foods: Principles of Preparation</td>
<td>5</td>
</tr>
<tr>
<td>Elements of Family Living</td>
<td>3</td>
</tr>
<tr>
<td>Household Equipment</td>
<td>2</td>
</tr>
<tr>
<td>Clothing</td>
<td>1</td>
</tr>
<tr>
<td>Home Management</td>
<td>1</td>
</tr>
<tr>
<td>Introduction to Child Development</td>
<td>1</td>
</tr>
</tbody>
</table>
The response to these two questions appears to give a strong indication of interest, and perhaps need, in the study of design principles and their application. This finding is of particular interest since television presentation in this area has not been reported, while there have been studies and experiments in presentation of clothing construction on television.
Prompted by the suggestion by the WOSU-TV studio personnel that the series of lessons be run in an evening hour, the students were asked if they knew they could see the lesson a second time would they make an effort to do so. Over half the students indicated that they would make an effort to view the lesson again at least part of the time. Thirty-five per cent checked "yes," while 19 per cent wrote in "sometimes" or made a similar indication.

Perhaps the most revealing of any of the students' evaluations of the course were the unsolicited comments that were written in on the final questionnaires. One such note read:

I would like to comment that for this type of course I really appreciate the TV demonstrations. There is nothing more frustrating to me than for the students to be crowding around a desk or table trying to see with no one able to see adequately. Even from the back row I think everyone can see every move.

Another student had this to say--

I felt the course was taught very well by television. I was skeptical of it at the beginning of the quarter.

On this questionnaire no one made any objections to being unable to ask questions, but this observation appeared.

I liked this course on TV because all the material was covered in one day. So many times questions arise which delay finishing of a lesson this way all was taken care of.
Teacher evaluation.—Since students tend to reflect the attitudes of their teachers, the response of the teachers toward an innovation in teaching method is germane to the success or failure of an experiment. Making the change from the usual, conventional pattern of college classroom teaching to a relatively new medium requires an adjustment of role on the part of the teachers involved.

The television teacher, who is responsible for presenting subject matter, or the telling and showing of fact and principle, will spend more time on lecture preparation and less time with the students. The laboratory teacher, on the other hand, will spend less time dispensing information and more time working with the students, helping them to make application of principles and achieve their objectives. In such a joint endeavor, the television teacher faces the possible threat of feeling depersonalized, and the laboratory teacher faces the possible threat of feeling an increased loss of professional and curricular autonomy.²

According to the design of this study, the lectures for both groups, whether in the classroom or by the medium of television, were presented by the same teacher. The laboratory activity for all students in the classes, whether

the control group or the experimental group, was coordinated and directed by a second teacher.

The lecturer, who was also the researcher, found that preparation for the television lessons took three to four times longer than preparation for the classroom lectures. Since the responsibility for two half-hour television presentations was not added to a full teaching load, the extra amount of work was not considered excessive. The writer does agree, however, with the conclusions drawn from other experiments that some adjustment of time and responsibility needs to be made for the person who prepares and teaches courses by television.

Television is more exacting than appearance before a class in the classroom. The television teacher was cognizant of this fact, but she found it stimulating and challenging to be able to present as much, and sometimes more, subject matter in thirty minutes by television than was possible in forty-eight minutes of classroom time.

The television teacher had no feeling of depersonalization; and this may have been due, in part, to the fact that she was in the classroom at the time the lesson was viewed and also led the discussion period which followed the telecast. Also, she visited the laboratory when time permitted and had an opportunity to become acquainted with most of the fifty students to a slight degree.
In spite of Mr. Siepman's final admonition, there is evidence that television now holds a prominent place in education. National and regional organizations, long active in promoting educational causes, have acknowledged the growing importance of new teaching aids and have formed committees or subcommittees to investigate the use of television, make recommendations, and form policies for the future.

At the 1956 meeting of the American Association of Colleges for Teacher Education, the Executive Committee and its Committee on Studies provided for the appointment of the Subcommittee on Television and Teacher Education. The purpose of the subcommittee was

... to develop, formulate, and make recommendations regarding the Association's program in the area of educational television and to keep the member institutions informed of developments in this field. ²

Among other activities the AACTE Subcommittee on Television initiated a series of three workshops in 1957 which were "important in high-lighting areas of common inquiry and in giving direction to further research." ³

³ Ibid., p. 6.
In summary, then, even though teaching by television is more time-consuming and exacting than classroom teaching, the television teacher found it challenging and interesting. Although she regretted that there was less time to spend in the laboratory, she felt en rapport with the students.

As stated earlier, it may be a fact that one of the limitations of this study is the slight bias on the part of the researcher in favor of television teaching. In her opinion, however, she was equally as conscientious in trying to do the best job of teaching one quarter as the other.

The laboratory teacher for this study directed the laboratory experience of three sections of the course (the experimental group), which meant that she worked with fifty students and their individual problems of application. She had also directed the laboratory work for the thirty-three girls in the classroom sections (the control group) of the previous quarter. In her statement of evaluation of the experiment, although she expressed some skepticism as to the value of television as a medium for teaching this course, she recognized the advantage of its use in showing each student the same thing regardless of seating position in the classroom. She observed the inability of some students to carry over information from the televised lectures into use in the laboratory and mentioned the necessity of
re-showing some of the students things that had been demonstrated in the television lectures. In an informal statement of observation during the quarter, she referred to the fact that the students in the experimental group seemed to have more awareness of the costume as a whole than had been noted in groups in previous quarters and showed evidence of thinking through the plans for an accessorized costume.

The laboratory teacher evidenced a change in her attitude toward the study during the experimental quarter. Her teaching role during the spring quarter appeared to bring about a certain degree of alienation.³

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the relative effectiveness of two media of communication in teaching a college course in clothing: by face-to-face lecture and by instructional television. Two regularly scheduled classes of Home Economics 431 (Clothing: Principles of Construction) at The Ohio State University were used as a control group during winter quarter 1962, and three regularly scheduled classes of the same course were used as an experimental group in the spring quarter 1962.

The control group of thirty-three students received two forty-eight minute periods of instruction each week in the conventional manner in a lecture classroom, and the experimental group of fifty students received two half-hour televised lessons (pre-recorded on video tape) a week, each followed by eighteen minutes of discussion led by the television teacher. All sections, with thirteen to eighteen students in each, had six hours of laboratory experience a week under the direction of an assistant professor of the textiles and clothing department.
Variables considered included the percentile rank on the Ohio State Psychological Examination, cumulative point-hour ratio, amount of previous experience in clothing construction, and scores on four tests given at the beginning of the quarter. Achievement in terms of overall objectives of the course was measured by gain on the four tests (difference between pre- and post-test scores) which were devised or selected for this purpose. These tests were a paper-and-pencil objective test of factual information, a performance test of application of principles of clothing construction, a choice-of-picture test revealing standards of selection and construction of clothing, and the Maitland Graves Design Judgment Test. An additional test on pattern alteration was devised and administered at the end of each quarter to determine ability to solve problems. Achievement also was measured by evaluation of laboratory performance.

It was hypothesized that in terms of the overall objectives of the course the students in the experimental group would show achievement as great as (or greater than) those in the control group. Sub-hypotheses were stated in relation to each of the criteria of achievement.

Scores representing the variables and the criteria of achievement were statistically analyzed by use of a multiple regression procedure. The results showed no significant difference in the achievement of the two groups as measured by the gain on the objective test, performance
test, choice-of-picture test, and Graves Design Judgment Test, and no significant difference in achievement on the problem-solving test. There was a significant difference at the 5 per cent level in achievement on laboratory performance in favor of the experimental group.

In general, the students in the experimental group reacted favorably to the medium of instruction. On an evaluation sheet midway through the quarter one-fourth of the students indicated the pace was too fast and 17 per cent objected to the fact that they could not ask questions during the lecture. The final evaluation, by response on questionnaire, showed that 92 per cent of the group considered the course successful as taught by television, 88 per cent of those who had had other Ohio State University courses via television thought Home Economics 431 the same or better by comparison, and 52 per cent of the experimental group made suggestions for other Home Economics courses to be taught by television.

Even though teaching by television is more time-consuming and exacting than classroom teaching, the television teacher found it challenging and interesting and felt that the experiment met with success. The laboratory teacher, although she expressed skepticism as to the value of television as a medium for teaching this course, recognized its advantage in showing each student the same thing regardless of seating position in the classroom.
It was concluded that a college course in clothing can be taught as effectively by instructional television as by face-to-face lecture. It was further concluded that disadvantages of the medium of television can be overcome and that the advantages may outweigh the disadvantages.

Hypotheses

The major hypothesis basic to this study was stated that in terms of the overall objectives of the course the students in the experimental group would show achievement as great as or greater than achievement of those in the control group.

In comparing the scores of the two groups (Table 2), the experimental group showed a greater mean gain on the objective test, choice-of-picture test, and Graves Design Judgment Test. The mean gain on the performance test was slightly lower for the experimental group than for the control group. The mean score of the problem-solving test and the mean grade on the laboratory performance were higher for the experimental group. It would appear that, in general, the achievement of the experimental group was higher than the control group; and, therefore, with the exception of the performance gain, the major hypothesis is supported. Each of the following sub-hypotheses had direct bearing on the major hypothesis and should be considered before conclusions are made.
Five sub-hypotheses were established in regard to comparative achievement of the two groups. In the first sub-hypothesis, stated as a null hypothesis, the statement was made that there would be no significant difference between the mean gain on tests measuring acquisition of factual information. The mean gain on the paper-and-pencil objective test for the experimental group was 27.24 while the mean gain for the control group was 23.00. The t test for the significance of difference revealed a t of 0.335 which is not a significant difference. Thus, the null hypothesis is sustained.

The second sub-hypothesis was stated that the mean gain on tests measuring development of critical standards in the experimental group would be as high as or higher than the gain in the control group. Two of the tests administered were measures of critical standards. The mean gain on the choice-of-picture test was 0.68 for the experimental group and 0.45 for the control group. The difference between these means is not significant with a calculated t value of -0.312. The mean gain on the Graves Design Judgment Test was 7.88 for the experimental group and 4.79 for the control group. These figures show no significant difference with a calculated t value of 0.295. Since neither set of figures reveals a significant difference in achievement, the hypothesis is accepted.
A third sub-hypothesis was set up stating that the mean gain on tests measuring performance or ability to apply principles in the experimental group would be as great as or greater than the mean gain in the control group. The mean gain on the performance test of the experimental group was 41.38 while the mean gain of the control group was 43.97. Although the difference of the two means is not significant with a t value of -1.322, the mean gain is not as great for the experimental group and the hypothesis must be rejected.

In a fourth sub-hypothesis, the statement was made that the mean scores of tests measuring ability to analyze and solve problems in the experimental group would be as high as or higher than the mean scores in the control group. On a pattern alteration test to measure this quality, the mean score of the experimental group was 11.50 with a possible score of twenty. The mean score of the control group was 11.33. This hypothesis may be accepted although there was no significant difference in the means of the two sets of scores. The calculated t value for this test was 0.776.

In the fifth or final sub-hypothesis, it was stated that achievement as measured by the mean grade on the laboratory performance in the experimental section would be as high as or higher than the mean grade in the control section. The mean grade of the experimental group was 2.98 and the
average grade of the control group was 2.73. The t value in the test of significant difference of means was 2.240 which is significant at the 5 per cent level of confidence. Thus the hypothesis may be accepted.

Conclusions

The specific conclusions made as a result of this study are preceded by a discussion of underlying facts as revealed by the data and observation.

First, and most important, the data reveal that there was no significant difference in achievement, except in laboratory performance favoring the experimental group, of the students taught by one medium and the other. Assuming that effectiveness can be measured by achievement, it may then be asserted that a college course in clothing can be taught as effectively by television presentation as by face-to-face lecture. Of particular interest was the development of critical standards, an objective which was met equally well through the experimental medium. Interest and awareness in clothing standards were observed and expressed among students in the experimental group. Thus, it may be concluded that through the use of instructional television there is a potentiality for stimulating and inspiring these qualities, which are essential to the development of appreciation and discrimination. The experimental group also displayed a high level of achievement in ability to
apply principles, another objective of particular interest in this study as well as in Home Economics in general.

These facts concerning achievement lead to the conclusion that other courses in Home Economics can be taught effectively through instructional television. A number of courses in the field of Home Economics are built on the same kind of objectives as the course in this study, stressing development of critical standards, decision-making, and the ability to apply principles as well as acquisition of factual information and aside from development of skills.

There were several aspects of the experimental teaching-learning situation, other than measure of student achievement, which merit consideration.

Students in the Home Economics 431 experimental group had a favorable attitude toward instructional television as a means of teaching a clothing course. Although there was a small percentage of students in the class who felt that the experiment was not successful, the general feeling toward it was favorable. Some of the responses given on a questionnaire item which asked for comparison with other televised classes seemed to indicate that other factors, such as interest in the subject, response to the teacher, and effectiveness of presentation may be more important to the student than the medium by which the instruction is received.