

AN ABSTRACT OF THE THESIS OF

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Title: A COMPARISON OF THE EXPERIMENTAL AND THE
EXISTING ELEMENTARY CLOTHING CONSTRUCTION
COURSES AT OREGON STATE UNIVERSITY IN TERMS
OF STUDENT BACKGROUND AND ACHIEVEMENT IN
FACTUAL KNOWLEDGE

Abstract approved: Redacted for privacy
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The purpose of this thesis was to compare the 5-hour experimental (CT 213X) and the two 3-hour existing (CT 210-CT 212) elementary clothing construction courses at Oregon State University in terms of the composition of students in each course, the student's background and the achievement of each group in knowledge of basic clothing construction terminology, techniques and methods. An attempt was also made to determine various opinions and attitudes held by each group toward their respective courses.

From observations of the CT 213X, CT 210 and CT 212 courses and from examination of the objectives and printed syllabi for each course, a list of commonly taught basic clothing construction

processes was drawn up. The list was used as an outline for constructing an objective paper-and-pencil pretest-retest.

In order to obtain background information as well as various opinions and attitudes held by the students, two questionnaires were developed. These materials, as well as the pretest-retest, were submitted to a panel consisting of members of the clothing faculty and graduate students in clothing and textiles. Based on the panel's criticism, they were revised where necessary.

Students enrolled in CT 213X, CT 210 and CT 212 during spring term, 1969, were used as the sample for this study. The total sample consisted of 106 students, with 35 in the CT 213X group, 46 in the CT 210 group and 25 in the CT 212 group. Not included in the sample were students who had been absent for either the pretest or retest, students in a section of CT 210 taught by a graduate assistant and students in CT 212 who had transferred from other colleges.

The pretest and general information questionnaire were administered to each course group during the first week of classes, spring term, 1969. During the last laboratory period of the term, the retest and final questionnaire were given.

The reliability coefficient of the pretest-retest, using the Kuder-Richardson formula (21), was computed to be .810. The pretest-retest was accepted as having content or curricular validity, as the makeup of the test closely followed each course outline.

Based on the results of this study, it was concluded that CT 210 is taken more often than is CT 213X by students from other schools in the university, upperclassmen and students who would like to learn to sew for their own personal use. Students who enroll in CT 213X generally have had more previous instruction in sewing and are more knowledgeable in basic clothing construction terminology, techniques and methods than are students in CT 210. However, students who have completed the one-term course, CT 213X, and those who have completed the two-term sequence, CT 210-CT 212, generally have an equal knowledge of basic clothing construction.

It was recommended that CT 213X be given regular course status as a five-hour elementary clothing construction course, thereby listing it in the catalog as CT 213.

A Comparison of the Experimental and the Existing Elementary
Clothing Construction Courses at Oregon State
University in Terms of Student Background
and Achievement in Factual Knowledge

by

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A COMPARISON OF THE EXPERIMENTAL AND THE EXISTING
ELEMENTARY CLOTHING CONSTRUCTION COURSES AT
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INTRODUCTION

Oregon State University has a long and fine tradition in the field of home economics. In 1890 it became the sixth land-grant college to offer such a program, and since that time it has continued to provide both a liberal and a professional education of high quality. Basic to the continuance of high quality education is the willingness to change to more effectively meet the needs of the times. As Ralph Tyler states in the "Forward" to Home Economics in Higher Education:

The maintenance of high standards in college departments of home economics and the improvement of these departments depend upon continuing evaluation (24, p. v).

This need for continuing evaluation exists not only on the school or department level but, more importantly, on the individual course level as well. After a new course is proposed and adopted, it must at some time be thoroughly evaluated in terms of how well it contributes to the overall quality of education.

In 1965 each department in the School of Home Economics was encouraged to develop an experimental five-hour elementary course that would include more information and challenge the students more than did the existing elementary courses. Since that time, these

experimental courses have undergone a number of revisions. It has been felt by many, however, that a thorough evaluation is needed of each of these courses by their respective departments. The writer, therefore, became interested in contributing to the evaluation of such a course in the Department of Clothing, Textiles, and Related Arts.

Need for the Study

The Council on Curriculum and Academic Policy of Oregon State University and the State Board of Higher Education state that in the State of Oregon an experimental course may be listed as a temporary trial course for two years. After this time, a decision must be made either to discontinue the course or to assign it regular course status, thereby listing it in the regular catalog. The time has come for such a decision concerning Clothing and Textiles 213X--Clothing Construction. The writer feels that the data collected in this study will assist those with whom the responsibility for this decision lies.

Purpose and Objectives

The general purpose of this study was to compare, in terms of student background and achievement in factual knowledge, the experimental (CT 213X) and the existing (CT 210-CT 212) elementary clothing construction courses at Oregon State University.

The following specific objectives were set forth to accomplish the general purpose of the study:

1. To determine the composition (major, specific area of interest, class standing) and the background (the amount of previous sewing instruction and experience) of each course group.
2. To determine the amount of factual knowledge of basic clothing construction possessed by each group at the beginning of each course, as measured by a pretest.
3. To determine the amount of factual knowledge of basic clothing construction gained by each group at the end of the course, as measured by a retest.
4. To determine the opinions and attitudes of each group toward their respective courses.

Hypotheses

The hypotheses were:

1. Students with a specific area of interest in clothing and textiles will enroll in CT 213X.
2. Students having had considerable previous sewing instruction will enroll in CT 213X.
3. The mean score on the pretest for the CT 210 group will not be equal to that of the CT 213X group.
4. The mean score on the retest for the CT 212 group will not be

equal to that of the CT 213X group.

5. The mean score on the retest for the CT 210 group will not be equal to the mean score on the pretest for the CT 212 group.

Definition of Terms

1. "Existing courses" refers to two 3-hour courses presently listed in the regular catalog: Clothing and Textiles 210 and its sequel, Clothing and Textiles 212.

CT 210. Clothing Construction 3 hours

Principles of selection, construction and fitting; management problems.

CT 212. Clothing Construction 3 hours

Principles of pattern alteration and fitting.

Emphasis on organization and creativity in construction techniques and design. Pre-requisite: CT 210, 211.

2. "Experimental course" refers to a 5-hour temporary trial course, Clothing and Textiles 213X--Clothing Construction. Though not listed in the regular catalog, it is officially described by the Office of the Dean of the School of Home Economics as follows:

CT 213X. Clothing Construction 5 hours

Fundamentals of fabric selection, construction

techniques, pattern alteration and fitting.

Emphasis on organization and management, creativity, consumer responsibility.

This course incorporates the principles in CT 210 and CT 212. Core requirement¹ may be met by either CT 210 or CT 213X. CT 212 or CT 213X are required of majors in home economics education and in clothing and textiles.

3. "Elementary clothing construction courses." The writer feels that the experimental course and both terms of the existing courses are to be considered elementary clothing construction courses. This terminology was used to distinguish them from the advanced construction courses, tailoring, flat pattern and draping, and clothing for children.
4. "Achievement" refers to the amount of factual knowledge gained, as measured by the pretest-retest.
5. "Factual knowledge" refers to basic information which it is necessary for students to know and understand before they can advance to more complicated problems.

¹ All students fulfill requirements of one core curriculum for graduation from the School of Home Economics. The core includes courses in home economics, science, social science, and humanities.

6. "Pretest" is an evaluative device used at the beginning of a course to ascertain the extent of factual knowledge of the subject prior to instruction.
7. "Retest" is an evaluative device used at the end of a course to ascertain the extent of factual knowledge of the subject after specific instruction.

Limitations

1. The study was limited to the students enrolled in CT 213X, CT 210 and CT 212 during spring term, 1969.
2. The test was devised to measure factual knowledge on clothing construction terminology, techniques and methods.
3. The use of a practical or performance test to measure skills was not feasible because of the time element involved in its administration.
4. An objective-type paper-and-pencil test was selected rather than an essay test for two reasons; first, to make scoring as impersonal as possible and second, to make scoring as quick and efficient as possible.
5. Lack of time made it impossible to test the validity and reliability of the pretest-retest prior to its administration.

Assumptions

It was assumed that:

1. Students in the CT 212 group received the same instruction in CT 210 as those students enrolled in the CT 210 group.
2. Students in the CT 212 group gained information and experience between the time they completed CT 210 and began CT 212.

REVIEW OF LITERATURE

A Study Concerning the Comparison of Two College Level Elementary Clothing Construction Courses

A 1967 study by Vermilyea (25) at Iowa State University was undertaken to discover if the two elementary clothing construction courses prepared students equally well for the advanced course and, if not, where weaknesses might exist. Her criterion variables consisted of a Score Sheet for Dresses, designed to evaluate the quality of the constructed final garment, and two forms of a Rating Sheet for Evaluating Student Progress. Form I was involved with the consistency of performance while Form II measured the quality of student performance.

Vermilyea used as predictor variables a pretest, used for placement into either of the two beginning courses, and the final course grades of both the elementary courses and subsequent advanced course. In addition, interviews were scheduled with seven textiles and clothing staff teachers to obtain opinions regarding student preparation for the advanced clothing construction course.

She found that there was little relationship between the score a student received on the placement test and her performance in the advanced course as measured by the Rating Sheet for Evaluating Student Progress. Little relationship also existed between scores on

the placement test and garment quality as recorded on the Score Sheet for Dresses. Coefficients of correlation indicated that the student's daily work habits were related to performance on the final product. Both quality and consistency of work habits were associated with garment construction quality.

There was a high correlation between the students' daily performance as measured by the Rating Sheet and the final course grades in the advanced course. However, students in the study group receiving high scores on the final garment did not necessarily receive the highest final course grades in the advanced course. In addition, there was little relationship between how well these students did on the placement test and their final course grade in the advanced course, but a relationship did exist between the final grades in the elementary clothing construction course and the final grades in the advanced course.

Faculty members interviewed felt that both elementary clothing construction courses prepared students equally well for the advanced course. However, approximately half of the interviewees expressed a desire to have some type of basic construction course as a supplement to the existing elementary construction courses.

Studies Concerning the Use of Pretests in Elementary Clothing
Construction Courses at the College Level

The first pretest in clothing construction, developed by Saddler (21) at Iowa State University in 1945, was designed to predict the students' ability to sew and to section them into homogeneous groups. The test devised was composed of two parts: a paper-and-pencil section which measured the student's judgement and information related to clothing construction processes, and a practical section to test sewing ability. To determine the value of previous experience for predicting ability to sew, an experience score was obtained for each student by giving numerical value and weights for each garment made in college, high school, or home, and whether the construction was done under supervision or alone.

The criterion for determining validity was the teacher's placement of the student into one of five groups at the end of a three-week period in the course. The instructor was to compare the abilities and accomplishments of each student with those of former students in making the placement.

The coefficients of correlation obtained between each section of the test and teacher placements were not sufficiently high for either section to be used alone for prediction of ability. Regression equations were developed to determine which test factor or combination of factors would be best for predicting achievement. The results

indicated that the two sections when used together gave better prediction than either section alone, and that the addition of an experience score was of insufficient value to be used for prediction. Saddler indicated the desirability of finding a simpler practical test.

In 1947, Evans (9) made a study on pretesting to determine whether a suitable substitute could be found for the Saddler Practical test. The variables selected for the study were the O'Conner Finger Dexterity Test, the O'Connor Tweezer Test, the Minnesota Paper Form Board Test, the high school average, the American Council on Education Psychological Examination for College Freshmen, and both the paper-and-pencil and practical sections of the Saddler Pre-test. The final examination score, which was primarily a construction problem, was used as the criterion measure for clothing construction achievement.

Evans found that the high school average and the intelligence test scores showed very little relationship to clothing construction as measured by the criterion. Her findings differed from those of Saddler in the relative usefulness of the two sections of the test. Her results indicated that the practical test could be eliminated from the prediction battery without serious loss. When the O'Connor Finger Dexterity Test was combined with the paper-and-pencil test, the correlation was highly significant. She concluded that this could be a possible substitute for the practical section of the prediction test.

Scholtes (22) in 1948 continued the investigation to find the best possible substitute for the practical test developed by Saddler and found the Minnesota Spatial Relations Test (Speed and Error Section) a satisfactory alternate. She also developed a Finger Dexterity Background Questionnaire which added to the effectiveness of the prediction.

The purpose of Patson's (20) thesis in 1952 was threefold: to examine and make necessary revisions in the Saddler paper-and-pencil test, to examine and review the weighting of items on the Finger Dexterity Background Questionnaire, and to find an effective substitute for the Minnesota Spatial Relations Test which had to be administered individually and was expensive both in time and money.

Serving as a basis for revision were an item analysis of the Saddler paper-and-pencil test for 175 girls who had taken the elementary clothing construction course and an analysis of the students' placement in each course section. Items were added to the test which related to new procedures taught in the course.

An item analysis was also made of 318 Finger Dexterity Background Questionnaires and the weighting of the items was adjusted. Since the coefficients of correlation which Patson obtained in her analysis were lower than those obtained by Scholtes, she recommended that the effectiveness of the revisions and additions to the Saddler test and the adjustment of the weighting of items on the questionnaire

be studied further.

Four spatial relations tests were studied which seemed to measure the same or similar aptitudes as the Minnesota Spatial Relations Test. Correlations between the criterion (the final examination score) and the selected variables indicated that the Miller Survey of Object Visualization could be substituted for the Minnesota Spatial Relations Test (Speed and Error Section).

A third study of the Saddler paper-and-pencil test was undertaken by Nieman (18) in 1961. In determining the effectiveness of the revised test, she selected as her criteria the final course grade, the instructor's opinion of the best placement of each student, and the student's opinion of her best placement. She found a positive correlation between the Saddler test and each of the criteria, indicating some degree of validity for classifying students.

Nieman recommended that the test battery, including the Saddler paper-and-pencil test, should continue as a classification device for elementary clothing construction. She felt, however, that the Saddler test could be weighted more highly in the formulas for classifying students in order to provide better prediction.

During these years Purdue University was conducting studies along the same lines. In 1949, Wright (29) made a study to determine the effect of students' previous experience on achievement in clothing construction at the college level. Further knowledge of the

investigation at Purdue University was found in an article published in 1951 (30). Achievement in construction was based on knowledge, skills and attitudes, as measured by an objective pretest-retest, actual construction processes, and use of a questionnaire and an attitude scale. On the basis of information from these instruments, three homogeneous groups were organized to separate those students with similar skills and experiences in sewing.

It was found that students who had a great deal of former experience had significantly greater success in freshmen clothing than did any of the remaining groups. They also indicated a greater interest in the clothing course. From the evidence she obtained, Wright concluded that previous experience in clothing construction is a factor affecting achievement in a university clothing course, but that amount rather than type of previous experience indicated greater interest and achievement on the part of the students.

During 1951 Henkel and Seronsy (14) also contributed to the continuing curriculum study at Purdue University with their findings on the results of sectioning the beginning clothing and textile course to care for varied levels of training. The three devices used for placement were the Home Economics Orientation Test in Clothing and Textiles, the A. C. E. Test scores and the Experience Checklist, constructed by the writer.

Course grades were correlated with the three factors used for

placement. The course grades were significantly related to all factors except the score on the Experience Checklist. Thus they concluded that achievement, as measured by a reliable test, was more basic in predicting course grades than was a record of previous learning experiences. The results of the A. C. E. test were equally strong in predicting course grades. A highly significant improvement in attitude toward the introductory course was found among students who had been divided as compared to non-divisioned students of the previous year.

The first recorded work toward developing a pretest for use in the basic clothing course at Oklahoma State University was done in 1959, by Walsh (26). Test items were based on ten objectives taken from the Oklahoma Homemaking Education Resource Material for Clothing and Grooming, a guide used by teachers in planning the secondary school program.

Students in a graduate seminar assisted Walsh by making suggestions for improving the content and arrangement of test items. The test items were also evaluated by members of the clothing faculty, and revisions and corrections were incorporated into the instrument. Walsh did not administer the pretest, but concluded that the most effective way to insure having a better pretest was to use the instrument, study the results and make improvements.

In 1961, Witt (28) conducted a study in which the Walsh pretest

was revised, a questionnaire-checklist added and a practical test developed to yield a comprehensive battery of evaluative instruments. Both the written and practical tests were designed to evaluate the students' manipulative and judgemental skills pertaining to clothing construction, selection and care.

The pretest was based on the objectives of the course, and each test item was supported by a generalization that a majority of home economists considered basic to the beginning clothing course. Ideas for test items came from common tests, experiences of the writer, reference books, curriculum guides and other materials related to the course, thus increasing the validity of the pretest.

Data were gathered by administering the practical and written tests to freshmen clothing students at Mississippi State College for Women and Oklahoma State University during the school year, 1960-1961. Witt concluded that a need existed for evaluating different types of clothing construction skills in order that students may be placed more satisfactorily in clothing courses. Students who scored high on the written test did not necessarily receive a similar high score on the practical test. She recommended that further studies be conducted to improve the evaluative devices developed in the study.

Gould (11), in 1963, developed a performance test to be used in conjunction with a paper-and-pencil instrument for placement in the basic clothing course at Oklahoma State University. Nine

practical problems were devised, three of which were patterned after those of the Witt study.

The test was given to 77 students enrolled in four sections of the basic clothing course during the spring semester, 1963. Students in the four sections had been grouped according to scores made on a paper-and-pencil test prior to the beginning of the semester. Gould concluded that the scores on the two tests were related to some degree but that a high score on one test did not insure a high score on the other test.

In the same year and at the same institution, Berry (4) examined the revised clothing pretest to determine through use the specific needs for revision. An item analysis and other information yielded the basis for revision of the pretest. The revision included an addition of five practical or recognition type items in an attempt to determine any relationship between student's knowledge of principles and their ability to recognize actual applications.

After the revised pretest was re-administered, Barry recommended that more practical type test items and a variety of evaluative instruments along with the paper-and-pencil test be used to increase its validity.

A study on placement in clothing construction classes at MacDonald Institute in Guelph, Ontario, was conducted by Bray (5) in 1949. The purpose was to find a means of separating the students

so that those with more ability and training could move on to more advanced work during the course. She developed an objective paper-and-pencil test which was administered in 1947 as a pretest and as a retest.

Revisions were made, and the test was administered again in 1948, at the beginning of the school year, for the purpose of grouping students with similar abilities, and at the end of the year for measuring achievements. Bray concluded that the test was a valid device to use in classifying students in beginning clothing classes and that it was more discriminating when used as a pretest than as a retest. Furthermore, Bray stated that better results could be obtained if some other device were used in addition to the paper-and-pencil test.

Davis (8) conducted a study in 1952 to determine the value of the clothing placement tests then in use at West Virginia University. It was assumed that the tests used were valid and that one could obtain some basis for evaluating the instrument as a placement and predictive device by correlating future grades with the placement tests scores.

Data for the study were obtained from clothing placement test scores of 133 freshmen during the period, 1948 to 1951, student profile sheets and scholastic records of students enrolled in home economics. She found several relationships of significance, one of which was the tendency of the placement test score to parallel the percentile

rank of the A. C. E. psychological examination. She also found some, but not great, tendency for the placement test scores to coincide with the course grade. From her findings, she recommended the continued use of the testing program and its expansion to include transfer students.

In 1954, West (27) investigated the influence of high school homemaking on achievement in the beginning clothing course at the University of Colorado. West sought to determine if majors in home economics made higher grades than non-majors in the same course. The study included 711 students enrolled in the beginning course from 1944 to 1953. The following characteristics of the sample which may have influenced achievement in college clothing were identified: over one-half were non-majors; almost one-half had no previous homemaking in high school; and graduates, majors and non-majors had approximately the same amount of high school homemaking, but in each group about 50 percent had none.

West concluded that high school homemaking is a factor in achievement in college clothing courses and that there seemed to be a definite relationship between the amount of high school homemaking and achievement in college clothing. There was also some indication that high school achievement was as important a factor as number of years of high school homemaking on achievement in college clothing. In addition, she found that majors did not make higher grades than

non-majors in college clothing.

At Southern Illinois University in 1956, Collins (7) proposed to formulate a clothing pretest which would cover the subject matter included in the beginning clothing course more adequately than had other instruments used previously. Efforts were made to improve the scoring procedures so that the test could be quickly and easily scored, and deficiencies identified for the purpose of placing students with similar needs in the same section.

The pretest included a written and a practical section. Although Collins did not administer the device, she concluded that it could be used in placing students in sections according to areas of deficiency, aiding teachers in planning course work based on student needs, and indicating to students taking the test the subject matter and skills they were expected to acquire in the beginning clothing course.

In attempting to develop a pretest for use in the colleges and universities in New Mexico in 1959, Hoskins (15) stated that students with high levels of skill often did not know the principles involved when constructing a garment and subsequently could not apply them in related clothing processes. She then formulated test items for a pretest based on broad generalizations and basic principles, believing that ability of a pupil to solve problems, not merely to know specified facts, was more indicative of her skill and past training. She also stated that since pretests were used to reveal strengths and

weaknesses of students before class instruction, they might have definite value in remedial teaching.

The test developed was found to be valid and reliable, and could be used for placement and possible exemption from the beginning clothing course. Hoskins did suggest use of a practical test to accompany the objective pretest to determine manual skill.

The purpose of Gaya's (10) 1960 study at Oklahoma State University was to develop a pretest for securing background information of the clothing construction experiences and abilities of students entering the Home Economics College in Karachi, Pakistan. A questionnaire was developed to accompany the pretest to secure information as to the type of clothing construction experiences the students might have had before entering college. Gaya administered the questionnaire to 11 Pakistani women graduate students for clarification and found that, on the whole, the individuals who checked the questionnaire had had a moderate amount of experience in constructing a variety of garments. Training had been given both in the home as well as the school.

The pretest developed was based on specific objectives formulated by the writer. After studying various types of test situations, the paper-and-pencil objective test was decided upon. Gaya felt that these types of questions made it possible to measure different kinds of knowledge in a short period of time. One of the difficulties

encountered in developing the pretest was the selection and simplification of terms most frequently used in Pakistan. These had to be acceptable to the leaders in the field of clothing and textiles at Oklahoma State University.

In 1961 Semeniuk (23) planned an objective pretest-retest for classification of freshmen in beginning clothing construction at South Dakota State College. In addition, she devised a questionnaire to gain information about the kind and amount of sewing experience students had had and about their attitude toward sewing. Both instruments were administered to 87 students prior to the beginning clothing course and were found to be valid in determining student's past experience.

An item analysis was also completed which indicated a greater number of multiple-choice items were discriminatory than true-false and that the multiple-choice items elicited more thought and application of the decision-making process. Semeniuk recommended that the test items be examined and poorer ones revised in order to increase the discriminatory value. She suggested that a practical test be given in combination with the pretest if the test results were to be used in sectioning students.

In a 1963 study by Hale (12) at Oregon State University, an analysis of the revised placement test battery was undertaken to evaluate its worth in placing students in the accelerated and regular

sections of the elementary clothing construction course, and in determining exemptions from the course. The test battery included a clothing construction placement examination portion, the Miller Survey of Object Visualization and a background information sheet. A group of 427 tests administered to incoming students in the fall of 1960 and 1961 made up the sample for the analysis.

Simple correlations showed that the test battery measured a factor other than that evaluated by data previously available on entering students. While the examination portion was found to be reliable, an item analysis indicated that some weaknesses existed. Scrutiny of the content or curricular validity revealed that the test was inadequate in its existing form as the only device for determining exemptions from the course.

The type of background experience data as measured by the background information sheet did not appear to be significant when correlated with the final grade in the course. This indicated that the sheet could be eliminated from the battery without any adverse effects. However, the test battery was found to be useful and practical in sectioning students, and it was recommended that the use of the test battery be continued after changes were made in the examination portion to improve its reliability and validity.

Arthur's (2) 1964 study at Texas Women's University also dealt with the effectiveness of an existing instrument. In 1963, a pretest

was compiled by the faculty of Texas Women's University for placement of students in sections of the beginning clothing construction course and for possible exemption of the students with high scores. A practical test was designed for home economics education students to indicate their skill and finger dexterity. All beginning students were given the pretest, and those who scored "B" or over on the written part were asked to submit items for the practical examination. Exemptions from the course were based on information received on the practical examination.

Arthur concluded that the pretest reflected to some degree the student's past clothing experience and subsequent performance in the clothing course. She further revealed that students with high academic records in high school scored higher on the written and practical parts of the test and made better collegiate grades in the first clothing construction course than did those students who did not rate academically so high.

Hendrickson (13) revised an existing pretest at the University of Tennessee in 1962. The purpose of the revision was to strengthen the placement program and to revise test items to avoid misinterpretation. The revised pretest covered subject matter contained in the beginning clothing courses, and was given to members of the faculty in the clothing and textiles department for criticism before administering to students. The pretest, plus an experience check

sheet, was given to 24 beginning students. Grades on the former pretest, revised pretest, and ACT scores were also compared. The instrument was then used for sectioning of students.

In 1967, Hendrickson's pretest was again revised by Marshall (17). Since the beginning course in clothing construction had undergone considerable change since the revision, it was necessary to revise the pretest. Marshall also investigated the contributions of the American College Test scores, past experience index as given in the pretest questionnaire, the Nelson-Denny Reading Test scores and object visualization score (Survey of Object Visualization) in evaluating the status of students. A pretest of 118 items was developed for a pilot study which was reviewed by the graduate students, the staff members in the textiles and clothing department, the writer's thesis committee and a group of high school home economics teachers. After revisions, the pretest was given to students at two area universities. Revisions again were made on the basis of the data obtained, and the test containing 100 items was administered to 70 students enrolled in the beginning clothing course at the University of Tennessee. Additional revisions were made on the basis of the findings.

Marshall also developed a questionnaire to determine information which would help the instructors become familiar with the students. Correlation coefficients were calculated to show the relationship between the pretest and the other evaluative instruments. The

author recommended that the pretest and other scores be used in evaluating student potentialities.

The most recent investigation dealing with the development of a pretest was completed in 1968 by Caudill (6) at Ohio State University. She purposed to develop a valid and statistically reliable pretest based on course content and objectives and a questionnaire to determine previous experiences in clothing construction. The pretest would then be used to determine which students would need an extra experience laboratory.

The pretest and questionnaire developed at the University of Tennessee by Marshall was adapted by the author for use at Ohio State University. Items on the Marshall pretest were revised and new items added to meet the basic clothing course content requirements. All items were submitted to the clothing faculty, graduate students in clothing and textiles and the writer's thesis committee for criticism and suggestions.

The items were revised and administered with the questionnaire to 88 students in two elementary clothing courses during winter quarter, 1968. An item analysis was completed, and revisions were again made in the pretest. The questionnaire was also revised to give more pertinent information. The second revision of the test instrument was administered to 49 students in the basic clothing course, spring quarter, 1968. Coefficients of correlation were

calculated and from these, Caudill concluded that the pretest scores were related to the amount of past experiences of the students.

The idea of a pretest for use in determining clothing ability is not new. There are certain basic common problems of each study investigated. All of the studies reviewed, as did this investigation, used a written test as one instrument of evaluation. All considered previous clothing construction experience an important factor in determining abilities and placement. Most of the studies were concerned with predicting performance of the students in clothing courses. The studies were generally concerned with the development or improvement of a written test for placement or exemption of beginning clothing students. In some cases the information obtained by the test was used to organize course content to meet the needs of the students more effectively. The use of a pretest was accepted by these studies as an effective means of determining the students' level of achievement in clothing construction for sectioning, placement or exemption purposes. While the purpose of the pretest-retest developed for this investigation was not for sectioning, placement or exemption, a review of these studies was, nevertheless, felt to be of value.

PROCEDURE

Preliminary Preparation

To become familiar with the procedures and terminology used in basic clothing construction at Oregon State University, the writer arranged to observe classes of CT 213X, CT 210 and CT 212 during winter term, 1969. The observations also enabled the writer to discover the similar aspects of basic clothing construction taught in each course. In addition, the course objectives (see Appendix A) and printed syllabi for each course were examined. From these, a list of commonly taught basic clothing construction processes was drawn up (see Appendix B).

The list was then submitted to each course instructor for approval. Suggestions for improvement were offered, and revisions were made where necessary. The revised list was used by the writer as an outline for constructing the pretest-retest.

It was felt that while the experimental and the existing courses differed somewhat because of course structure, basic principles of clothing construction were taught in each course, and this common element could be effectively compared.

Test items designed to measure factual knowledge were then drawn up and submitted to a panel consisting of members of the clothing faculty and graduate students in clothing and textiles.

Based on the panel's criticism and suggestions for improvement, the pretest-retest was revised where necessary.

The revised pretest-retest contained a total of 75 items--36 multiple choice questions, 30 matching questions and nine true-false questions. To facilitate scoring, a separate answer sheet was designed to accompany the test.

In order to obtain information concerning the composition and background of each course group, a general information questionnaire was devised, designed to be administered with the pretest. To obtain information concerning the opinions and attitudes of each group toward their respective courses, a final questionnaire was developed, to be administered with the retest. To check for clarity, both questionnaires were submitted to the members of the clothing faculty and to the graduate students in clothing and textiles. Based on the panel's criticism, revisions were made where necessary. See Appendix C for test materials and questionnaires.

Administration of the Pretest and General Information Questionnaire

Arrangements were made for the pretest and general information questionnaire to be administered to all laboratory sections of CT 213X, CT 210 and CT 212 during the first week of classes, spring term, 1969. Whenever possible, the first hour of the first laboratory

period was selected, but because of scheduling difficulties, several sections were given the pretest and questionnaire during the last hour of the first laboratory period.

All students were informed of the purpose of the testing and that a retest would be given at the end of the term. It was made clear to each course group that, while the testing would take place during the class period, the results would in no way affect the course grades.

Identical directions were read to each group, and a total time of 45 minutes was allowed for filling out the general information questionnaire and answering the pretest. With a few exceptions, most of the students in each course group finished within the allotted time.

Administration of the Retest and Final Questionnaire

The last laboratory period of the spring term was scheduled for the administration of the retest and the final questionnaire to each course group.

All students were asked to complete the final questionnaire before proceeding with the retest. As no names were required on the questionnaire, it was hoped that each student would be as honest as possible in expressing her opinions and attitudes.

Identical directions were repeated to each group, and a total time of 45 minutes was allowed for filling out the final questionnaire and answering the retest. All students in each course group finished within the allotted time.

Validity and Reliability of the Pretest-Retest

Validity

The validity of a test may be defined as the degree to which the test measures the material which it is designed to measure. The degree of validity of an objective paper-and-pencil test can be determined by two different methods. First, statistical or empirical validity can be determined by correlation of the test score with some other criterion, such as the teacher's marks. However Noll states that:

. . . it is necessary to recognize the limiting factors in such a comparison. These are, first, the reliability of the test and the teacher's marks (criterion) and, second, the validity of the teacher's marks (criterion). If the teacher's marks are perfectly reliable and valid measures of achievement. . . , and the test scores are perfectly reliable, the resulting correlation between marks and test scores will be an accurate measure of the validity of the latter (19, p. 81).

A second type of validity, known as content or curricular validity, can be assumed if the test deals with material and with the objectives of instruction of that particular class. The pretest-retest was

constructed after careful consideration was given to the curricular content of each course. Test items were based on the list of basic clothing construction processes commonly taught in each course. The pretest-retest was submitted to a panel made up of each course instructor and revisions were made where necessary.

Reliability

The second criterion of a good test is its reliability, which refers to the consistency with which a test measures whatever it was intended to measure. Various methods are available for determining reliability, namely the test-retest, equivalent forms and the split half methods. Kuder and Richardson (16), however, devised a shorter method for determining reliability which requires the calculation of only the mean and standard deviation of the test scores. The formula follows:

$$r_t = \frac{n \sigma_t^2 - M(n-M)}{\sigma_t^2 (n-1)}$$

where r_t = the reliability of the test, n = the number of items in the test, σ_t^2 = the standard deviation of the scores on the test and M = the mean of the scores on the test.

Statistical Treatment of the Data

Upon consultation with the statistician, it was decided to use the 3300 CDC computer to obtain a basic statistical analysis and a step-wise linear regression analysis of the experimental data. An unsponsored research grant was obtained from the Oregon State University Computer Center to cover the expense of computer processing.

Calculation of the Students' Achievement

The pretest-retest contained a total of 75 items, each item given a weight of one point. The mean and standard deviation of the pretest and retest scores for each course group were obtained from the computer data. The median and range of the pretest and retest scores were calculated by the writer.

The percentage gain of each student was calculated by the writer using the following formula:

$$\% \text{ gain} = \frac{\text{difference between the pretest and retest score}}{\text{pretest score}} \times 100$$

The mean and standard deviation of the percentage gain for each course group were obtained from the computer data. The range of the percentage gain for each group was calculated by the investigator.

Hypotheses Tests

Two statistical methods were used to test the hypotheses. For the first hypothesis, a contingency table was used to determine association between the specific area in home economics and the choice of course. Hypotheses 2, 3, 4 and 5 were tested using a t-test to determine the significance of difference between two means at the .05 level of significance. All hypotheses tests were conducted by the writer using data from the computer's basic statistical analysis.

Stepwise Linear Regression Analysis

A simple comparison of the mean scores on the retest for each course group using a t-test procedure was not considered a completely valid measure as it did not take into account the previous differences of each group, such as the mean pretest scores, different mean number of semesters of sewing in high school and different mean high school grade point averages. A stepwise linear regression analysis was thought to be of value because it compares adjusted mean scores on the retest. In other words, the mean scores on the retest were adjusted in terms of each group's differences in order to be compared on a more equal basis.

For this study a stepwise linear regression analysis of the data from the total sample was programmed for the computer using the

variables X_1 = high school grade point average, X_2 = number of semesters of clothing construction work in high school, X_3 = mean pretest score, X_4 = CT 210 group versus the CT 213X group, X_5 = CT 212 group versus the CT 213X group, and X_6 = mean retest score.

During the first phase of the analysis, the computer examined the dependent variable, the mean retest score, and chose the independent variable, with the highest intercorrelation. Then a variable was chosen which would most increase the value of R^2 , the square of the correlation between the observed mean retest score (Y) and the predicted mean retest score (Y).

In step 4 of the analysis, variable X_4 was entered. This variable compared the CT 210 group with the CT 213X group. Then, in step 5 of the analysis, variable X_5 was entered. This variable compared the CT 212 group with the CT 213X group.

RESULTS AND DISCUSSION

Description of the Sample

Students enrolled in CT 213X, the experimental clothing construction course, and in CT 210 and CT 212, the existing clothing construction courses, during spring term, 1969 were used as the sample for this study. The total sample numbered 106 students, with 35 in the CT 213X group, 46 in the CT 210 group, and 25 in the CT 212 group.

Not all students enrolled in each course, however, were included in the sample. Those students who had been absent for either the pretest or the retest were eliminated, as no time was available for make-up tests. A section of CT 210 taught by a graduate teaching assistant was also eliminated, thus keeping all sections of CT 210 in the sample taught by one instructor. Finally, a small number of students in the CT 212 group were eliminated because they were transfer students from other colleges and it could not be established that the previous instruction in clothing construction which they received was comparable to CT 210 instruction.

Composition of Each Course Group

One of the objectives of the study was to determine the compositional makeup of each course group. In terms of class standing, the

CT 213X group was made up of 57.1% freshmen, 37.1% sophomores, 5.7% juniors and no seniors (Table 1). The CT 210 group contained 56.5% freshmen, 21.7% sophomores, 15.2% juniors and 6.5% seniors. The CT 212 group numbered 40.0% freshmen, 32.0% sophomores, 24.0% juniors and 4.0% seniors.

The CT 213X group and the CT 210 group contained about the same percentage of freshmen, whereas in the CT 212 group the percentage of freshmen was significantly lower. This is understandable, since CT 212 is taken by students after having had CT 210. The CT 212 group, however, contained more freshmen than sophomores, which is interesting since CT 212 is commonly referred to as "sophomore clothing." This seems to indicate that those students who plan to take the two-course sequence tend to do so in their freshmen year, rather than waiting until their sophomore year to complete it.

The fact that the CT 213X group contained proportionately more freshmen and sophomores than did the CT 210 group, could be because students find it increasingly difficult to schedule a five-hour course as upperclassmen.

Table 1. Distribution of Sample According to Class Standing

Class Standing	CT 213X		CT 210		CT 212	
	No.	%	No.	%	No.	%
Freshman	20	57.1	26	56.5	10	40.0
Sophomore	13	37.1	10	21.7	8	32.0
Junior	2	5.7	7	15.2	6	24.0
Senior	0	0.0	3	6.5	1	4.0
TOTAL	35	100.0	46	100.0	25	100.0

Students at Oregon State University are required to register in a school of the university from the time they are first-term freshmen. Many register in the school in which they wish to major. Ninety-seven and one-tenth percent of the CT 213X group were registered in the School of Home Economics and 2.9% in the School of Business and Technology (Table 2). The CT 210 group indicated that 65.2% were registered in the School of Home Economics, 10.9% in the School of Humanities and Social Science. In the CT 212 group those registered in the School of Home Economics were 92.0% with 4.0% in the School of Business and Technology and 4.0% in the School of Humanities and Social Sciences.

It is interesting to note the difference in the percentage of each

course group registered in the School of Home Economics. Ninety-seven and one-tenth percent of the CT 213X group indicated they were home economics majors, while only 65.2% of the CT 210 group indicated that fact. CT 210 seems to be chosen by students in other major schools who are interested in learning to sew for their own purposes more often than is CT 213X.

It is understandable that mostly home economics majors would enroll in the 5-hour clothing construction course, CT 213X. It is also interesting to note that the CT 212 group, which is a course required only by home economics majors with a specific area of interest in clothing and textiles or home economics education, contained a lesser percentage of those registered in the School of Home Economics than did the CT 213X group.

Table 2. Distribution of Sample According to Major and Specific Area of Interest

Major and Specific Area of Interest	CT 213X		CT 210		CT 212	
	No.	%	No.	%	No.	%
Home Economics	34	97.1	30	65.2	23	92.0
Clothing and Textiles	8	23.5	10	33.3	8	34.7
Child Development and Family Life	0	00.0	2	6.7	1	4.3
Foods and Nutrition	1	2.9	1	3.3	3	13.0
General Home Economics	0	00.0	3	10.0	1	4.3
Home Economics Education	13	38.2	6	20.0	8	34.7
Home Management	1	2.9	0	00.0	0	00.0
Institution Management and Dietetics	1	2.9	3	10.0	0	00.0
Undecided	10	29.4	5	16.7	2	8.6
Education	0	00.0	5	10.9	0	00.0
Business and Technology	1	2.9	3	6.5	1	4.0
Science	0	00.0	3	6.5	0	00.0
Humanities and Social Science	0	00.0	5	10.9	1	4.0
TOTAL	35	100.0	46	100.0	25	100.0

Students registered in the School of Home Economics are not required to declare their area of concentration until the end of their sophomore year. Many students, however, have determined their specific area of interest before that time. Of the 34 home economics majors in the CT 213X group, 23.5% indicated an interest in clothing and textiles, 2.9% in foods and nutrition, 38.2% in home economics education, 2.9% in home management, 2.9% in institution management and dietetics and 29.4% indicated they were undecided in their area of interest.

Of the 30 students in the CT 210 group registered in the School of Home Economics, 33.3% indicated an interest in clothing and textiles, 6.7% in child development and family life, 3.3% in foods and nutrition, 10.0% in general home economics, 20.0% in home economics education, 10.0% in institution management and dietetics and 16.7% were undecided.

The CT 212 group contained 23 home economics majors and of these, 34.7% indicated an interest in clothing and textiles, 4.3% in child development and family life, 13.0% in foods and nutrition, 4.3% in general home economics, 34.7% in home economics education and 8.6% indicated uncertainty as to their specific area of interest.

Background of Each Course Group

One of the objectives of the study was to determine the background of students in each course group in terms of the amount and type of previous sewing instruction. Members of each group were asked to estimate the amount of sewing experience they had had prior to enrollment in their particular course. Forty-eight and six-tenths percent of the CT 213X group stated they had had "much" experience and 51.4% stated "some" experience (Table 3). No students in the CT 213X group indicated "little" or "none." The CT 210 group contained 19.6% with "much" experience, 58.7% with "some" experience, 15.2% with "little" experience and 6.5 % with "none." Of those students in the CT 212 group, 56.0% claimed "much" experience, 40.0% claimed "some" experience and 4.0% claimed "little" experience. No students in the CT 212 group claimed no experience, which is understandable, since CT 210 is a prerequisite for CT 212.

Members of each course group were asked to indicate the type of sewing instruction, if any, they had received outside of the high school classroom. Ninety-seven and one-tenth percent of the CT 213X group had received some type of sewing instruction outside of school (Table 4). Of these 34 students, 29.4% had participated in 4-H Club programs, 8.8% had taken Singer sewing lessons, 76.5% had received help at home, 47.1% had taught themselves, and 8.8%

Table 3. Distribution of Sample by Estimation of Previous Sewing Experience

Estimation of Experience	CT 213X		CT 210		CT 212	
	No.	%	No.	%	No.	%
Much	17	48.6	9	19.6	14	56.0
Some	18	51.4	27	58.7	10	40.0
Little	0	00.0	7	15.2	1	4.0
None	0	00.0	3	6.5	0	00.0
TOTAL	35	100.0	46	100.0	25	100.0

Table 4. Distribution of Sample According to Type of Sewing Instruction Outside of School

Type of Sewing Instruction Outside of School	CT 213X		CT 210		CT 212	
	No.	%	No.	%	No.	%
No instruction	1	2.9	4	8.7	2	8.0
Had instruction	34	97.1	42	91.3	23	92.0
4-H Club	10	29.4	10	23.8	7	30.4
less than 1 year	3	30.0	0	00.0	1	4.3
1 to 2 years	2	20.0	5	50.0	1	4.3
2 to 5 years	2	20.0	4	40	1	4.3
over 5 years	3	30.0	1	10.0	4	17.3
Singer Sewing Lessons	3	8.8	5	11.9	3	13.0
Help at home	26	76.5	24	57.1	13	56.5
Adult Education	0	00.0	1	2.4	1	4.3
Self-taught	16	47.1	30	71.4	16	69.5
Other	3	8.8	4	9.5	0	00.0

indicated other types of instruction, such as the "S-t-r-e-t-c-h and Sew" knit classes.

The CT 210 group contained 91.3% with some kind of instruction in sewing outside of school. Of these 42 students, 23.8% had belonged to 4-H Club, 11.9% had taken Singer sewing lessons, 57.1% had received instruction at home, 2.4% had enrolled in adult education classes, 71.4% were self-taught and 9.5% claimed other types of instruction, such as Girl Scouts, home extension and help from an experienced friend.

Ninety-two percent of the CT 212 group had received some type of sewing instruction outside of school. Of these 23 students 30.4% had belonged to 4-H Club, 13.0% had received Singer sewing lessons, 56.5% had received instruction at home, 4.3% had enrolled in adult education classes and 69.6% had instructed themselves.

Each course group was also asked to indicate the number of semesters of clothing construction work they had received while in high school. Eight and six-tenths percent of the CT 213X group, 30.4% of the CT 210 group and 8.0% of the CT 212 group indicated that they had had no sewing instruction in high school (Table 5). It is interesting to note the difference between the CT 213X group and the CT 210 group in this regard.

Forty-five and six-tenths percent of the CT 213X group, 51.3% of the CT 210 group and 52.0% of the CT 212 group stated that they

had taken from one to three semesters of work in high school. Forty-two and eight-tenths percent of the CT 213X group, 23.9% of the CT 210 group and 40.0% of the CT 212 group claimed from four to six semesters of clothing construction in high school.

Table 5. Distribution of Sample According to Number of Semesters of Clothing Construction Work in High School.

Number of Semesters	CT 213X		CT 210		CT 212	
	No.	%	No.	%	No.	%
0	3	8.6	14	30.4	2	8.0
1	6	17.1	8	17.4	3	12.0
2	6	17.1	7	15.2	6	24.0
3	4	11.4	4	8.7	4	16.0
4	7	20.0	7	15.2	6	24.0
5	2	5.7	1	2.2	1	4.0
6	6	17.1	3	6.5	3	12.0
TOTAL	35	100.0	46	100.0	25	100.0

Validity and Reliability of the Pretest-Retest

The pretest-retest was accepted as having content or curricular validity as the test closely dealt with the material and the objectives of instruction for each course.

Using the Kuder-Richardson formula (21), the reliability

coefficient of the pretest-retest was computed to be .810. This figure was considered most significant since according to Noll (19) this formula nearly always gives an underestimate of true reliability. For more complete details on the calculation of the reliability for the pretest-retest, see Appendix D.

Achievement in Factual Knowledge

Results of the Pretest

The mean score on the pretest for the CT 213X group was 54.63, the median was 55 and the standard deviation was 7.8. The scores had a range of 31 points, from a low of 36 to a high of 67 (Table 6).

The CT 210 group had a mean pretest score of 50.94, a median of 49.5 and a standard deviation of 8.5. From a low of 28 to a high of 67, the scores had a range of 39 points.

A mean score of 61.28 was found in the CT 212 group, a median of 62 and a standard deviation of 5.7. The scores had a range of 28 points, with 42 being the lowest score and 70 the highest.

Table 6. Summary of Test Results for Each Course Group

	PRETEST		RETEST	
	Raw Score	Percentile	Raw Score	Percentile
CT 213X Group				
Mean	54.63	73.3	65.34	86.6
Median	55.0	73.0	64.5	86.0
Standard Deviation	7.8	--	5.1	--
Range	36-67	48-89	52-74	69-99
CT 210 Group				
Mean	50.94	68.0	63.35	84.0
Median	49.5	66.0	63.5	84.5
Standard Deviation	8.5	--	4.9	--
Range	28-67	38-89	50-73	67-97
CT 212 Group				
Mean	61.28	81.7	65.2	86.9
Median	62.0	83.0	66.0	88.0
Standard Deviation	5.7	--	4.6	--
Range	42-70	56-93	54-74	72-99

Results of the Retest

The mean score on the retest for the CT 213X group was 65.34, the median was 64.5 and the standard deviation was 5.1 (Table 6). The scores had a range of 22 points, the highest score being 74 and the lowest 52.

The CT 210 group had a mean score of 63.35, a median of 63.5 and a standard deviation of 4.9. From a low of 50 to a high of 73, the scores had a range of 23.

A mean score of 65.20 was found in the CT 212 group, with a median of 66 and a standard deviation of 4.65. The scores had a range of 20 points, with 54 being the lowest score and 74 the highest.

Percent Gain of Each Course Group

The average amount of difference between the pretest and the retest scores for the CT 213X group was +10.71 points, an average percentage gain of 21.3%. The lowest percentage gained was 4.5% while the highest was 58.1. For a more complete breakdown of the CT 213X group's test scores, see Table 7.

The CT 210 group had an average difference of +12.41 points between the pretest and retest scores and an average percentage gain of 27.7%. The percentage gained ranged from a low of -1.5% to a high of 117.9%. Table 8 gives more detailed information on the CT 210 group's test scores.

Table 7. CT 213X Group Test Results

Student Number*	Pretest Score	Retest Score	Difference	Percentage Gain
311	46	60	+14	30.4
312	45	62	+17	37.8
313	51	61	+10	19.6
314	52	62	+10	19.2
315	36	54	+18	50.0
316	50	67	+17	34.0
317	52	58	+6	11.5
318	65	72	+7	10.8
319	52	61	+9	17.3
3110	52	65	+13	25.0
3111	52	61	+9	17.3
3112	57	63	+6	10.5
3113	60	72	+12	20.0
3114	47	68	+21	44.7
3115	57	67	+10	17.5
3116	66	74	+8	12.1
3117	64	73	+9	14.1
321	51	66	+15	29.4
322	58	70	+12	20.7
323	40	64	+24	60.0
324	64	69	+5	7.8
325	65	72	+7	10.8
326	53	65	+12	22.6
327	52	60	+8	15.4
328	63	67	+4	6.3
329	48	52	+4	8.3
3210	50	68	+18	36.0
3211	61	67	+6	9.8
3212	67	70	+3	4.5
3213	59	68	+9	15.3
3214	61	65	+4	6.6
3215	60	66	+6	10.0
3216	62	68	+6	9.7
3217	51	62	+11	21.6
3218	43	68	+25	58.1
Mean	54.63	65.34	+10.71	21.3
Median	55.0	64.5	--	--
Standard Deviation	7.8	5.1	+5.7	14.6
Range	35-67	52-74	+3 to +25	4.5-58.1

*Code number assigned to each student in the sample by the writer.

Table 8. CT 210 Group Test Results

Student Number	Pretest Score	Retest Score	Difference	Percentage Gain
011	40	59	+19	47.5
012	38	62	+24	63.2
013	49	60	+11	22.5
014	44	55	+11	25.0
015	52	64	+12	23.1
016	58	59	+1	1.7
017	65	65	+0	0.0
018	44	61	+17	38.6
019	49	62	+13	26.5
0110	53	64	+11	20.8
0111	54	60	+6	11.1
0112	57	68	+11	19.3
0113	50	69	+19	38.0
0114	46	61	+15	32.6
0115	48	62	+14	29.2
0116	60	64	+4	6.7
0117	47	70	+23	48.9
021	49	71	+22	44.9
022	32	63	+31	96.9
023	65	73	+8	12.3
024	49	64	+15	30.6
025	50	61	+11	22.0
026	47	60	+13	27.7
027	45	54	+9	20.0
028	58	70	+12	20.7
029	36	58	+22	61.1
0210	59	67	+8	13.6
0211	57	69	+12	21.1
0212	50	55	+5	10.0
0213	48	64	+16	33.3
0214	62	67	+5	8.1
0215	44	64	+20	45.5
031	45	62	+17	37.8
032	46	69	+20	40.8
034	52	69	+17	32.7
035	44	58	+14	31.8
036	57	66	+9	15.8
037	59	68	+9	15.3
038	47	50	+3	6.4
039	60	69	+9	15.0
0310	54	67	+13	24.1
0311	62	63	+1	1.6
0312	67	66	-1	-1.5
0313	57	59	+2	3.5
0314	57	62	+5	8.8
Mean	50.94	63.35	+12.41	27.7
Median	49.5	63.5	--	--
Standard Deviation	8.5	4.9	+7.6	23.3
Range	28-67	50-73	-1-+33	-1.5-117.9

An average increase of +3.92 points between the pretest and the retest was found for the CT 212 group. The average percentage gain was 6.7%, ranging from a low of -8.6% to a high of +28.6%. See Table 9 for more complete information on the test scores of the CT 212 group.

It is not surprising that the CT 212 group had a lower percentage gain, as this group's pretest scores were higher to begin with. It is interesting to note, however, the wide range of percentage gained in the CT 210 group, as evidenced by a standard deviation of 23.3. On the average, though, this group had the highest percentage gain and advanced closer to the CT 213X group in achievement of factual knowledge by the end of the term.

Hypotheses Tests

Hypothesis 1, stating that the students with a specific area of interest in clothing and textiles would enroll in CT 213X, was rejected. Twenty-three and five-tenths percent of the home economics majors in the CT 213X group indicated an interest in clothing and textiles, while 33.3% of the home economics majors in the CT 210 group indicated the same interest (see Table 2). However, a contingency table was used, and it was found that no association could be established between the specific area of interest in home economics and the choice of course. Therefore, the hypothesis was

Table 9. CT 212 Group Test Results

Student Number	Pretest Score	Retest Score	Difference	Percentage Gain
211	59	66	+7	11.9
212	64	68	+4	6.3
213	64	66	+2	3.1
214	61	67	+6	9.8
215	65	67	+2	3.1
216	56	62	+6	10.7
221	64	74	+10	15.6
222	61	67	+6	9.8
223	66	72	+6	9.1
224	63	70	+7	11.1
225	69	68	-1	-1.5
226	64	67	+3	4.7
227	70	64	-6	-8.6
228	67	67	+0	0.0
229	55	62	+7	12.7
2210	61	68	+7	11.5
2211	60	61	+1	1.7
2212	59	71	+12	20.3
2213	58	64	+6	10.3
2214	67	64	-3	-4.5
2215	59	58	-1	-1.7
2216	55	61	+6	10.9
2217	42	54	+12	28.6
2218	63	60	-3	-4.8
2219	60	62	+2	3.3
Mean	61.28	65.20	+3.92	6.9
Median	62.0	66.0	--	--
Standard Deviation	5.7	4.7	+4.7	8.3
Range	42-70	54-74	-6-+12	-8.6-28.6

rejected, as there was too small a sample to detect a trend.

Hypothesis 2, stating that students having had considerable previous sewing instruction would enroll in CT 213X, was accepted. The mean number of semesters of clothing construction work in high school for the CT 213X and CT 210 groups was compared. It was found that those students with a greater number of semesters of high school clothing construction tended to enroll in CT 213X and those with fewer or no semesters tended to enroll in CT 210.

Hypothesis 3, stating that the mean score on the pretest for the CT 210 group would not be equal to that of the CT 213X group, was accepted. The mean score on the pretest for the CT 213X group was significantly greater than the mean score on the pretest for the CT 210 group.

Hypothesis 4, stating that the mean score on the retest for the CT 212 group would not be equal to that of the CT 213X group, was rejected. The CT 212 group and the CT 213X group performed equally well on the retest.

Hypothesis 5, stating that the mean score on the retest for the CT 210 group would not be equal to the mean score on the pretest for the CT212 group, was rejected. This would seem to negate the assumption that students in the CT212 group gained appreciable information and experience between the time they completed CT210 and began CT 212. For the specific t-values of the hypotheses tests, see Appendix E.

Stepwise Linear Regression Analysis

A stepwise linear regression analysis of the data revealed a

significant difference between the CT 210 and CT 213X groups, which implied that the adjusted mean retest score of the CT 213X group was significantly greater than the adjusted mean retest score of the CT 210 group. The estimated difference was 2.4 ± 0.76 points at the 95% confidence interval.

The analysis also revealed no significant difference between the adjusted mean retest score of the CT 212 group and the adjusted mean retest score of the CT 213X group. This would seem to indicate that the members of both groups were equally prepared in basic clothing construction knowledge.

While this analysis agrees with the hypotheses tests, it is considered to be a more valid comparison as it takes into account the differences of each course group.

Opinions and Attitudes of Each Group Toward Their Respective Course

One of the objectives of this study was to determine the opinions and attitudes of members of each group toward their respective courses. Many of the questions on the general information and final questionnaires were designed to obtain this information. A summary of such information is presented in this section.

Ninety-seven and one-tenth percent of the CT 213X group, 78.3% of the CT 210 group and 92% of the CT 212 group considered their

respective course to be of college level or "about right" in difficulty (Table 10). Two and nine-tenths percent of the CT 213X group thought their course to be "too difficult" but none considered it "too easy."

Table 10. Distribution of Sample According to Opinions Concerning Course Difficulty

Degree of Course Difficulty	CT 213X		CT 210		CT 212	
	No.	%	No.	%	No.	%
Too difficult	1	2.9	9	19.6	1	4.0
About right	34	97.1	36	78.3	23	92.0
Too easy	0	0.0	1	2.1	1	4.0
TOTAL	35	100.0	46	100.0	25	100.0

In the CT 210 group, however, 19.6% felt their course to be "too difficult," while only 2.1% thought it "too easy." This is understandable as about the same percentage of the students in this course group had little or no previous experience in clothing construction (see Table 3).

Four percent of the CT 212 group felt their course to be "too difficult," and 4% thought it "too easy."

In answer to the question on how students felt about their achievement, 54.3% of the CT 213X group, 43.5% of the CT 210

group and 40% of the CT 212 group stated that they had "learned a great deal" (Table 11). Forty-two and nine-tenths percent of the CT 213X group, 50% of the CT 210 group and 48% of the CT 212 group thought they had "learned a fair amount." Only 2.9% of the CT 213X group, 6.5% of the CT 210 group and 12% of the CT 212 group indicated they had "learned very little. No students in any course group thought that they had "learned nothing."

Table 11. Distribution of Sample According to Feelings about Achievement

Feelings about achievement	CT 213X		CT 210		CT 212	
	No.	%	No.	%	No.	%
Learned a great deal	19	54.3	20	43.5	10	40.0
Learned a fair amount	15	42.9	23	50.0	12	48.0
Learned very little	1	2.9	3	6.5	3	12.0
Learned nothing	0	0.0	0	0.0	0	0.0
TOTAL	35	100.0	46	100.0	25	100.0

When asked the degree of interest they had in sewing prior to taking a college clothing construction course, 88.5% of the CT 213X group, 69.6% of the CT 210 group and 88% of the CT 212 group

indicated they liked to sew "quite well" (Table 12). Eight and six-tenths percent of the CT 213X group, 23.9% of the CT 210 group and 12% of the CT 212 group stated that they liked to sew "fairly well." Only 2.9% of the CT 213X group and 6.5% of the CT 210 group claimed that they liked sewing "not too well." None of the CT 212 group felt this way, and none of the groups stated that they did not like to sew at all.

At the end of the term the students were asked if their interest in sewing had changed. Twenty-two and nine-tenths percent of the CT 213X group, 13% of the CT 210 group and 28% of the CT 212 group indicated that their interest in sewing had "remained the same" (Table 13). Sixty percent of the CT 213X group, 63.1% of the CT 210 group and 60% of the CT 212 group stated that their interest in sewing had "increased," while 17.1% of the CT 213X group, 23.9% of the CT 210 group and 12% of the CT 212 group claimed that their interest had "decreased." It is possible that the decreased interest found in the CT 210 group may be due to the presence of students with widely varying levels of previous sewing experience.

In conjunction with the students' change of interest in sewing, the writer was interested in determining whether or not the students' plans for taking future clothing construction courses had changed since the beginning of the term. More particularly, the writer was interested in the responses of those students with a specific area

Table 12. Distribution of Sample According to Degree of Interest in Sewing

Degree of interest	CT 213X		CT 210		CT 212	
	No	%	No.	%	No	%
Quite well	31	88.5	32	69.6	22	88.0
Fairly well	3	8.6	11	23.9	3	12.0
Not too well	1	2.9	3	6.5	0	0.0
Not at all	0	0.0	0	0.0	0	0.0
TOTAL	35	100.0	46	100.0	25	100.0

Table 13. Distribution of Sample According to Change of Interest in Sewing

Change in interest	CT 213X		CT 210		CT 212	
	No.	%	No.	%	No.	%
Increased	21	60.0	29	63.1	15	60.0
Decreased	6	17.1	11	23.9	3	12.0
Remained the same	8	22.9	6	13.0	7	28.0
TOTAL	35	100.0	46	100.0	25	100.0

of interest in either clothing and textiles, or home economics education. These students would be most likely to choose as electives advanced clothing construction courses, such as tailoring, flat pattern and draping and clothing for children.

In the CT 213X group, 77.3% stated no change of attitude regarding future clothing courses, while 22.7% indicated they had changed their mind (Table 14). Of the 17 students who indicated no change of attitude, 88.3% still planned further courses and 11.7% still planned not to take them. Of the five students who claimed a change of attitude since the beginning of the term, 80% decided in favor of taking further construction courses, while 20% decided against taking any.

Table 14. Distribution of Sample According to the Change in Attitude Toward Future Clothing Construction Courses

Attitude Toward Taking Future Courses	CT 213X		CT 210		CT 212	
	No.	%	No.	%	No.	%
No change in attitude	17	77.3	11	68.7	14	87.5
Plan future courses	15	88.3	11	100.0	12	85.7
Not plan future courses	2	11.7	0	0.0	2	14.2
Change in attitude	5	22.7	5	31.3	2	12.5
Plan future courses	4	80.0	2	40.0	0	0.0
Not plan future courses	1	20.0	3	60.0	2	100.0
TOTAL	22	100.0	16	100.0	16	100.0

Sixty-eight and seven-tenths percent of the CT 210 group indicated no change of attitude regarding advanced construction courses, while 31.3% claimed a change of attitude. Of those 11 students who stated no change of attitude, all still planned to continue taking clothing construction courses in the future. However, of the five students who indicated they had changed their mind since the beginning of the term, 40% decided in favor of taking more advanced courses, while 60% decided against it.

The CT 212 group contained 87.5% who claimed no change of attitude regarding future clothing courses and 12.5% who did indicate a change. Of those 14 students whose minds were not changed at the end of the term, 85.7% still planned on taking more advanced construction courses, while 14.3% still planned not to take any. Of the two students who stated they had changed their attitude toward further construction courses, both decided against taking any.

The primary reason given for not taking any further clothing construction courses was that students did not enjoy sewing for a class or for a grade. Other reasons given were that "there was too much busy work," "the work was repetitive," "interested in another area of clothing," "no time available," "don't like inflexible methods," and "not returning to school."

Of particular interest to the writer was the students' reasons for choosing either CT 213X or CT 210 as their elementary clothing

construction course. The most common reasons given for taking CT 213X instead of CT 210 were "thought CT 213X was more advanced and moved faster," "wanted a 5-hour course," and "liked the idea of a one term-course." Other reasons stated were "an advisor recommended it," "liked the instructor," "course fit into schedule," "it filled the requirement," "thought it would be a good course for home economics education major," "friends advised it," and "didn't know the difference between CT 213X and CT 210."

The primary reason stated for taking CT 210 instead of CT 213X was that "one could learn more in two terms." Other reasons were "didn't want a five-hour course," "did not know about CT 213X," "thought 213X was more advanced," "advisor recommended it," "course fit into schedule," "thought the two-course sequence would be better for home economics education majors," "thought it would be easier in two terms," and "CT 213X was not offered then."

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The general purpose of this study was to compare, in terms of student background and achievement in factual knowledge, the experimental (CT 213X) and the existing (CT 210-CT 212) elementary clothing construction courses at Oregon State University. While the experimental and existing courses differed somewhat in course structure, basic principles of clothing construction were taught in each course, and it was felt that this common element could be effectively compared.

From observation of the CT 213X, CT 210 and CT 212 courses and from examination of the objectives and printed syllabi for each course, a list of commonly taught basic clothing construction processes was drawn up. The list was used as an outline for constructing an objective paper-and-pencil pretest-retest.

In order to obtain background information as well as various opinions and attitudes held by the students, two questionnaires were developed. These materials (as well as the pretest-retest) were submitted to a panel for criticism and were revised where necessary.

Students enrolled in CT 213X, CT 210 and CT 212 during spring term, 1969, were used as the sample for this study. The total sample

consisted of 106 students, with 35 in the CT 213X group, 46 in the CT 210 group and 25 in the CT 212 group. Not included in the sample were students who had been absent for either the pretest or retest, students in a section of CT 210 taught by a graduate teaching assistant and students in CT 212 who had transferred from other colleges.

The pretest and general information questionnaire were administered to each course group during the first week of classes, spring term, 1969. During the last laboratory period of the term, the retest and final questionnaire were given.

The percentage of freshmen was about equal for both the CT 213X and CT 210 groups. The CT 210 group, however, contained more juniors and seniors than did the CT 213X group. The CT 212 group contained a higher percentage of freshmen than sophomores, which is interesting as it is commonly referred to as "sophomore clothing."

The CT 213X group contained a higher percentage of home economics majors than did the CT 210 group. CT 210 seems to be taken more often than CT 213X by students from other schools of the university.

Over half of the students in each group stated a specific area of interest as being either clothing and textiles or home economics education. In terms of students in these areas, however, no association could be established between specific area of interest and choice

of course. More students from other areas of home economics were found in the CT 210 group, though.

In terms of background, there was a higher percentage of students in the CT 213X group who estimated "much" sewing experience than in the CT 210 group. There were none who estimated "little" or no experience in the CT 213X group while over one-fifth of the CT 210 group indicated this.

The majority of each course group stated that they had received some kind of instruction in sewing outside of high school, with help from home and self-instruction listed as the most common sources.

As to high school instruction, there appeared to be a significant difference in the amount of instruction received by the CT 213X and CT 210 groups. In the CT 210 group, there was a higher percentage of students who had had no clothing construction in high school than in the CT 213X group. There was a higher percentage of students with between four and six semesters of clothing work in the CT 213X group than in the CT 210 group.

A comparison was made of the mean pretest score of the CT 213X group with that of the CT 210 group. It was found that the mean score on the pretest was significantly greater for the CT 213X group.

The mean retest score of the CT 213X group was compared with that of the CT 212 group. It was found that no significant difference existed in the mean retest scores of the two groups.

A comparison was also made of the CT 210 mean retest score and CT 212 mean pretest score. No significant difference could be established.

In terms of percentage gain, the CT 213X group was found to have a lower percentage gain than the CT 210 group. A wide variance in percentage gain was found in the CT 210 group. The CT 212 group had the lowest percentage gain, but this was expected as they had higher pretest scores to begin with.

The majority of students in each course group thought that their particular course was "about right" in difficulty. The CT 210 group, however, contained a higher percentage of students than did the CT 213X group who felt that their course was "too difficult."

There was a higher percentage of students in the CT 213X group than either the CT 210 or CT 212 groups who indicated they had "learned a great deal."

The CT 213X group contained a higher percentage of students than the CT 210 group who stated that they had liked to sew "quite well" before taking a clothing construction course in college. However, almost two-thirds of each group indicated that their interest in sewing had increased after completion of such a course. The CT 210 group contained a higher percentage of students whose interest had decreased than did the CT 213X group.

The students with a specific area of interest in either clothing

and textiles or home economics education were asked to indicate if their attitude towards taking further clothing construction courses had changed since the beginning of the term. The CT 210 group contained a higher percentage of students than the CT 213X group who stated they had changed their minds. Of those students in the CT 210 group, 60% decided not to take further courses, while 80% of those in the CT 213X group who had changed their mind, decided in favor of more courses. The main reason given for not taking further clothing construction courses was that these students did not enjoy sewing for class or for a grade.

When students in the CT 213X group were asked why they had chosen CT 213X instead of CT 210, the main reasons given were that they thought it was a more advanced course, they wanted a five-hour course or they wanted a one-term course. Students in the CT 210 and CT 212 groups gave as their primary reason for choosing CT 210 instead of CT 213X, that they thought one could learn more in two terms.

Conclusions

The following conclusions were drawn on the basis of an analysis of the data in this study:

- 1, CT 210 is taken more often than is CT 213X by students from other schools in the university, upperclassmen and students

who would like to learn to sew for their own personal use.

2. Students who enroll in CT 213X generally have had more previous instruction in sewing and are more knowledgeable in basic clothing construction terminology, techniques and methods than are students who enroll in CT 210.
3. Students who have completed the one-term course, CT 213X, and those who have completed the two-term sequence, CT 210-CT 212, generally have an equal knowledge of basic clothing construction.

Recommendations

Based on the results of this study, the following recommendations are made:

1. It is recommended that CT 213X be given regular course status as a 5-hour elementary clothing construction course, thereby being listed in the catalog as CT 213.
2. It is recommended that further comparisons be made between subsequent groups as revisions are made in each course.
3. It is recommended that a study be conducted to determine if the performance of students in an advanced construction course is related to their elementary clothing construction course background.
4. It is recommended that the audio-tutorial system of instruction

be experimentally adopted for CT 210, in order to more effectively meet the needs of students with widely varying levels of previous experience.

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APPENDIX

APPENDIX A

CT 213X Course Objectives

1. To develop an appreciation of the contribution of clothing to personal satisfaction and creative expression.
2. To develop an appreciation of the relationships between fabrics, findings and clothing design.
3. To develop an understanding of the principles of pattern selection and alteration, clothing construction and fitting.
4. To develop judgement in selecting methods of construction for personal and family needs.
5. To develop judgement in selecting methods of construction in relationship to fabric, design and type of garment.
6. To develop an appreciation of standards of workmanship in manufactured and custom made clothing.
7. To gain an understanding of consumer responsibility in the purchase and care of fabrics and clothing.
8. To develop judgement in the management of time, energy and money.
9. To develop judgement in deciding between making a garment or buying a readymade one.
10. To gain experience in the selection, use and care of sewing equipment.
11. To gain experience in handling cotton and wool fabrics.

CT 210 Course Objectives

1. To develop an appreciation of the contribution of clothing to personal satisfaction and creative expression.
2. To develop an appreciation of the relationships between fabrics, findings and clothing design.
3. To develop an understanding of the principles of pattern selection and alteration, clothing construction and fitting.
4. To develop judgement in selecting methods of construction for personal and family needs.
5. To develop judgement in selecting methods of construction in relationship to fabric, design and type of garment.
6. To develop an appreciation of standards of workmanship in manufactured and custom made clothing.
7. To gain an understanding of consumer responsibility in the purchase and care of fabrics and clothings.
8. To develop judgement in the management of time, energy and money.
9. To develop judgement in deciding between making a garment or buying a readymade one.
10. To gain experience in the selection, use and care of sewing equipment.
11. To gain experience in handling cotton and wool fabrics.

CT 212 Course Objectives

This course builds on the objectives of those begun in CT 210. Specifically the following are emphasized in CT 212.

1. To develop an appreciation for and practice creative expression in clothing design.
2. To develop critical thinking in the application of basic principles to the broad area of clothing construction, selection, pattern alteration, fitting and the construction skills.
3. To gain an appreciation for custom methods and their place in contemporary clothing construction.

APPENDIX B

BASIC CLOTHING CONSTRUCTION PROCESSES

1. Figure measurements
2. Pattern selection
3. Fabric selection
4. Selection of appropriate linings
5. Selection of appropriate interfacings
6. Selection of findings
7. Pattern preparation
8. Pattern fitting
9. Pattern alterations
10. Fabric preparation
11. Pattern layout
 - a. matching plaids
 - b. napped fabrics
 - c. one-way designs
12. Cutting
13. Transferring pattern markings
 - a. dressmakers' carbon
 - b. tailor's tacks
14. Sewing equipment
 - a. sewing machine
 - b. scissors and shears
 - c. needles
 - d. pins
15. Stay-stitching
16. Interfacings
17. Underlinings
18. Hand sewing
 - a. basting stitches
 1. long uneven
 2. short even
 3. slip
 4. catch
 5. running
 6. back
19. Basic seams
 - a. exposed seams
 1. plain seams and finishes
 - a. raw edge
 - b. selvedge
 - c. double stitched

- d. pinked
- e. stitched and pinked
- f. clean finished (edge turned and stitched)
- g. overcast
- h. blanket stitched
- 2. welt seams
 - a. single stitched
 - b. double stitched
- 3. lapped and tucked
- 4. flat fell
- 5. French
- 6. gathering
- b. enclosed seams
 - 1. straight with acute angle
 - 2. concave with right angle
 - 3. convex with piping
- 20. Finishing for edges
 - a. clean finishing
 - b. overedging
 - c. binding
 - 1. bias cutting
 - 2. bias joining
- 21. Stitching darts
- 22. Pressing
- 23. Buttonholes
 - a. machine worked
 - b. piped
- 24. Waistline construction
 - a. waistline seam
 - b. waistband
- 25. Placket closings
 - a. zipper
 - b. buttons
 - 1. placement of buttonholes
 - 2. placement of buttons
- 26. Linings
- 27. Neckline finishes
 - a. facings
 - 1. fitted facings
 - 2. bias binding
 - b. collars
 - 1. preparation
 - 2. application
- 28. Set-in sleeves

29. Hems for garments
 - a. flat hemming
 1. slip stitch
 2. catch stitch
 - b. inside hemming
 1. Tailor's slip stitch
 2. catch stitch
30. Fasteners
 - a. snaps
 - b. hooks and eyes
 - c. buttons
31. Final finishing
 - a. belt loops
 - b. tacks
 - c. final pressing
32. Straight belt with belting

APPENDIX C

STUDENTS:

The following questionnaire and test you are being asked to answer is part of the research I am conducting for my Master's thesis. Your name is asked for but in no way whatsoever will the results of your test affect your grade in this course. I would appreciate, however, your full cooperation by filling out the questionnaire completely and by answering the test questions to the best of your ability.

THANK YOU VERY MUCH

GENERAL INFORMATION

DIRECTIONS: Please fill out the following questionnaire before proceeding with the test.

Name _____

1. What Clothing Construction course are you presently in?
 - CT210
 - CT 212
 - CT 213X

2. What school are you registered in?
 - Home Economics
 - Education
 - Business and Technology
 - Science
 - Humanities
 - Other (please specify) _____

3. If you are majoring in Home Economics, what is your area of interest?
 - Clothing, Textiles and Related Art
 - Child Development and Family Life
 - Foods and Nutrition
 - General Home Economics
 - Home Economics Education
 - Home Management
 - Institution Management and Dietetics
 - undecided

4. What is your class standing as of this term?
 - Freshman
 - Sophomore
 - Junior
 - Senior
 - Graduate

5. In your estimation, how much sewing experience did you have before taking this course?
 - much
 - some
 - little
 - none

6. In high school how many semesters of clothing construction work did you have? (please circle)

1 2 3 4 5 6

7. What sewing instruction have you had outside of school?
 - none
 - 4-H club
 - Singer Sewing classes
 - help at home
 - Adult Education
 - self-taught
 - other (please specify) _____

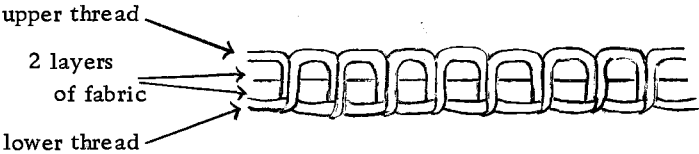
8. If you had sewing instruction in 4-H club, how long did you have it?
- less than 1 year
 - 1 to 2 years
 - 2 to 5 years
 - over 5 years.
9. Why did you take CT 210 CT 213X instead of CT 213X CT 210?
(please be honest!)
10. Do you plan to take any clothing classes after completing this course?
- yes
 - no
 - not sure
- a. If yes, which course(s)?
- CT 212 Clothing Construction
 - Tailoring
 - Draping
 - Children's clothing
- b. If no, please state reason:

-1-

-1-

DIRECTIONS: Please use the accompanying Answer Sheet for all your answers. Select the one response that best answers the question or completes the statement and place its letter on the blank provided for it beside the question number.

1. What size needle would you use to do fine hand finishing on a garment, such as hems, and tacking down facings?
 - A. size 3
 - B. size 5
 - C. size 8
 - D. size 10
2. Reason for your answer:
 - A. The lower the number of the needle, the finer it is.
 - B. The higher the number of the needle, the finer it is.
3. Which of the following cutting tools should be used to cut out a garment?
 - A. scissors
 - B. shears
 - C. pinking shears
 - D. scalloping shears
4. Reason for your answer:
 - A. Pinking shears will finish the seams.
 - B. Shears have longer blades that cut straighter and more accurately.
 - C. Scissors are made to cut any weight fabric.
 - D. Scalloping shears are suitable for any garment.
5. In the following illustration, what is the cause of the machine tension problem?



upper thread

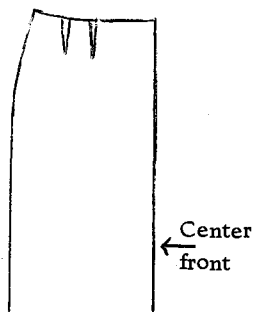
2 layers of fabric

lower thread

 - A. The upper tension is too loose.
 - B. The upper tension is too tight.
 - C. The upper and lower tension are in balance.
 - D. The bobbin tension is too loose.
6. The seam allowance on a pattern is usually:
 - A. 1"
 - B. 7/8"
 - C. 5/8"
 - D. 1/2"

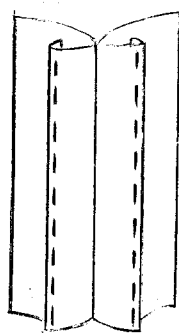
-2-

7. A student needs to alter her skirt front pattern to take care of large thighs. How would she do this?

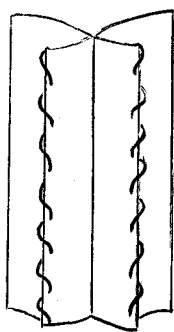


- A. Add width onto side seams.
 B. Add width onto center front.
 C. Slash and spread between dart and side seam.
 D. Slash and spread between two darts.

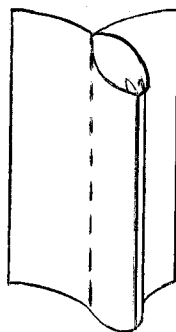
- 8-10. Identify each seam illustrated by means of the letters from the list below:



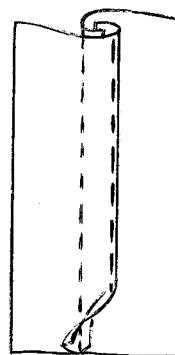
8.



9.



10.



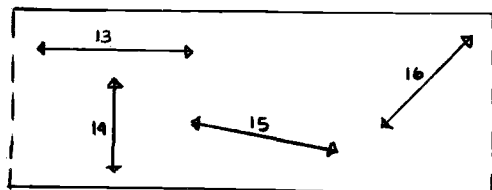
11.

- A. lapped seam
 B. French seam
 C. plain seam, overcast
 D. welt seam
 E. flat felled seam
 F. plain seam, turned and stitched

12. The major purpose of fitting the paper pattern is to:

- A. check length and width of pattern pieces
 B. check length of pattern pieces only.
 C. check width of pattern pieces only.
 D. check precise fitting details.

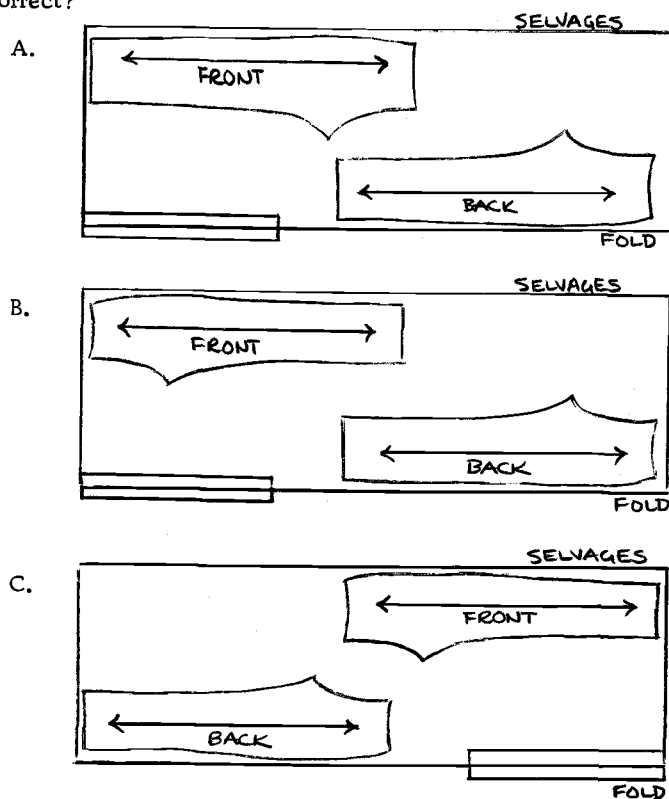
- 13.-16. The diagram below represents a piece of fabric. Identify each grain position from the following choices.



- A. lengthwise grain
 B. crosswise grain
 C. true bias
 D. selvage
 E. garment bias

-3-

17. How would you check to be sure that a pattern is placed on the straight of the goods?
- Measure from the dart to the fold line.
 - Measure from the grainline arrow to the selvage.
 - Measure from the fold to the grainline arrow.
 - Measure from the notches to the selvage.
18. A student is preparing to cut out corduroy slacks. Which of the following pattern layouts is correct?

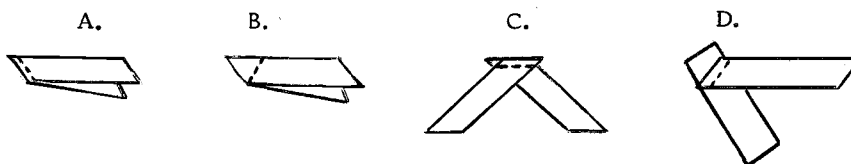


19. If you wished to machine-baste a garment together for fitting, which stitch length would you use?
- 6 st./in.
 - 8 st./in.
 - 10 st./in.
 - 12 st./in.
20. The major purpose of stay-stitching is:
- to serve as a guideline for stitching seams.
 - to keep the edges from raveling.
 - to keep the edges from stretching.
 - to serve as an easeline.
21. Interfacing is used to:
- reinforce buttons and buttonholes
 - give shaping to collars.
 - give body to faced areas.
 - incorporate all three. (A, B, C)

-4-

22. A student is working with a loosely woven wool for an A-line skirt and has decided to underline it. Which of the following statements best justifies her choice?
- Underlining will support the shape of the skirt.
 - Underlining will cover the seams, keeping them from raveling.
 - Underlining will provide the inside of the skirt with a finish.
 - With underlining the seams will be less bulky.
23. Which of the following stitches is best to use when basting for fitting?
- diagonal
 - slip
 - long uneven
 - short even

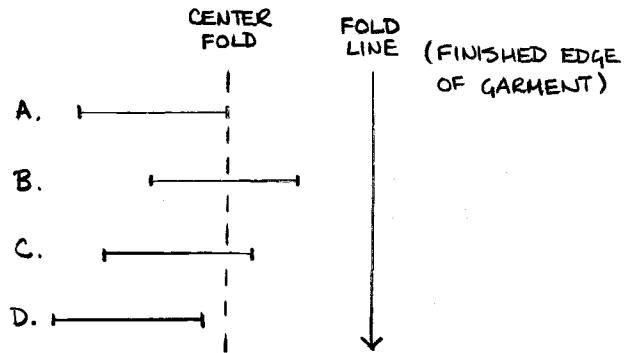
24. Which drawing represents the correct way to join two strips of bias fabric?



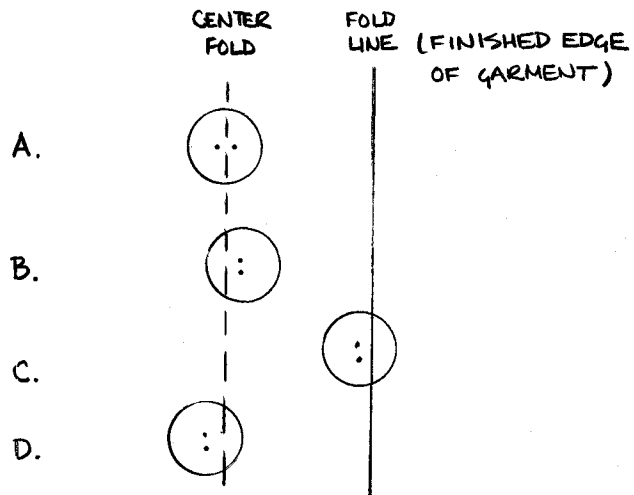
25. Darts should be stitched:
- from the point to the wide end.
 - from the wide end to the point.
 - in either direction.
26. Reason for your answer:
- To obtain a well-tapered point.
 - To stitch from the point to the wide end is stitching with the grain.
 - To stitch from the wide end to the point is stitching with the grain.
 - It makes no difference.
27. For a long-sleeved, tailored, cotton broadcloth blouse, which of the following buttonholes would be best?
- hand worked
 - machine worked
 - pipied
 - corded

-5-

28. Which of the following diagrams represents the correct placement of buttonholes?



29. Which of the following diagrams represents the correct placement of buttons?



30. After stitching a convex curve, such as the outside edge of a rounded collar, which of the following is the correct order of procedure?
- press, trim, understitch, clip, grade.
 - trim, grade, clip, understitch, press.
 - notch, grade, trim, press, understitch.
 - trim, grade, notch, understitch, press.
31. Which of the following statements concerning collars is correct?
- The straighter the neckline curve of the collar, the flatter the roll.
 - The greater the neckline curve of the collar, the higher the roll.
 - The straighter the neckline curve, of the collar, the higher the roll.
 - The roll of a collar is not affected by its neckline curve.

32. When stitching the ease line(s) in a sleeve cap, which is the best method?
- Stitch on the stitching line on entire sleeve cap from underarm seam to opposite underarm seam.
 - Stitch two lines, one 1/4", the other 1/2" from the raw edge between the notches.
 - Stitch on the stitching line between the notches.
 - Stitch three lines, one on the stitching line, and one 1/8" on either side of it.
- 33.-36. Three methods commonly used for finishing hems are described as follows:
- Raw or pinked edge hemmed inside with a catch stitch.
 - Seam tape or lace stitched to cover the raw edge, then slip-stitched in place.
 - Raw edge turned under and then stitched in place by machine.

Which of the above hem finishes is most suitable to use on each of the following garments at their lower edge?

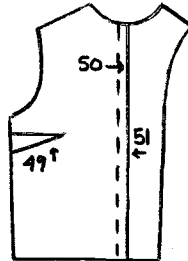
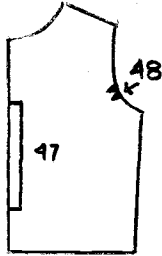
- dress of double-knit fabric
- man-tailored shirt with vents
- cotton shift dress
- wool A-line skirt

37.-67. On the answer sheet place the letter of the response from the right column that best matches the word(s) in the left column.

- | <u>machine part</u> | A | <u>function</u> |
|---------------------|----|---|
| 37. balance wheel | A. | pulls thread off spool and sets the stitch. |
| 38. thread take-up | B. | holds lower thread. |
| 39. presser foot | C. | guides thread along. |
| 40. feed dog | D. | starts and stops the motion of the machine. |
| 41. bobbin case | E. | regulates the tightness of the upper thread. |
| | F. | moves the fabric through the machine. |
| | G. | holds the fabric firmly in place while stitching. |
-
- | <u>type of seam</u> | A. | <u>uses</u> |
|-------------------------------|----|-------------------------|
| 42. plain seam with raw edge | A. | sheer fabrics |
| 43. clean finished plain seam | B. | patch pockets |
| 44. lapped seam | C. | unlined jacket |
| 45. French seam | D. | seam with gathers |
| 46. flat felled | E. | lined garment |
| | F. | heavy fabric that ravel |
| | G. | men's shirt |

-7-

47.-51. Identify each of the following pattern markings using the list below:



- A. dart
- B. tuck
- C. center front
- D. center back
- E. ease line
- F. front foldline
- G. notches

fabric terms

- 52. selvage
- 53. sanforized
- 54. warp
- 55. mercerized
- 56. filling

sewing terms

- 57. under stitching
- 58. grading
- 59. clipping
- 60. notching
- 61. lining
- 62. underlining
- 63. French tack
- 64. shears
- 65. scissors
- 66. findings
- 67. pressing

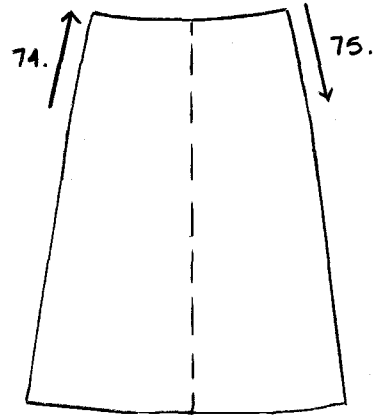
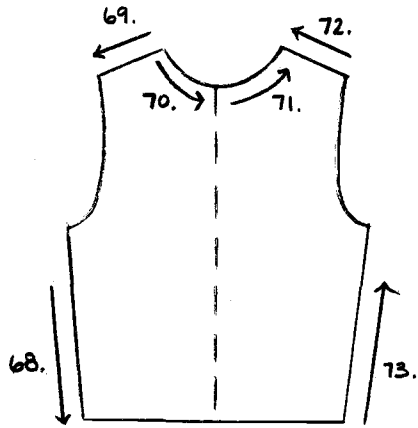
definitions

- A. diagonal line across the grain of the fabric
- B. crosswise yarns in fabric
- C. finished edge of new woven fabric
- D. a fabric woven from colored yarns, looks alike on both sides
- E. lengthwise yarns in fabric
- F. treated to add luster to cotton thread
- G. guaranteed not to shrink more than a stated percentage

definitions

- A. to make a short cut in a seam allowance.
- B. dressmaking supplies such as thread, seam tape, zipper, etc.
- C. trimming seam allowances to different widths to eliminate bulk.
- D. a row of stitching along the edge of a faced seam holding seam allowance to facing.
- E. to make a short V in a seam allowance.
- F. lower and lift operation of the iron.
- G. used to hold two pieces of fabric loosely together.
- H. 6 inches or less in total length.
- I. bearing down and stroking operation of the iron.
- J. an extra layer of fabric placed between the lining and the garment for added warmth.
- K. more than 6 inches in total length
- L. stitched to wrong side of outer garment and handled as one.
- M. seamed together separately, then sewed into garment.

68.-75. Which of the following are correct directions for stay-stitching? On the Answer Sheet, mark each suitable direction X, each unsuitable direction O.



ANSWER SHEET

Page 11. D2. B3. B4. B5. A6. CPage 27. C8. F9. C10. B11. E12. A13. A14. B15. E16. CPage 317. B18. A19. A20. C21. DPage 422. A23. D24. C25. B26. A27. BPage 528. C29. A30. D31. CPage 632. A33. A34. C35. B36. A37. D38. A39. G40. F41. B42. E43. C44. B45. A46. GPage 747. D48. G49. A50. C51. F52. C53. G54. E55. F56. B57. D58. C59. A60. E61. M62. L63. G64. K65. H66. B67. FPage 868. X69. X70. X71. O72. O73. O74. X75. O

Test Results (Do not fill in.)

Number of points 75Number of errors Score

Course number _____
Section _____

FINAL QUESTIONNAIRE

DIRECTIONS: Please fill out the following questionnaire before proceeding with the test.

1. How do you feel about your achievement in this course?
_____ learned a great deal
_____ learned a fair amount
_____ learned very little
_____ learned nothing

2. What do you consider the degree of difficulty of this course?
_____ too difficult
_____ about right
_____ too easy

3. How well do you like to sew?
_____ quite well
_____ fairly well
_____ not too well
_____ not at all

4. Has your interest in clothing construction increased?
_____ yes
_____ no
_____ remained the same

5. Rank the value of your previous sewing instruction. (1-most valuable, 2-next in value, 3-etc.) Rank only those which apply to you. If you have had no previous sewing instruction, check the appropriate blank below.
_____ high school
_____ 4-H club
_____ Adult Education
_____ Singer sewing classes
_____ help at home
_____ self-teaching
_____ I have had no previous sewing instruction.

6. Has this course changed your attitude toward taking further clothing courses?

_____ No, I still plan to take further clothing courses.

_____ No, I still plan not to take further clothing courses.

_____ Yes, I now plan to take further clothing courses.

_____ Yes, I now plan not to take further clothing courses.

7. If you do plan to take further clothing courses, which ones(s)?

_____ CT 212 Clothing Construction

_____ Flat pattern and Draping

_____ Tailoring

_____ Children's Clothing

8. If you do not plan to take further clothing courses, please state your reason:

Thank you very much for helping me with this study.

APPENDIX D

Test for Reliability using Kuder-Richardson formula (21)

$$r_t = \frac{n \sigma_t^2 - (n-M)^2}{\sigma_t^2 (n-1)}$$

$n = 75$
 $\sigma_t = 8.6$
 $M = 54.6$

$$= \frac{75(8.6)^2 - 54.6(75-54.6)}{(8.6)^2(75-1)}$$

$$= \frac{75(73.9) - 54.6(20.4)}{73.9(74)}$$

$$= \frac{5550 - 1114}{5476}$$

$$= \frac{4436}{5476}$$

$$= .810$$

APPENDIX E

Hypothesis	Value of t
Hypothesis 2	2.74 ^{**} *
Hypothesis 3	1.99 [*]
Hypothesis 4	-.57
Hypothesis 5	1.54

**Significant at the .01 level

*Significant at the .05 level