THE DEVELOPMENT AND EVALUATION OF A COMPREHENSIVE SELF-INSTRUCTIONAL MANUAL FOR A COLLEGE INTRODUCTORY CLOTHING CONSTRUCTION COURSE

A DISSERTATION

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CHAPTER I

INTRODUCTION

Importance of Study

This study originated from a desire to identify a method of teaching which would improve a college student's ability to learn clothing construction skills and principles. For several years college clothing construction courses have been the target of a variety of criticisms from administrators, students, and involved faculty. The aim of the criticisms, depending on the interest of the source, has often been directed at altering or eliminating existing college construction courses. Aspects which have been perceived as problems by critics have included:

1. Cost of providing and maintaining large limited use facilities which, once equipped with construction equipment, are usually available for only construction related courses.
2. Cost of faculty needed to supervise multiple laboratory sections since extensive laboratory responsibilities result in a low student load when computing operational costs.
3. Inexperienced new faculty or graduate students are

frequently given the responsibility for introductory courses, which due to their lack of teaching experience and limited backgrounds in clothing and textiles can contribute to students receiving inadequate information.

4. Experienced faculty is involved in continuous repetition of introductory level materials instead of being free to pursue advanced studies and research.
5. The availability of construction as a service course for other disciplines is limited since, due to restrictions on facilities, staff, and laboratory sections, class limits are small.
6. Majors in areas of home economics other than home economics education and extension question whether skills developed in construction of a garment will facilitate upward mobility in future career plans.
7. Merchandising and retailing majors, whose career options deal with constructed ready-to-wear, express a need for coursework involving evaluation of construction and fit, rather than for coursework emphasizing garment construction and skill development.
8. A higher level of workmanship quality is required of students in construction courses than is required of the apparel industry for the American

market place.

9. Techniques do not reflect society's interest in quick, time-saving methods; many college and university faculty are teaching time consuming construction techniques which are obsolete.

10. Construction courses and related laboratory activities often lack the degree of structured progressive learning experiences found in other academic courses.

11. Explanations often lack depth since construction books and other materials describe "how to" without explaining "why" in a conceptual scientific manner which would provide the student with a basis for decision making.

12. Research reports and experimental project publications on college level clothing construction are limited.

An examination of published materials available for use as textbooks or laboratory manuals for an introductory college clothing construction course revealed a shortage of self-instructional materials designed to direct the student's evolution through desired learning experiences. Several textbooks proved to be well organized with worthwhile content, but when the textbooks were used as the primary resource for a class, the instructor was totally responsible for planning and directing the laboratory experience. The available self-directed or self-instructional materials were reviewed to determine whether any one publication included the following items:

1. Syllabus of most basic construction skills and principles taught in introductory college construction courses.
2. Explanatory background information on construction skills and principles.
3. Complete instructions for achieving construction skills, including list of supplies and equipment, either through completion of a garment or units of construction.
4. Method for evaluation of construction processes.
5. Method for self-testing student knowledge.
6. Method of organizing materials for future use and study.

The search revealed that each of the existing published self-instructional programs examined was either deficient in some aspect or the content was presented in a manner which would keep the program from becoming universally acceptable for use in college construction courses.

Several self-instructional programs for teaching a specified unit of construction at the college level have been developed. Most of the studies were concerned with developing an instructional tool that would facilitate teaching a single sewing skill. Programmed approaches to teaching clothing construction have included programs on collars, zipper applications, and hems. Programs on teaching art principles in clothing design, pattern alterations, fabric selection and textiles have also been developed. Previous research, in most instances, has not been concerned with the development of a teaching tool which would contribute to the acquisition of a comprehensive knowledge of basic clothing construction skills at the college level.

Moderately standardized laboratory programs which allow the student to operate independently have been published for laboratory courses in areas of study such as accounting, chemistry, marketing, biology, and psychology. Such a program would be desirable for college clothing construction courses in that directly or indirectly, it would

1) introduce more uniformity in construction courses in colleges and universities, resulting in fewer articulation problems for transferring students;
2) insure a minimum level knowledge base that would be available to all students completing construction courses;
3) meet critics' oppositions to "sewing classes" by providing an orderly academic system for teaching construction principles and skills;

4) free the faculty from time needed to plan and organize construction laboratory experiences;
5) relieve faculty of the total responsibility of directing and guiding individual student progress and development; and
6) allow inexperienced persons with low level construction competencies to supervise or monitor laboratory sections.

In all research reviewed, favorable results were obtained when self-instructional programs were used in elements of clothing construction classes. Programmed instruction allows students the opportunity to progress at individual rates, provides readily available review resources, supplements teacher directed learning experiences, frees the teacher for other activities, helps develop student independence and self-confidence, and provides a method for measuring student progress. A good background in the principles of basic clothing construction can help facilitate the student's future progress in advanced clothing classes, in teaching, and in clothing related progressions. Thus, a comprehensive self-instructional laboratory manual of clothing construction skills and principles could be of benefit to students, faculty, and the clothing and textiles profession.

Purpose

The purpose of this study was to develop and evaluate a comprehensive self-instructional manual for teaching basic construction principles and skills in an introductory college clothing construction course. The specific objectives were:

1. To develop an instructional manual which can be used to ensure that students will master the basic clothing construction skills.
2. To determine the extent to which the use of a self-instructional manual will contribute to an improvement in a student's understanding of clothing construction principles.
3. To determine the degree to which the use of a self-instructional manual will result in a student's acquisition of the skills needed for satisfactory garment construction.
4. To determine significant differences between the achievement levels of students taught by a self-instructional manual and students taught by a conventional method.
5. To develop an evaluation method for student use in evaluating both individually constructed garments and ready-to-wear.

CHAPTER II

REVIEW OF LITERATURE

The focus of the review of literature was on previous research relative to self-instructional clothing construction programs. Related literature that might provide an understanding of the factors involved in this study was also examined. When reviewing previous research involving programmed instruction in clothing construction at the college level, special consideration was given to analyzing the following aspects of each study:

1. Development of the program
2. Development of the evaluative measures
3. Administration of the program and procedure for collecting data
4. Results of the statistical analysis of data
5. Limitations of the study

Self-Instructional Programs

Edith Pankowski (1) conducted one of the earlier studies involving the development of a self-instructional manual for an introductory clothing course at the college level. The purpose of Pankowski's project was to design a manual which would facilitate the learning of art principles in introductory clothing design and construction classes. The objectives of the study were to develop a manual of programmed instruction presenting the art principles and elements of balance, emphasis, proportion, rhythm, line, color, form, and texture with reference to apparel; to develop objective tests covering each unit of the manual along with a comprehensive examination; and to develop guidelines for writing programmed instruction in the area of clothing.

Books and literature in the fields of clothing and art were examined and used as a basis for the content of the manual. The manual content was divided into eight units, each of which could be completed by the student in less than the normal fifty-minute class period. An objective self-test was developed to follow each unit.

Each unit of Pankowski's manual was administered to college students in an introductory course in clothing construction and selection. The unit was then revised to contain approximately a five percent error rate. The number of incorrect student responses was divided by the total number of responses and multiplied by 100 to obtain the rate of error for each unit. No attempt was made to prove that the self-instructional materials were an improved teaching tool, as the prime concern was focused on the development of a self-instructional program.

Pankowski's suggestions for writing programmed instruction which could be utilized in this study included:

1. Set up objectives for the program and identify information the student is expected to retain.
2. Organize the data into units.
3. Require regular responses from students throughout program.
4. Make correct answers to program questions accessible so students may verify responses quickly.
5. Pilot test program on an appropriate group.
6. Do not program a course in its entirety.
7. To insure optimum retention, utilize the information presented in the program in additional projects, classroom discussions, or other methods.

Each frame in Pankowski's program presented one basic fact which was followed by a question designed to test the student's comprehension of the fact. The correct answers were provided at the beginning of each succeeding frame. Student administered unit tests and a comprehensive examination were included in the manual. Correct answers to all tests were provided in the back of the manual.

In a study, completed at Ohio State University, Losey (2) evaluated the use of recorded motion and sound in presenting instructions for sewing techniques. The study was primarily concerned with identifying appropriate content for recorded demonstrations of clothing construction techniques and also with determining the potential value of this technique for the student. The hypotheses formulated for the study were:

1. Students receiving instruction from continuous motion will have less difficulty than students receiving instruction from the printed word.
2. Continuous motion with an audio sound track is more effective than continuous motion without an audio sound track.
3. Students will experience difficulty in mastering the intricate catch stitch for inside hemming.
4. Students will not experience difficulty in mastering the catch stitch for flat hemming.

The sample consisted of forty-five students enrolled in a college costume design course who had not received formal instruction in a clothing construction laboratory course.

Losey duplicated in films the viewpoint of the person performing the skills. The films portrayed only the working hands of the video demonstrator. The catch stitch for flat hemming, the catch stitch for inside hemming, and the slip stitch were the three hemming stitches selected for filming. The printed instructions and line diagrams included in the program were selected from sewing books and leaflets.

The participants were divided into three groups with fifteen in each group. Group A received instruction via video tape without audio. Group B received instruction via video tape with audio. Group C received instruction via printed instructions and line diagrams. Three graduate students in clothing were asked to evaluate the students' hemming samples on the basis of thread tension, neatness of stitches, and general appearance. A value scale of zero to four was utilized in evaluating the hem prototypes, zero being poor, and four being excellent. Standards that described the characteristics of the hem ratings were not provided.

Statistical analysis of the ratings of the judges revealed no significant difference between the three different hemming stitches or the three different instructional methods; however, the mean score of the students using the video tape with audio accompaniment was higher than the mean score of the other two groups. Losey concluded that self-instructional film loops could be used successfully in a clothing construction laboratory, even though the findings failed to support any of the hypotheses which had been formulated. Student comments indicated an acceptance of the continuous motion presentation and a preference for films with sound.

Reed (3) undertook to devise a method for incorporating basic textile information into an introductory college level clothing construction course. The development and implementation of a programmed instructional manual was chosen as the means of attaining this goal. A survey of forty-four college catalogs revealed that textile courses were usually not prerequisites for construction courses. Clothing construction books and reference books that were examined contained inadequate information on fabric structures.

Students enrolled in a basic clothing construction course at Syracuse University were given a pre-test in order to ascertain their knowledge of fabric structures. The pretest also was given to students enrolled in an introductory textiles course. Results of the pretest indicated a lack of textile knowledge by the students enrolled in the introductory clothing construction course and a need for the program was established.

In reviewing the literature, Reed discovered that an extensive amount of research had been performed on programmed instruction in other disciplines, but that only a limited amount had been conducted in home economics. To prepare the linear program, Reed selected content data, organized the data into sections, and wrote frames for each section of the program. The frames were arranged in logical sequence, and each frame included a small portion of the information needed by the student. After each frame a student response was requested and the response was affirmed or negated before the student proceeded to the next frame. A comprehensive examination was given at the end of the unit. The program consisted of simple, direct open-end or fill in the blank questions and covered only very basic textile facts.

Upon completion, the program was tested on a one to one basis, revised, retested on a one to one basis, and revised again. The program was not tested in a classroom situation to determine its effectiveness as a teaching tool. Reed concluded that the manual could be used to provide basic textile information in a clothing construction class.

The purpose of a study executed by Meerdink (4) at Iowa State University was to develop and evaluate a linear programmed lesson on collar construction and attachment to a garment. The self-instructional program was designed for college students in an elementary clothing construction course. The composition process for the project included selecting subject matter, outlining the information, devising illustrative samples, selecting the type program to be used, and writing frames that elicited both cognitive and manipulative responses. Meerdink's program provided background information on collars, gave instructions for constructing and attaching a collar, directed the student to proceed step by step through the construction process, gave evaluation criteria for judging workmanship, and included a self-test over the project.

After revision by Iowa State University textiles and clothing instructors and six undergraduate students, the program was tested utilizing twenty undergraduate students. The evaluation data was obtained from student information sheets, reaction questionnaires, records of the amount of time required by students to complete the project, program responses, and workmanship ratings of the collars. No attempt was made to apply statistical analysis in interpreting the data.

After examining the data, Meerdink made recommendations for improvement of the program. The recommendations which would be applicable to other self-instructional programs were:

1) to develop easily understood introductory directions for how-to-use the program;
2) to eliminate superficial or repetitive materials in order to reduce the time needed for completion of the program;
3) to provide explicit illustrations and directions for construction procedures;
4) to arrange for students to rate construction workmanship at regular intervals throughout the lessons;
5) to supply more than one set of illustrative samples for easily accessible student reference;

6) to allow adequate time for completion of all parts of the program; and

7) to evaluate constructed garments in order to measure retention and transfer of learning.

On the basis of the literature reviewed and data collected, Meerdink formulated the following generalizations concerning the advantages and disadvantages associated with programmed instruction:

Advantages:

1. Student error is reduced.
2. Slow learners tend to perform better.
3. Students progress at their own rate.
4. Students accept responsibility for their learning.
5. Students derive a sense of achievement.
6. Teacher can be more effective and efficient.
7. Teacher is provided with tools of evaluation.
8. A consistent instruction progress is maintained.
9. The subject is separated from the personality of the teacher.

Disadvantages:

1. Lengthy time period is needed to develop programs.
2. Purchased programs are costly.

3. Originality can be suppressed.
4. Boredom and loss of motivation can result.
5. Gaps may develop between gifted and slow students.

Athearn (5) performed a study at the University of Tennessee in order to develop a programmed instruction unit for a beginning college textiles course and to compare this programmed instruction unit with a traditional lecture technique. The steps followed in planning the program were: outlining subject matter, formulating objectives, identifying expected terminal behavior, selecting respondents, formulating achievement tests, and writing the program. The program consisted of a pretest, a mental ability test, an experience questionnaire, a programmed unit, a posttest given upon completion of the program, a recall test administered five weeks after the completion of the program, and a subjective evaluation given both at the beginning and at the end of the study. The program content was limited to the material found in Chapter I of the textbook, Textiles, by Hollen and Saddler. The objectives for the program were:

1. The student should be able to define a fiber, to distinguish between a generic name and a trade name, and to identify four characteristics that make a fiber useful.
2. The student should be able to distinguish between a monofilament and a multifilament. The student should also be able to define what a tow is.

3. The student should be able to give a brief explanation of what the following fiber properties are: abrasion resistance, absorbency, cohesiveness, elastic recovery, elongation, hand, loft, luster, specific gravity and density, stability, stiffness, and strength.

Each statement or question in the program was printed on the front side of a page and the answer to that frame was printed on the back of the same page. The student response mode was a fill in the blank type response.

The program was administered to two volunteer groups as a pilot test, and then revised. The revised program was then administered to two matched groups and data were collected. The average length of time needed to complete the program was fifty-two minutes. A t-test was used to determine significant differences in learning between the two groups. Judgement of achievement within each group was determined by use of mean scores. Results revealed that the experimental group performed better on the posttest and recall test than did the control group. The posttest scores showed that the experimental group had learned more upon completion of the unit than had the control group. The recall scores for the experimental group decreased 1.5 points while the recall scores of the control group decreased only 0.25 points, indicating that the experimental group retained less after a five week interval, yet the overall scores of the experimental group remained higher than those of the control group.

The results of Athearn's study indicated that students in programmed instruction would do as well or better than students in a traditional lecture arrangement and that most students enjoyed the programmed approach and found it instructional. Athearn recommended that further testing be focused on expanding both the content and the audience of the study. Athearn concluded that definite conclusions could not be drawn as only one class was tested.

Medlen (6) conducted an exploratory study designed to compare two methods of teaching fabric selection and to investigate the contribution of aesthetic perception to the application of specific fabric selection principles. A self-instructional method was developed and compared with a conventional method of lecture-demonstration in a beginning college clothing construction course. The hypothesis was that there would be no significant difference in the results of the two methods of teaching. The assumptions on which the study was based were that a basic knowledge of fabric selection is needed for garment construction, that the principles of fabric selection can be taught using a self-instructional device, that students vary in ability and experience, and that aesthetic sensitivity can be learned.

Thirty-two students enrolled in a beginning college construction class were given a pretest, designed to measure knowledge in clothing construction, and a test designed to measure visual perceptivity. Based on pretest scores, the students were divided into two groups, one group to participate in the self-instructional laboratory and one group to receive the conventional lecture-demonstration. The objectives and basic principles to be taught were reviewed and evaluated by a group of graduate students, high school teachers, and college textiles and clothing staff.

The student's knowledge of fabric selection was measured by a pretest and posttest which had been tested for validity. A portion of the pretest and posttest involved coordination of fabric swatches and garment design. A previously proven test, the Barron-Walsh Art Scale (7) was utilized to measure aesthetic perception.

A progressive station-to-station type laboratory situation was instituted for the self-instructional laboratory group. The five stations were designed to accomodate one student as one task was performed. A laboratory assistant was available as the students progressed through the stations. A brief evaluation was requested from the students after the stations were completed. The same materials and information that were used in the self-instructional laboratory were presented to the students enrolled in the lecture-demonstration portion of the study. Both groups were given the Aesthetic Perception and Fabric Selection posttests at the completion of the unit on fabric selection.

A Paired-t test was used to determine the differences between the means of the Aesthetic Perception pretest and Aesthetic Perception posttest, and between the Fabric Selection posttest in each of the two teaching methods. T-test Routine was used to compute the differences between the self-instructional laboratory group and the lecture demonstration group as measured by the various tests. Simple correlations were used to analyze the relationships between the variables.

A significant difference was found to exist between the two methods of teaching as the results indicated that students in the self-instructional group learned more than students in the lecture demonstration group. The measure of aesthetic perception used did not prove to be reliable or valid for this study. Student evaluations and laboratory assistants' evaluations indicated a preference for the self-instructional laboratory plan.

Courtney (8) performed a study at Pennsylvania State University to evaluate the effectiveness of two methods of teaching the application of a zipper crossing a seam. The methods were tested in a college basic clothing construction course. The hypotheses were that a self-instructional programmed method would be more effective than the conventional method and that there would be no difference in the time involved in actual zipper application by both methods.

Courtney reviewed literature relative to learning processes and then applied this to the learning processes involved in clothing construction classes. The observation was made that the evaluation of a student's progress in construction courses is usually based on the construction of some type of garment and responses to questions on a paper and pencil test. The student is expected to be able to transfer the knowledge of construction principles learned in class to new garment constructions completed outside of class.

The steps that were followed in designing the project included a study of the principles involved in preparing self-instructional programs, a review of self-instructional programs in home economics, an analysis of the steps involved in the welt application of a zipper, and conferences with instructors of elementary clothing construction. The decision was made to have the students who participated in the study use a basic style pattern in a half-scale size dress with a six inch zipper applied in the left seam. The program was presented in a loose-leaf notebook with rings at the top so the pages could be flipped.

A score sheet was used to measure the quality of workmanship in the zipper application. The student's retention of knowledge was measured by an objective test. Neither the scoring sheet nor the objective test was pretested. A student information sheet was utilized to determine the previous clothing construction levels of the students who participated in the study.

The two methods of teaching the zipper construction process were presented to two groups in a college introductory clothing construction course. The students were given an envelope of supplies needed for the project. The programmed instruction for zipper application crossing a seam was completed by one group, while a demonstration of the same materials was given to the second group. After the demonstration the second group was asked to complete the zipper application. The program was then revised and the testing process was repeated.

Three judges rated the quality of the workmanship of the zipper application using the score sheet designed by Courtney, and an average score was computed for each participant. Results of statistical tests revealed no significant difference in the time spent in each of the two teaching methods. The results as interpreted by Courtney seemed to indicate differences in favor of programmed instruction. Courtney suggested that self-instructional programs should be administered at various educational and sewing experience levels to determine where programmed instruction can make the best contribution in the area of clothing construction.

In a study at Kent State University, Green (9) developed a programmed lesson covering the construction of a bound buttonhole. Results of the programmed lesson on bound buttonholes were compared with the results of a lesson on bound buttonholes taught by conventional techniques. The study was conducted in beginning clothing construction courses at three universities. A total of seventy-two students participated, thirty-seven in the experimental group, thirty-five in the control group.

At the beginning of the experiment, Green assumed that the participants had acquired some previous sewing experience, that the experimental group and the control group would both receive the same information, that the program was a fair representation of programmed instruction, that the sample size was adequate, and that pretest and posttest scores and scores on construction of the bound buttonholes would be sufficient indicators of achievement. A linear program covering the principles of construction of a one-piece tucked strip buttonhole was written. A lecture-demonstration lesson covering the same principles of bound buttonhole construction was developed. The linear program consisted of sixty-one frames and twenty diagrams. The student wrote answers to the questions following each frame on a separate answer sheet and then checked the accuracy of each written response against the answer in the program. Constructed samples of steps in the buttonhole construction were available to both the control and experimental group for examination during the experiment.

A short answer pretest and posttest were utilized in the evaluation of the program. In addition, the bound buttonhole constructed by each student was scored by a panel of four judges. A three hour class period was used for the administration of the experiment. The pretest was given at the beginning of the class. The total experimental group received introductory instructions and was told to complete the programmed lesson. Upon completion of the programmed lesson, the group was divided into two subgroups. The first subgroup was given the posttest and then asked to construct a bound buttonhole using the programmed lesson. The second subgroup constructed a bound buttonhole using the program, and then completed the posttest.

After conducting the pretest, Green presented a lecture-demonstration to the control group. At the end of the lecture-demonstration, the control group was divided into two subgroups. The first control subgroup received the posttest before constructing a bound buttonhole. The second control subgroup constructed the bound buttonhole before taking the posttest. The pretest, posttest, and buttonhole evaluations for all four groups were scored.

Previous experience with bound buttonholes, pretest scores, posttest scores, and buttonhole evaluation scores were measures that were statistically analyzed. Results indicated that no significant differences existed between the group taught by conventional techniques and the group taught by programmed instruction. There was no significant difference between those taking the posttest before making a bound buttonhole and those taking the posttest after making the buttonhole. Also, there was no significant difference in scores on the finished bound buttonholes between the group taught by the programmed lesson and the group taught by conventional techniques. Previous experience with bound buttonholes did not result in higher scores on the posttest. The difference between pretest and posttest scores showed that both groups had experienced an increase in learning.

Green found that preparing for the program required a longer period of time than preparing for the lecture, but the program required less time to present than did the lecture-demonstration. Students who used the program asked fewer questions and needed less supervision. The results of this study did not indicate that one treatment was better than the other treatment. Green's recommendations for further study were:

1. Keep a time record for each student from start of treatment to conclusion.
2. Develop an opinionaire to help determine student's reaction to the program.
3. Test an additional group which would receive both

lecture and program.

4. Revise present program to include more frames to further clarify material.
5. Test the effectiveness of the program in different situations such as outside the classroom, supplemental to the text, as introductory material, or as review material.
6. Retest the same students after a lapse of time to see if retention of material is significantly different between groups.
7. Give only a posttest to one group and let other group construct a buttonhole as well as take the posttest. Then retest both groups after a lapse of time to determine if buttonhole construction affects the retention of concepts.
8. Have subjects construct three bound buttonholes and choose the best one for evaluation. This would involve more time,but reduce mistakes made because of small misunderstandings or small errors that can happen to the best of seamstresses.

Hresko (10) evaluated the effectiveness of a self-instructional program method of teaching pattern alteration in a college level basic clothing construction course. An effort was made to determine if previous experiences in clothing construction contributed to a student's success with the program. Before writing the program, Hresko examined books on pattern alternations, literature pertaining to the development and writing of a program, and other programs in clothing construction. The content outline and the behavioral objectives, to be used as a guide in writing the program, were developed. The decision was made to divide the topic into two sections, Part A contained the principles of pattern alterations, and Part B involved the recognition of a problem and selecting the appropriate alteration.

Part B incorporated a supplementary handout on pattern alterations, directions for assembling and fitting the tissue pattern, and a tape and slide presentation. Slides were made showing muslin garments with alteration problems and suggested alterations for the problems. Several slides were prepared to be used along with the handout giving directions for assembling and fitting the tissue pattern. A checklist for use in checking the fit of a pattern was included. The slide and tape presentation included lessons on how to lengthen and shorten, how to narrow and widen by altering the outer edges, and how to narrow and widen by altering within the pattern. An objective test based on information in the program, handouts, tapes, and slides was developed. The same testing device was used as both a pretest and as a posttest.

A linear program, which is easier for the beginning programmer to write and lends itself to the teaching of a skill for transfer, was selected. Part A was written and presented to a clothing specialist and a programming specialist for criticism. After the suggested corrections were made, fifteen students participated in a pilot study designed to test the program. After the first pilot study, Hresko made several revisions in the organization and content before the program was presented to a second pilot group of forty students. An examination of student responses identified parts of the program that needed further revision.

The participants in the final portion of the study were enrolled in a college basic clothing construction course. An established set of tests designed to determine student's previous experience levels was administered along with the pretest on pattern alterations. The students were asked to complete Part A before proceeding to Part B. After completing Part B and a full size pattern alteration, the students received the evaluation measure to determine retention of information.

The results indicated that previous clothing construction experience did not significantly affect the amount of time needed to complete the program or on the posttest scores. The percent of improvement varied inversely with the experience level. The scores of students of low experience improved the most and students of high experience improved the least. Ninety percent of the students scored eighty percent or higher on the posttest. There was a significant relationship between the posttest score and the final grade in the course.

Hresko concluded that the achievement rate of students who completed the program indicated that the students would be adequately prepared for more advanced levels of study in this area. The program was considered to be successful for the following reasons:

1. The instructor was able to give the students more individual attention.
2. The students were able to ask more detailed questions.
3. The students needed less assistance from the teacher.
4. The students were able to apply the information in a practical manner on the full-size pattern alterations.
5. Each student was allowed to progress at her own rate.
6. The use of the program resulted in an increase of knowledge for the students.

At Oklahoma State University, Shimonek (11) developed and evaluated a self-paced learning unit, Getting Started: Cutting Your Garment. The unit was tested in a basic clothing construction class of forty-nine students. The effectiveness of the unit was determined by measuring the gain in student achievement from a pretest to a posttest and soliciting student attitude responses toward the self-paced learning unit. One of the assumptions of the study was "Students are capable of learning independently with little or no assistance from an instructor."

The material in Shimonek's learning unit was limited to four areas: preparation of fabrics for cutting, pattern layout techniques, cutting special fabrics, and transferring pattern markings. The supplies needed for completion of the unit were packaged and given to the students. The pretest was administered during the first laboratory session of the course. The students were then given the learning packets and told to complete them within the next ten days. The material presented in the unit was not included in the class lecture, but questions concerning the packet were answered in class. When the packets were returned, the students were given a posttest and were asked to complete a student reaction sheet. An average of three hours and eighteen minutes was required by the students to complete the project.

A comparison of the students' pretest scores with their posttest scores revealed that the students' posttest mean scores were significantly higher than the pretest mean scores. Thirty-five percent of the students expressed a preference for the lecture method of instruction, while sixty-three percent expressed a preference for the self-paced learning packages. The reasons students gave for liking the self-paced learning packages included:

1. Can move at your own pace
2. Notes are accurate
3. Repetition possible, when needed
4. Able to complete at own convenience
5. Helpful samples and illustrations

6. Learn and retain more

The student's reactions against self-paced learning were expressed in terms of:

1. Too much time required

2. Not as easy to ask questions

3. Too easy to put off completing assignments

Sixty-five percent of the students indicated that they preferred self-directed learning to be only a part of the course, twenty percent thought the entire course could be self-paced learning packages, and twelve percent thought self-paced packages should not be included in the course.

Shimonek suggested repeating this study with a larger sample and measuring the retention of learning after a sufficient lapse of time. The suggestion was made that transfer of student learning from self-paced packages to classroom situations be measured and that multi-sensory materials be used in the learning activities. The results of the item analysis of the pretest and posttest indicated the questions should be redesigned before further use. No provision was provided for comparison of a control group and an experimental group.

Epps (12) developed a pretest that could be used in planning individualized instruction for students in a basic clothing construction course at Winthrop College. The measurement devices that were examined in the study included written pretest scores, practical performance pretest scores, previous sewing experience levels, written posttest scores, and final course grades. Fifty-four students enrolled in a college basic clothing construction course participated in the study.

The written pretest contained ten multiple choice test items on each of the following topics:

> 1) patterns, fitting, pattern alteration; 2) selection of patterns and fabric; 3) fabric preparation, layout, cutting, marking; 4) construction fundamentals; 5) sewing maching, pressing; 6) handling fabrics; 7) linings, underlinings, interfacings; 8) facings, collars, necklines, sleeves; 9) buttonholes, buttons, zippers, plackets; and 10) hems, finishing details, bands, belts.

The practical performance test involved cutting, marking and constructing a portion of a half-size bodice. The student was given a sketch of the finished appearance of the garment with appropriate patterns and directed to construct the bodice portion of the illustrated garment. No instructions were given for completing any aspect of the construction process. A checklist was utilized to evaluate the construction workmanship.

The project was administered in its entirety in the fall, revised and readministered in the spring. The results indicated that the written pretest and the practical pretest measured a similar variable. Both practical pretest scores and levels of experience were significantly related to scores on the written pretest and written pretest scores were significantly related to final course grades. The conclusions were that a single comprehensive measuring device could be used to identify a student's weaknesses and strengths as they related to particular areas of clothing construction. This information could then be employed to determine which portions of a self-instructional laboratory experience the student should complete and which portions the student should omit.

Souligny (13) designed a study to evaluate a written Clothing Exemption Test at Oklahoma State University. The project was undertaken because the clothing instructors questioned the validity of the test as a tool for determining the level at which a student's instruction should begin. The Clothing Exemption Test in use at the time of Souligny's study had been revised several times. Each test item had been analyzed and the content validity of the test items had been established by comparison with instruction objectives, comparison with faculty opinion, and comparison with resource materials.

The Clothing Exemption Test was presented to 267 students who completed it as an exemption test, and to 131 students who took the test as a final examination in the beginning clothing construction course. An item analysis revealed that the test was an acceptable measuring device and could be used to measure the abilities and experiences of students in clothing construction. Although the study at Oklahoma State University was not designed for the purpose of relating students' levels of achievement to placement in self-instructional programs, it did support the theory that a pretest could be used to indicate appropriate levels of experiences for students in clothing construction.

Content of Introductory Clothing Construction Courses

The topics encompassed in Epp's (12) pretest provided an indication of the subject matter areas in which a student is expected to develop competencies in an introductory college clothing construction course. In a study designed to compare two clothing construction courses, Miller (14) outlined the content of introductory construction courses at Oregon State University:

Figure Measurements
Pattern Selection
Selection of Appropriate Linings
Selection of Appropriate Interfacings
Selection of Findings
Pattern Preparation
Pattern Fitting
Pattern Alterations
Fabric Preparation
Pattern Layout
Cutting
Transferring Pattern Markings
Sewing Equipment
Stay-stitching
Interfacings
Underlinings
Hand Sewing
Basic Seams
Finishing of Edges

Fabric Selection
Stitching Darts
Pressing
Buttonholes
Waistline Construction
Placket Closings
Linings
Neckline Finishes
Set-in Sleeves
Hems for Garments
Fasteners
Final Finishing
Straight Belt with Belting

An articulation meeting of Home Economics Units in Colleges and Universities in Missouri in 1977 identified the following as basic skills which should be included in beginning clothing construction courses:

1. Acquaintance with and use of laboratory equipment
2. Measuring to obtain correct pattern size and figure type
3. Pattern and fabric selection to include design concepts
4. Pattern adjustments
5. Establishing correct techniques for fabric preparation, pattern placement, pinning, cutting and marking
6. Interpreting instruction sheets and following directions in assembling garments in logical order
    a. Stay-stitching
    b. Darts

c. Pressing during construction

d. Gathering and/or easing

e. Seams and seam finishes

f. Fitting during construction

g. Zippers

h. Handling circumferences

1) Sleeves

2) Waistbands, waistline seams

3) Necklines

4) Collar

i. Hems

7. Other fundamental skills as fashion dictates

a. Buttonholes

b. Cuffs

c. Plackets

d. Lining and underlining

e. Bindings, facings, and interfacings

f. Bias strips

g. Separate belts

h. Special trims

Literature Summary

The review of reported studies revealed that some portion or all of the following steps were a part of the development and testing of self-instructional programs in clothing construction: 1) selecting content, 2) organizing data into appropriate units, 3) composing individual units, 4) determining desired student responses and the method to be used to invoke responses, 5) developing evaluation processes for construction, 6) developing measurement devices, 7) devising illustrative samples, 8) writing directions for using the program, and 9) composing an opinionaire to determine students' responses to the program.

A search of research projects in issues of the Home Economics Research Journals (16) from September, 1972 to June, 1978 revealed one doctoral study on clothing construction. Naomi Reich (17) developed a self-instructional program for college clothing construction at The Pennsylvania State University in 1971. A half-scale sized basic fitted garment was constructed by the students during the program. The publication, Essentials of Clothing Construction, which incorportated both Reich's study and Hresko's (10) study is included in appendix A in the Selected Clothing Construction References.

Most previous self-instructional programs were short term projects which, with the inclusion of the pretest and posttest, were designed to be completed in one to eight regular fifty minute class periods. In most instances the evaluation and development of the programs involved only one developmental stage and one testing stage. In addition, the programs have been limited to the development of one unit or a portion of the total content of a clothing construction course. The present study was designed to develop a more comprehensive self-instructional introductory clothing construction program than were those completed in previous studies.

Scope and Limitations of the Study

The self-instructional manual did not include all topics taught in introductory clothing construction courses, but focused on basic construction principles and skills. Use was limited to post-secondary institutions, and no attempt was made to simplify the vocabulary for lower levels. The manual was designed to be a laboratory manual and did not include the information which would be included in clothing construction lectures.

The manual did not follow the form of traditional self-instructional linear programs, but rather represented a modified approach to programmed instruction. The manual involved the student in a complete lesson before requesting a response. The students were not given the correct answers to the questions in the self-tests. The students were asked to reread the information in the Introduction to verify the accuracy of their responses.

The materials in the manual were presented in a systematic, telescoping fashion, progressing from elementary to complex. The construction experiences utilized the unit construction concept in which separate components are completed before being joined to form a whole garment. The manual directed students to construct samples of each basic unit of construction; the individual instructor had the option of requiring additional garment construction for the class when deemed necessary. Evaluation devices were provided at the completion of each unit.

The primary purpose of the manual was for utilization as a student introductory clothing construction laboratory manual in conjunction with textbooks, lectures, demonstrations, audio visuals, and student clothing construction projects. The manual would be adaptable to other uses such as an out-of-class assignment, a portion of a comprehensive examination for placement in advanced classes, and for teaching basic construction skills and evaluation processes to students who are not required to construct whole garments. The manual would be useful in fashion merchandising programs where the primary stress is not on total garment construction.

This study was undertaken to develop and evaluate the effectiveness of a self-instructional programmed clothing construction manual for college students of varying levels of experience and ability. The sample population used to test the effectiveness of the manual was not randomly selected. In all instances the subjects in this study were preassembled groups that were as similar as availability permitted within the limitations of college and university scheduling. In all cases, the students knew they were part of an experiment. Due to stated limitations, generalizations cannot be drawn beyond the sample.

Definition of Terms

Self-instructional - A method of instruction in which the students are expected to teach themselves using the provided materials. The student proceeds at their individual pace.

Manual - A handbook which has the subject matter arranged in a series of sequential steps, ranging from simple to complex.

Program - A method of instruction in which the compiled data is subdivided into small units of information. At the end of each unit, a student response is required. The information may be presented in printed form, as visual aids, or by other means.

Pretest - A test given at the beginning of a unit of study. The test is designed to determine the student's inherent knowledge of the subject matter.

Posttest - A test given at the completion of a unit of study to determine the amount of knowledge the student retained from the unit of study.

Self-Test - A test which is administered by the students. The students are usually responsible for checking the accuracy of their responses.

Frame - A single item or fact which is exposed to the student at one time in a linear self-instructional program.

CHAPTER III

PROCEDURE

Development and Testing of Manual

This study was primarily concerned with developing a self-instructional clothing construction manual and determining the effectiveness of the manual when used in college clothing construction courses. The developmental part of the study involved graduate students from Texas and Missouri and the testing portion involved undergraduate students from Missouri and Iowa. The manual was developed by the researcher and tested and evaluated by the students. The procedure for developing and testing the manual involved several stages:

1. Selection of Manual Content
2. Development of Manual Format
3. Development of Individual Lessons
4. Development of Patterns
5. Pilot Testing of Lessons
6. Revision of Materials
7. Classroom Testing of Lessons
8. Additional Revision of Materials
9. Testing and Evaluation by Professionals

10. Additional Revision of Materials
11. Final Classroom Testing of Manual
12. Collection and Analysis of Data

Selection of Manual Content

The first step in developing the self-instructional manual for a college introductory clothing construction course was to identify selected learning experiences which would be included in the manual. This was accomplished by examining textbooks, by discussions with college clothing teachers, by examining college catalogs and curricula, and by means of a questionnaire designed to solicit information from knowledgeable persons. Knowledgeable persons were selected on the basis that they had an in-depth involvement in clothing and textiles in the form of extended graduate work or professional employment. The assumption was that persons extensively involved in clothing and textiles activities would be qualified to make judgements about the appropriate content for an introductory clothing construction course.

The developmental questionnaire respondents were requested to select, from a prepared list, the basic construction skills and learning experiences they felt should be included in an introductory clothing construction course. The basic construction skills and learning experiences included in the questionnaire reflected the content of the clothing construction textbooks currently being used by colleges and universities. Space was allowed for the respondents to explain special conditions or situations which might affect their answers. A copy of the complete questionnaire appears in appendix B.

A total of sixty-eight clothing and textile graduate students, persons professionally involved in clothing and textiles, and home economists completed the questionnaire. These individuals were from Texas, Kansas, Oklahoma, Iowa, Arkansas, and Missouri. Based on the results of the questionnaire and the review of related materials, the following specific topics were selected as appropriate content for an introductory college construction course laboratory manual:

Staystitching	Hems
Seams	Interfacing
Seam and Edge Finishes	Tucks
Darts	Hand Stitches
Facings	Zippers
Set-in Sleeves	Bands
Convertible Collars	Gathers
Buttons and Buttonholes	Fasteners
Lapped Plackets	Pockets
Transferring Pattern Markings	Bias Bindings
Removing Bulk	Pressing

Development of Manual Format

After examining the methods of presentation used in other self-instructional programs and laboratory manuals, the format of the manual was developed. A format which closely resembled the formats used by commercial pattern companies and textbooks was chosen in the belief that students could more easily transfer and apply the knowledge gained from classroom experiences to applied project experiences. The manual was organized in the following manner:

1. Instructions to the student
2. List of supplies and equipment needed to complete the manual
3. Lessons covering specific skills and construction principles
4. Patterns needed to complete the lessons

A decision was made to have the manual printed on paper punched for a three-ring loose leaf binder and to have each participating student provide a three-ring loose leaf binder to hold the manual contents and completed samples. This system would be convenient for the student while using the manual and would also provide opportunity in the future for the student to use the printed materials and samples in other coursework or in professional endeavors. This arrangement would allow additional reference materials to be added easily and materials or samples to be removed or altered as they became dated or obsolete.

Development of Individual Lessons

In order to determine the content of the lessons, each topic, such as staystitching, was researched in commercial sewing books, college textbooks, and other sources such as visual aids prepared by commercial companies. An outline of information which would be applicable to college clothing construction courses was made for each topic, and the content of the lessons was developed from the outlines. A plan was developed for the organization of the individual lessons in the manual. Each lesson included these items:

1. Objectives for the lesson
2. Introductory information about the topic of the lesson
3. List of supplies needed to complete the activity in the lesson
4. Directions for completing the construction activity of the lesson
5. Evaluative criteria to use in appraising the quality of the completed unit of construction
6. Self-Test to review and test information learned by completing the lesson

The Introduction of each lesson contained the basic principles related to the construction activity along with other explanatory information about the lesson topic. The Activity segment included instructions for the clothing construction required in the lesson, and was presented in a manner that would allow students to proceed in a logical step-by-step order from layout and cutting to finishing a sample of a specified unit of construction. Graphic illustrations were prepared to clarify the instructions presented in each Activity.

Precise and exact criteria were developed to be used in evaluating the constructed samples. The Evaluation of each lesson was designed to require the student to carefully examine each segment of the construction process. After evaluation of the finished sample, the students completed a Self-Test. The open-end questions included in the Self-Test emphasized the facts presented in the Introductions, and after completion of the Self-Tests, the students were referred to the Introductions to check the accuracy of their answers.

The students were to complete the lessons in the order presented since the learning experiences of each lesson were based on the student having acquired the skills, knowledge, and vocabulary of the previous lessons. The students were to read each written word carefully and retain previously presented information. All information needed to understand the construction principles as well as to master the skills was included in the manual.

Development of Patterns

Patterns designated for use in each lesson were drafted. The patterns were engineered to be large enough to handle easily in construction, yet small enough for the finished sample to be mounted on a three-ring notebook, 8½ inches by 11 inches sized page. In order to facilitate transfer of knowledge, the manual patterns were prepared with 5/8 inch seam allowances and identical markings as used by commercial pattern companies. Each student was requested to supply a large brown envelope with the idea that used patterns would be stored in the envelope after each lesson was completed.

Pilot Testing and Revision of Lessons

A first draft of the manual was completed. After several weeks the author assumed the role of a student and proceeded through the manual, page by page, following the instructions, constructing the samples, and completing all portions of each lesson. This resulted in a number of changes, particularly in the patterns. The main problem encountered was in working with the small size patterns. Keeping the patterns small enough to fit in the manual, yet large enough to manipulate easily, was a challenging task. The work through procedure resulted in the construction of a complete set of samples which could be used with the manual in the future testing processes. A suggestion that teachers planning to use the manual should work through all lessons in the same manner was added to the Instructor's Guide which was being developed along with the manual.

The next step was to arrange for students to use and respond to this first draft of the manual. As the lessons were completed they were used by four undergraduate students who were enrolled for credit in an independent study course in Clothing Construction. Each week the students would independently complete one lesson and then meet with the instructor to discuss problems encountered in understanding the materials, following the instructions, or deciphering the illustrations in the lessons. Illustrative samples were kept in the department and made available for student examination during regular school hours. Since the students did not own sewing machines, most of the construction was done in the clothing laboratory when classes were not in session.

The participating students had very limited, or no previous experience in clothing construction and were not majoring in home economics. The students were enlisted to participate because they expressed an interest in attending construction classes, but were unable to enroll in the established course due to scheduling conflicts. The group's lack of experience and contact with previous construction was considered advantageous since the students were learning the material for the first time and depended totally on the manual for the information needed to complete each lesson.

After completing the lessons in the manual, the students were asked to complete one additional independent construction project. The acquired skills and information were applied to altering ready-to-wear and to constructing a garment from a commercial pattern. The evaluative criteria in the manual was used to to appraise the construction features of the projects. Since "fit and alterations" had not been included in the assignment, these components were not evaluated, though guidance had been provided in this area to meet specific student needs. As a result of this pilot project, the four students learned the basic principles and skills involved in clothing construction, and their responses were used to indicate changes which were needed in the developing lessons, particularly in the illustrations, vocabulary, and activity instruction sequence.

Classroom Testing of Lessons

The next phase involved using the lessons in a three semester hour college introductory clothing construction course. The course consisted of two hours of lecture and four hours of laboratory each week. The twenty students enrolled in the course, with the exception of three, were home economics education majors enrolled in the course at the freshman or sophomore level.

The class was evenly divided into two groups of ten for each laboratory section. The assignment of the students to the laboratory sections was a result of placement by the registrar based on the students' scheduling needs, but the students' grade point averages and pretest scores indicated the two groups were rather homogenious. The laboratory sections were merged for the lecture hours.

The course requirements included completion of a pretest, hereafter referred to as T_1; constructing three garments, a shirt with convertible collar and set-in sleeves, a pair of pants, and a one-piece garment which was fitted at the waist; and completing a posttest, hereafter referred to as T_2. The students were required to complete all construction projects in the assigned laboratory hours, and the garments were completed in the following sequential order: 1) shirt, 2) pants, and 3) fitted garment. At the beginning of the course, the lecture hours were utilized to provide lessons on selection of pattern, fabric, and sewing equipment; fitting and alterations; fabric preparation and pattern layout; cutting and marking; and using the sewing machine.

Since this material was not covered in the manual, comments and suggestions related to these topics were included in the Instructor's Guide.

The students in one laboratory section, hereafter referred to as A-Experimental, were asked to complete each lesson in the manual before attempting the parallel type of construction on a garment. For example, the lesson on stay-stitching was to be completed and checked by the instructor before the student did staystitching on a garment project. This allowed the instructor to point out any discrepancies in students' actual construction processes or in their understanding of the evaluation criteria, thereby preventing unnecessary mistakes in the garment. The students in the other laboratory section, hereafter referred to as A-Control, did not use the manual lessons or prepare samples of any type before attempting the construction of a garment. For example, in the laboratory period following the lecture on staystitching, the students in A-Control staystitched one of the garment projects.

The increase in knowledge of the students enrolled in both sections was measured using the same set of test questions as both the pretest (T_1) at the beginning of the semester and as the posttest (T_2) at the end of the semester. The questions on the pretest and posttest tested only the material covered in the manual. The pretest-posttest questions were subjected to item analysis, using the Kuder Richardson 20 formula and the items with significant values were retained, others were discarded. The pretest and post-test scores, as well as the garment grades, of A-Control and A-Experimental were analyzed to determine the difference, if any, that exposure to the self-instructional manual caused in the students' learning clothing construction principles and skills.

Throughout the semester, the students in A-Experimental were asked to react to the lessons and express their view-points in the following directions:

1. Negative comments on aspects of the lessons which presented problems
2. Positive comments about parts of the lessons which were helpful
3. Suggestions for changes in the lessons

All comments were recorded and at the end of the semester the lessons were revised to reflect the collective comments of the students. Other alterations were made as a result of the instructor's observations during the semester. The revisions included adding explanations to clarify facts given in the introductions, enlarging the size of illustrations, expanding directions to include more details, making evaluative criteria more specific and exact, and adding new evaluative criteria.

<u>Testing and Evaluation by Professionals</u>

At this point, the lessons were evaluated by persons from a variety of backgrounds with professional experience in clothing construction. The professionals were enrolled in a three semester hour course offered through the University of Missouri, Columbia, College of Home Economics and the University of Missouri, Extension Division, in Kansas City during the Summer 1978 session. The course entitled, Experimental Clothing Construction, was approved by the University of Missouri, Columbia, Graduate School for three hours graduate credit. The purposes of the course were:

1) to promote an interest in clothing construction research
2) to provide an opportunity for participation in clothing construction research;
3) to analyze construction techniques in terms of quality, energy, and time; and
4) to evaluate the prepared self-instructional lessons in terms of quality, energy, time, and clarity.

The professional involvement of the course participants ranged from two years to eighteen years with ten years representing the median and 10.7 years being the mean. Table 1 discloses the educational level of the participants.

TABLE 1

EDUCATIONAL LEVEL OF KANSAS CITY PARTICIPANTS

Number of Participants	Degree	Additional Graduate Hours
2	Bachelors	4 - 8
5	Bachelors	10 - 15
3	Bachelors	16 - 24
1	Bachelors	51
3	Masters	10 - 12
1	Masters	52

The participants were currently teaching clothing construction courses in either junior high, high school, adult education or college programs in the Kansas City area.

For each class meeting, the participants were asked to complete one lesson from the manual; they were directed to read carefully and follow instructions exactly. In addition, the class members were asked to experiment with a minimum of two other techniques for completing the same unit of construction as was presented in the manual lesson. All constructed units were evaluated using the evaluative criteria provided in the manual lessons. In an effort to provide a more accurate analysis, the class members were requested to record observations as they worked concerning:

1) length of time spent on each technique;
2) ease of manipulation;
3) appropriate use of techniques relative to end use of articles, care of articles, and level of experience;
4) influence of varying materials and equipment; and
5) quality of construction as related to both aesthetics and durability.

When searching for experimental techniques, the participants were encouraged to examine a variety of clothing construction references. A list of reference books used in the Kansas City course, as well as those consulted before the original drafting of the manual, is found in appendix A.

As the class members proceeded through the manual lessons, they were asked to evaluate each lesson giving consideration to the following features of the lessons:

Format

Clarity of Illustration

Vocabulary

Sentence Structure

Sequence of Learning Experiences within a Lesson

Sequence of Lessons

Patterns

Suggestions were also solicited for each lesson regarding other information to be included, materials and techniques to be eliminated, and materials or techniques which needed alterations or clarification. The participants' comments related to the appraisal of the manual were recorded to serve as a guide in the next revision process. The amount of time required to complete each lesson was monitored during the course. The results appear in table 2.

TABLE 2

AVERAGE TIME REQUIRED TO COMPLETE LESSONS

Lesson Topic	Time Required
Staystitching	33 minutes
Darts	36 minutes
Seams	1 hour 46 minutes
Seam Finishes	1 hour 36 minutes
Facings	1 hour 50 minutes
Set-in Sleeves	3 hours
Convertible Collar	3 hours
Fasteners	3 hours 27 minutes
Band	1 hour 41 minutes

At regular intervals, each participant presented to the remainder of the class the techniques she/he had tried for the assigned unit and the comparative evaluations and observations related to those techniques. After all members had presented their individual variations, the entire group participated in an in-depth penetrating evaluation and analysis of all presented techniques, comparing the experimental techniques with the procedures specified in the manual. Results of the group analysis were recorded for future revisions of the manual.

Revision of the Materials

After the course was finished and all evaluative reports were in, modifications were made in the manual lessons which reflected the suggestions of the professionals. These changes included improving several illustrations, altering vocabulary, rearranging the sequence of lessons, adding additional evaluative criteria, and redrafting patterns. The manual lessons were then retyped in preparation for the next testing session.

Final Classroom Testing of Manual

After the revisions were completed, arrangements were made for the manual to be used in an introductory clothing construction course at a university in Missouri during the Spring Session, 1980. The course was a two semester hour credit course which met for two hours, three times a week, making a total of six hours of student contact time each week. This course will hereafter be referred to as B-Experimental. The first portion of each B-Experimental class meeting was used for lecture and demonstration by the instructor, the remainder was devoted to laboratory experiences.

The B-Experimental course requirements included completion of the manual lessons in the scheduled laboratory hours, construction of one garment outside the scheduled class time, and completion of both a pretest and posttest. The same pretest and posttest were given to the B-Experimental students as were given earlier to the A-Control and A-Experimental students. In addition, the professors at the university had developed an examination which had been administered and subjected to item analysis in previous semesters as both a pretest and as a posttest. This test, hereafter referred to as B-Pretest or B-Posttest, was given to the B-Experimental class.

B-Pretest and B-Posttest scores were available from two classes of the same construction course which had been taught the previous semester without benefit of the manual. These classes will hereafter be referred to as B-Control I and B-Control II. B-Control II and B-Experimental were taught by the same instructor, while B-Control I was taught by a different instructor. Since the B-Control classes did not use the manual, a comparison of the B-Control pretest and posttest scores with the B-Experimental pretest and posttest scores was used to measure the effect on the manual on the students' knowledge retention as expressed in test scores.

Since the purpose of this project was to perfect the manual lessons as well as to test the validity of the manual as a learning tool, regular visits were made to the experimental class. This allowed both the students and the instructor to question the information and procedures in the manual lessons as well as provided for observation of the students' progress through the manual in a class situation. Throughout the semester observations, student comments, and instructor comments were recorded to be used for later revisions of the manual lessons. Each student's completed samples, evaluations, and self-tests were personally checked to identify weaknesses in the lessons. At the end of the semester the students were given a questionnaire, Construction Program Evaluation, which in addition to requesting positive and negative responses, also invited the students to comment on the level of satisfaction experienced as a result of using the programmed clothing construction manual. In an effort to yield more valid responses, student signatures were not requested on the questionnaires. A copy of the Construction Program Evaluation appears in appendix C. Samples of manual lessons which were used by B-Experimental can be found in appendix D.

Statistical Treatment of Data

The data which were analyzed statistically were collected from students in two college level introductory clothing construction courses, during the classroom testing of the manual.

First Classroom Testing

The first classroom testing involved two groups, A-Control and A-Experimental. Pretest scores (T_1), posttest scores (T_2), the difference between the pretest and posttest scores (posttest score minus pretest score, or $T_2 - T_1$) was considered to be a measure of the amount of knowledge gained in the course. The validity of the T_1 and T_2 questions was established with the Kuder Richardson 20 formula.

The means, ranges, and standard deviations of the pretest scores, posttest scores, posttest minus pretest scores, and garment grades were compared to provide descriptive information about A-Control and A-Experimental. Frequency distributions of the pretest and posttest scores were charted to graphically illustrate the differences in the distribution of scores for the two groups. A T-Test was applied to the means of the pretest, posttest, and posttest minus pretest scores to determine whether a significant difference existed between the means of the two groups' test scores. A linear correlation was utilized to determine the degree of association, if any, between pretest and posttest scores and between posttest minus pretest scores and garment grades.

Second Classroom Testing

The second classroom testing involved three separate classes, B-Control I, B-Control II, and B-Experimental. Pretest scores (B-Pretest), posttest scores (B-Posttest), the difference between the pretest and posttest scores (posttest score minus pretest score, or B-Post-Pretest), and student college cumulative grade point averages were statistically analyzed. The validity of the pretest and posttest questions was established with the Kuder Richardson formula.

The means, ranges, and standard deviations of the pretest scores, posttest scores, and posttest minus pretest scores were compared to provide descriptive information about B-Control I, B-Control II, and B-Experimental. Frequency distributions of the posttest scores were charted to graphically illustrate the differences in the distributions of scores for B-Control II and B-Experimental, the two groups taught by the same instructor. A T-Test was used to determine significant differences in the means of the pretest, posttest, and posttest minus pretest scores of B-Control II and B-Experimental. A linear correlation was utilized to determine the degree of association between pretest and posttest acores, between grade point average and pretest scores, between grade point average and posttest scores, and between grade point average and posttest minus pretest scores.

CHAPTER IV

RESULTS AND DISCUSSION

This study was designed to develop and evaluate a self-instructional manual in introductory clothing construction. Data were collected from undergraduate students, graduate students, persons professionally employed in clothing and textiles, and professional home economists. Data were collected throughout the study for two reasons:

1) to obtain information to be used in the development and revision of the manual, and
2) to gather data to be used in the evaluation of the effectiveness of the manual.

First Classroom Testing of Lessons

The data collected during the first classroom testing from A-Control and A-Experimental included pretest scores (T_1), posttest scores (T_2), posttest minus pretest scores ($T_1 - T_2$), and garment scores. Table 3 shows range, mean, and standard deviation of the test and garment scores from the first testing situation.

TABLE 3

RANGE, MEAN, AND STANDARD DEVIATION
OF A-CONTROL AND A-EXPERIMENTAL SCORES

Item	Range	Mean	Standard Deviation
A-Control Pretest	50 - 76	63.5	9.253
A-Experimental Pretest	50 - 76	66.4	6.857
A-Control Posttest	62 - 84	74.2	7.421
A-Experimental Posttest	62 - 95	82.6	9.606
A-Control Post minus Pretest	4 - 22	10.7	5.1001
A-Experimental Post minus Pretest	5 - 24	16.2	6.088
A-Control Garment	63 - 94	81.5	9.582
A-Experimental Garment	74 - 96	86.4	8.181

An examination of the data in table 3 revealed that the range of pretest scores of the two groups was identical, and that the difference between the pretest mean scores was 2.9 points. The similarity of scores indicated that the two groups began the experiment at a similar level of knowledge, even though they were not randomly selected. A difference in the achievement level of the two groups during the experimental period was evidenced by the differences in the ranges and mean scores of the posttests. The upper limit of the posttest range for A-Experimental was ninety-five, compared to an upper limit of eighty-four for A-Control. The posttest mean of the experimental group was 8.4 points higher than the posttest mean score of the control group. The mean of the difference between the pretest and posttest scores, posttest minus pretest, was 5.5 points higher for the experimental group than for the control group. The mean of the garment grades was 4.9 points higher for the experimental group than for the control group. The uniformily higher ranges and mean scores of the posttest, posttest minus pretest, and garment scores indicated that the knowledge of the experimental group was improved by use of the manual.

Figure 1 graphically illustrates the difference between the pretest and posttest scores of the two groups. A-Experimental registered higher posttest scores and a larger majority of posttest scores over eighty points than did A-Control. Also, the increase in magnitude of the scores, from pretest to posttest, of A-Experimental was greater than that of A-Control.

Correlations between garment scores and posttest minus pretest scores of the two groups were similar. The correlation coefficient for A-Control was 0.67 and A-Experimental was 0.55. The similarity of these results may be attri-

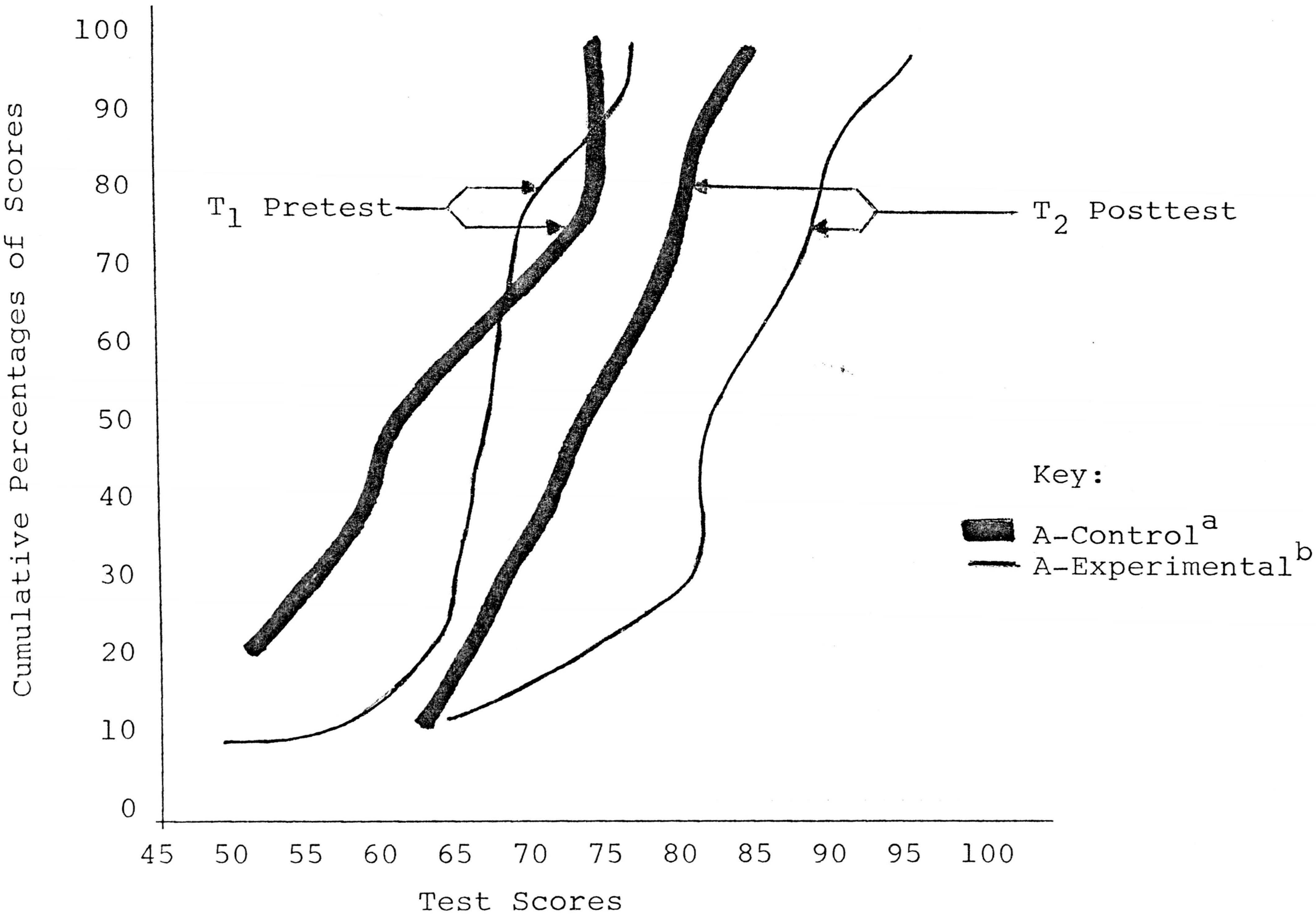

Figure 1 - Cumulative Percentages of Pretest and Posttest Scores of A-Control and A-Experimental

[a]Number = 10
[b]Number = 10

buted to the constant guidance of the instructor in both laboratory sections. Observations by the instructor disclosed that the students in A-Experimental had less difficulty interpreting pattern directions, spent less time ripping-out and redoing stitching during garment construction, and asked fewer questions.

Differences between the posttest and posttest minus pretest mean scores are shown in table 4.

TABLE 4

DIFFERENCES BETWEEN MEAN SCORES OF POSTTEST AND POST-PRETEST FOR A-CONTROL AND A-EXPERIMENTAL GROUPS

Test	Group	Mean	t-Value
Posttest	A-Control	74.2	0.2254
	A-Experimental	82.6	
Post-Pretest	A-Control	10.7	0.7923
	A-Experimental	16.2	

The t-values revealed no significant differences at the 0.05 level of probability between the mean scores of the posttest and posttest minus pretest for A-Control and A-Experimental, however, differences in the mean scores of the two groups attest to the positive contributory effect of the manual.

<u>Final Classroom Testing of Lessons</u>

The data collected during the final classroom testing of the manual included pretest scores (B-Pretest), posttest scores (B-Posttest), posttest minus pretest scores (Post - Pretest) and cumulative grade point averages. Table 5 shows the ranges, means, and standard deviations of the test scores for B-Control I, B-Control II, and B-Experimental. An examination of the pretest mean scores and ranges in table 5 disclosed that the level of knowledge of the three groups at the beginning of the experiment was relatively similar even though the groups had not been randomly selected. Among the groups, there was a 2.24 points difference in the mean scores of the pretest. At the end of the course, the ranges and mean scores of the B-Experimental posttest were higher than the ranges and mean scores of the control groups.

The most noticeable difference among the groups was in the ranges and mean scores of the posttest minus pretest. The highest posttest minus pretest scores of the Experimental group were higher than those of the control groups. The mean of the posttest minus pretest score of the Experimental group was higher than that of either control group. Even though the margin of difference was not great, the experimental group consistently scored higher than the control groups on all measures, other than the pretest. This indicated that the manual was effective as an improved teaching device.

TABLE 5

RANGE, MEAN, AND STANDARD DEVIATION
OF B-CONTROL I, B-CONTROL II, AND B-EXPERIMENTAL SCORES

Test	Range	Mean	Standard Deviation
B-Control I Pretest	44 - 81	65.63	9.912
B-Control II Pretest	40 - 83	63.39	10.34
B-Experimental Pretest	47 - 76	64.93	7.796
B-Control I Posttest	66 - 84	76.2	6.6651
B-Control II Posttest	58 - 90	76.2	7.960
B-Experimental Posttest	64 - 93	80.2	8.670
B-Control I Post-Pretest	-1.5 - 21	11.5	6.3807
B-Control II Post-Pretest	-1 - 24	12.8	6.819
B-Experimental Post-Pretest	3 - 28	15.5	7.782

As may be noted in table 5, variations in standard deviations occurred from pretest to posttest with an increase in the experimental group and a decrease in the control groups. This was a result of the control groups' movement toward a more normal distribution while the experimental group moved toward a skewed distribution. Figure 2 illustrates the distribution of posttest scores of B-Experimental and B-Control II, the two groups taught by the same instructor.

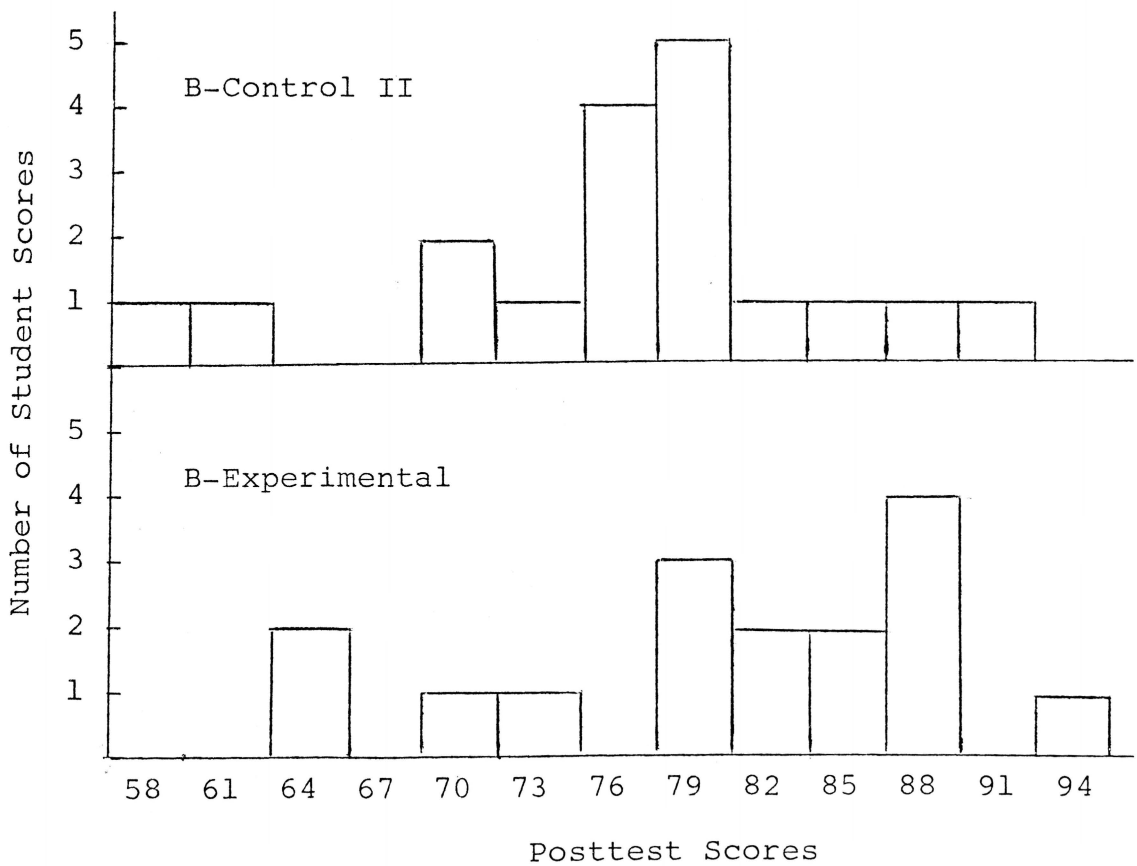

Figure 2 - Frequency Distribution of B-Control and B-Experimental Posttest Scores

Posttest scores of B-Experimental assumed a skewed configuration while those of B-Control II were contained in a more normal distribution. The distribution of scores revealed that fifty-six percent of B-Experimental posttest scores were more than eighty points, while twenty-four percent of B-Control II posttest scores were more than eighty points.

The results of linear correlations of cumulative college grade point averages and pretest scores, posttest scores, and posttest minus pretest scores are found in table 6.

TABLE 6

CORRELATIONS AMONG GRADE POINT AVERAGES AND TEST SCORES

Test Score	Variable Correlated Grade Point Average
B-Control II Pretest Scores	0.5902
B-Experimental Pretest Scores	0.4086
B-Control II Posttest Scores	0.8225
B-Experimental Posttest Scores	0.7364
B-Control II Post - Pretest Scores	0.0629
B-Experimental Post - Pretest Scores	0.3821

Results of correlation analysis revealed a high correlation coefficient, 0.8225, between grade point average and posttest scores of B-Control II. A slightly lower correlation existed between grade point averages and posttest scores for B-Experimental with a correlation coefficient of 0.7364. In contrast, the correlation between grade point average and posttest minus pretest scores was low with a correlation coefficient of 0.0629 for B-Control II and 0.3821 for B-Experimental.

In order to identify the factors which contributed to the variations in the correlation coefficients, correlation analyses were applied to grade point averages of 2.7 or better and the corresponding posttest and posttest minus pretest scores. The results appear in table 7. The correlation coefficient of 2.7 or better grade point averages with posttest scores for B-Control was 0.1069, while the corresponding correlation coefficient for B-Experimental was 0.7223, showing a stronger relationship between 2.7 or better grade point averages and posttest scores for the experimental students. The correlation coefficient for posttest minus pretest scores revealed a similar pattern. The correlation coefficient of posttest minus pretest scores for B-Control II was a negative correlation of -0.2610, while the corresponding correlation for the experimental group was a positive correlation of 0.6105. The implication of the positive correlations was that the manual provided students who were average or better achievers with a method which allowed them to acquire knowledge in accord with their previously established academic records. On the other hand, the achievement rate of students in the control courses was erratic in that there was no consistent pattern in the achievement scores.

TABLE 7

CORRELATIONS AMONG 2.7 OR BETTER GRADE POINT AVERAGES AND TEST SCORES

Test Score	Variable Correlated Grade Point Average
B-Control II Posttest	0.1069
B-Experimental Posttest	0.7223
B-Control II Post - Pretest Score	-0.2610
B-Experimental Post - Pretest Score	0.6105

The t-values for the posttest and the posttest minus the pretest scores appear in table 8. The t-value revealed no significant differences at the 0.05 level of probability between the mean scores of the posttest and posttest minus pretest for B-Control II and B-Experimental. However, the results indicated the use of the manual contributed to higher scores for the experimental group.

TABLE 8

DIFFERENCES BETWEEN MEAN SCORES OF POSTTEST AND POST-PRETEST FOR B-CONTROL II AND B-EXPERIMENTAL

Test	Group	Mean	t-Value
Posttest	B-Control II	76.22	0.1434
	B-Experimental	80.21	
Post-Pretest	B-Control II	12.8	0.4621
	B-Experimental	15.5	

Student responses to the questions in the Construction Program Evaluation were tabulated. A summary of responses which pertained to the value of the manual appears in table 9. In response to the question, "Would you recommend this program to other students?" the response was 100 percent "Yes". Eighty-six percent of the students found the program appropriate for their backgrounds, and endorsed further use of programmed materials. Sixty percent of the students stated they could have learned as much without a teacher present.

TABLE 9

CONSTRUCTION PROGRAM EVALUATION

Item	Student Responses
1. Have you worked with self-instructional materials before this course?	Yes 40% No 60%
2. If yes, did you consider the other program helpful?	Yes 40% No
3. Was the material in the manual appropriate to your career interests?	Yes 86% No 13%
4. Would you recommend this manual to other students in introductory clothing construction courses?	Yes 100% No
5. Would you like further use of self-instructional materials of this or other types in other clothing courses?	Yes 86% No 13%
6. Rate the effectiveness of the illustrative samples used with the manual. 3 - Very helpful 2 - Adequate 1 - Inadequate	3 66% 2 33% 1
7. Rate the length of time spent working during scheduled classes with the manual. 3 - About right to accomplish goals 2 - Too much time used on program 1 - Too short	3 73% 2 6.7% 1 20%
8. Do you feel you could have learned as much using the manual without a teacher present?	Yes 60% No 40%
9. Rate the degree to which your teacher contributed to your mastering the material in the manual. 4 - A great deal 3 - A significant contribution 2 - A little 1 - Not at all	4 3 20% 2 53% 1 27%

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to develop and evaluate a comprehensive self-instructional manual for teaching basic construction principles and skills in a college introductory clothing construction course. The specific objectives were:

1. To develop an instructional manual which can be used to ensure that students will master the basic clothing construction skills.
2. To determine the extent to which the use of a self-instructional manual will contribute to an improvement in a student's understanding of clothing construction principles.
3. To determine the degree to which the use of a self-instructional manual will result in a student's acquistion of the skills needed for satisfactory garment construction.
4. To determine significant differences between the achievement levels of students taught by a self-instructional manual and students taught by a

conventional method.

5. To develop an evaluation method for student use in evaluating both individually constructed garments and ready-to-wear.

The procedure for developing and testing the manual involved several stages. The selection of topics included in the manual was a result of a process which involved examination of college clothing construction textbooks, discussions with college clothing construction teachers, examination of college clothing curricula, and the administration of a questionnaire designed to solicit information from persons knowledgeable in clothing and textiles. The overall format and organization of the manual was developed after a thorough examination of other self-instructional programs, laboratory manuals, and related materials. The manual was designed to be placed in a three ring loose leaf notebook for ease in handling materials.

Each individual lesson was designed to encompass informative material, a clothing construction activity complete with a list of supplies and instructions, an evaluative procedure, and a self-test on each specific unit of construction. Patterns were drafted which were small enough to manipulate in the construction process. The lessons were arranged in order of difficulty, from simple to complex construction.

The testing process consisted of 1) pilot test composed of four students enrolled in a college independent study introductory clothing construction course; 2) a classroom test in a college introductory clothing construction course which involved two laboratory sections, one section which used the manual was compared to the other section which did not use the manual; 3) an evaluation in a graduate level course by persons from a variety of backgrounds with professional experience in clothing construction; and 4) a classroom test in a university introductory clothing construction course which was compared to two classes of the same course which had been taught the previous session without the manual. In the classroom testing situations, pretest scores, posttest scores, garment grades, and grade point averages were utilized to evaluate the manual's effectiveness as a teaching device. Within both classroom testing situations, the means of the pretest scores, the means of the posttest scores, and the means of the difference between the pretest and posttest scores were compared to provide descriptive information about the groups. T-tests were utilized to determine significant differences between the mean scores of the two teaching methods. Correlation analyses were utilized to determine relationships among the variables investigated.

Results of the statistical analyses revealed no significant differences at the 0.05 level of probability between the students who used the manual and the students who did not use the manual. However, the t-values indicated the probability that seventy-five percent of the time, students who used the manual would perform better than students who did not use the manual. Also, results of the correlation analyses indicated that students with a 2.7 or better grade point average accomplished more with the manual than students with 2.7 or better grade point averages who did not use the manual. Even though the differences were not statistically significant, the posttest mean scores and the mean scores of the difference between the pretest and posttest scores were higher for students who used the manual than for students who did not use the manual.

Conclusions

The manual was designed to solve some of the problems encountered in teaching introductory clothing construction laboratory classes. The manual was effective in that it did provide a method for solving some of the problems discussed earlier. Ways in which the manual provided potential solutions for existing problems included:

1. Provision of a structured approach for teaching construction skills and principles
2. Provision of a comprehensive teaching method for

inexperienced laboratory assistants and faculty

3. Reduction of amount of faculty time needed to organize and plan laboratory experiences.
4. Liberation of experienced faculty for research and/or other activities
5. Provision of method for identifying performance expected of student
6. Provision of method for students to develop observational skills needed to evaluate apparel construction processes.

Throughout the development and evaluation of the manual, responses to the program were favorable. Even when the manual was still in a conceptual stage, discussions with college teachers of clothing construction revealed a need for such a laboratory teaching tool. Professional persons who had contact with the manual during its development were extremely supportive of and receptive to the project. Undergraduate students who used the program unanimously endorsed the manual for further use in college construction courses. Graduate students who evaluated the manual requested copies of the materials to use in their future professional endeavors.

In all instances, the aspect of the manual which received the most praise was the technique developed for evaluation of construction processes. Both students and faculty approved of the placement of the manual materials in a loose leaf notebook. This arrangement provided flexibility for students in handling the materials, as well as allowed faculty to remove materials for inspection. Generally, home economics education majors were particularly careful in preparation and mounting of the samples, since they could see an immediate application for use of the samples.

Recommendations

Specific recommendations for future use and testing of the self-instructional manual include:

1. Retest in numerous college courses in order to collect data which could be statistically analyzed.
2. Test manual in a class composed of multiple laboratory sections which are combined for lectures. This would allow the manual to be used in one laboratory section and compared to a similar laboratory section taught by conventional methods, thus reducing the variables associated with testing in different classes taught by different teachers.
3. Test the manual in a variety of situations such as 1) an outside of class assignment, 2) in

merchandising programs which do not feature clothing construction, and 3) as a substitute for coursework by students who need construction as a prerequisite for advanced courses, for example, graduate students.

4. Expand and improve the pretest-posttest. A more comprehensive examination would be helpful in determining a student's level of competency.
5. Expand self-tests to be more comprehensive and to include a variety of types of questions such as multiple choice and fill in the blank.
6. Develop visual aids such as slides, film loops, and transparencies which could be used along with the manual.
7. Develop samples which instead of showing only the finished units of construction, illustrate the individual steps involved in each construction project.

An additional possibility for future expansion of the manual would be to incorporate experimental projects designed to help students develop the ability to make decisions based on observations of scientific research in clothing construction. An analytical approach to directing clothing construction laboratories would assure that students would learn more than"finger skills." In addition, the scientific approach would be more defensible to critics of construction laboratories.

Additional attention should be devoted to the identification of methods which can be used to teach students to evaluate the quality of apparel production techniques without constructing multiple garments. Development of this concept could result in a reduction of the number of laboratory courses required of clothing and textiles related majors. Students, instead of "sewing", could be involved in additional academic learning experiences and faculty would be freed for more professionally rewarding activities than directing laboratory sections.

APPENDIXES

APPENDIX A

SELECTED CLOTHING CONSTRUCTION REFERENCES

Selected Clothing Construction References

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APPENDIX B

QUESTIONNAIRE

This questionnaire is part of a research project being conducted at Texas Woman's University. Please provide the requested information. Your cooperation will be appreciated.

Thank you,
Jane M. Taylor

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1. Number of College Clothing Construction Courses Completed________

2. Previous clothing related experiences:

________Secondary clothing construction teacher
________College clothing construction teacher
________Commercial clothing construction teacher
________Position in clothing industry
________Other:________________________

3. Indicate the basic clothing construction processes you think should be included in a college introductory clothing construction course. Place a ✓ in the appropriate column.

Construction Process	Should Be Included	Should Not Be Included	Comments
Sewing Equipment Selection			
Pattern Selection			
Fabric Selection			
Pattern Fitting			
Pattern Alterations Length Width Dart Placement Style Modification			
Fabric Preparation			
Pattern Layout Plaids Napped			
Cutting			
Transferring Pattern Markings Tailor's Tacks Dressmakers Carbon			
Interfacings Fusibles Cutting Application			

Construction Process	Should Be Included	Should Not Be Included	Comments
Machine Use and Care			
Pressing			
Seam Construction			
Seam and Edge Finishes			
Removing Bulk Seams Inside areas Darts			
Dart Construction			
Gathers			
Tucks, Pleats			
Zippers			
Facings			
Bias Bindings			
Lapped Plackets			
Collars			
Sleeve Cuffs and Bands			
Skirt Bands			
Use of Elastic			
Sleeves Smooth Cap Gathered Cap			
Topstitching			
Buttons, Fasteners			
Buttonholes Machine made Bound			
Hand stitches			
Hems Hand stitched Machine Edge finishes			

Construction Process	Should Be Included	Should Not Be Included	Comments
Belt Loops			
Covered Belts			
Underlinings			
Linings			
Special fabrics Knits			
Piles, Fake Furs			
Sheers			
Wool			
Lingerie Construction			
Trims Lace Braids Applique			
Pockets			

APPENDIX C

CONSTRUCTION PROGRAM EVALUATION

CONSTRUCTION PROGRAM EVALUATION

1. Have you worked with self-instructional materials before this course? Yes___No___

2. If yes, did you consider the other program helpful? Yes___No___

3. Was the material in the manual appropriate to your career interests? Yes___No___
   Comments:

4. Would you recommend this manual to other students? Yes___No___
   Comments:

5. Would you like further use of self-instructional materials of this or other types in clothing courses? Yes___No___
   Comments:

6. Rate the effectiveness of the illustrative samples used with the manual. Rating_____
   - 3 - Very helpful, provided good reference
   - 2 - Adequate
   - 1 - Inadequate, needed additional materials

   Comments:

7. Rate the length of time spent working during scheduled classes with the manual. Rating_____
   - 3 - About right to accomplish desired goals
   - 2 - Too much time used on program
   - 1 - Too short

   Comments:

8. Do you feel you could have learned as much using the manual without a teacher present at all times? Yes___No___
   Comments:

9. Rate the degree to which your teacher contributed to your mastering the material in the manual. Rating_____
   4 - A great deal
   3 - A significant contribution
   2 - A little
   1 - Not at all
   Comments:

10. What changes would you like to see in the self-instructional manual if you were going to use it again?

Background Information:

Sewing background: Junior high classes_____________________
High school classes_____________________
Other_____________________

Most difficult garment constructed to date:

Your college classification: Freshman _____
Sophomore_____
Junior _____
Senior _____

Major in college:

Career Goals:

APPENDIX D

SAMPLE MANUAL LESSONS

AND

SAMPLE MANUAL PATTERNS

STUDENT GUIDE

INTRODUCTION

This self-instructional manual is designed to help you learn the basic principles of garment construction, master the skills needed to apply these principles, and evaluate the quality of clothing construction workmanship.

The manual is organized into lessons. Each lesson contains Objectives, an Introduction, an Activity, an Evaluation, and a Self Test. You are requested to read and complete all parts of one lesson before proceeding to the next lesson.

Please complete the lessons in the order in which they have been arranged. Each lesson's instructions are based on your having acquired the skills and vocabulary of the previous lessons.

The manual is designed to be placed in a loose leaf binder, as this will allow you to add other resource materials to the manual and to use the lessons and samples for other purposes.

A complete list of the supplies needed to complete the manual is included. Each lesson includes a list of the specific supplies needed to complete that lesson.

The manual presents only one approach for the development of each clothing construction skill. The author recognizes many other techniques are available. After completing the manual, you are encouraged to develop your own techniques for use in actual garment construction.

A comprehensive Garment Evaluation is included for your use in determining the quality of workmanship of full sized garments, either ready-to-wear or self-constructed. The individual unit Evaluations from each lesson can also be used to determine the quality of construction of specific parts of full sized garments during the construction process or of finished garments, either self-constructed or manufactured. The desired response for all the evaluative criteria is Yes.

You will be given a comprehensive examination upon completion of the manual. Your instructor will be responsible for determining grading procedures.

INSTRUCTIONS

1. Place manual in a loose leaf binder.

2. Punch holes in large envelope and place in the back of the loose leaf binder. Patterns which have been cut out are to be stored in the envelope.

3. Acquire the supplies needed for each lesson before beginning the lesson.

4. Read the Objectives and the Introduction of each lesson carefully. Complete each lesson, following the instructions given in the lesson.

5. After completing a lesson, attach the finished fabric samples to a heavy loose leaf page and place the sample pages in the loose leaf binder immediately following the lesson. The samples may be attached with staples, doublecoated tape, or rubber cement.

   Attach the samples at the top only, or in a manner that will allow the instructor to examine both side of your construction.

   It is suggested you use Biology Paper or other extra heavyweight paper which will resist tearing. This heavy paper will be referred to as the Sample Page in the instructions.

6. If, in the future, you plan to use the samples for demonstration or display purposes, you may want to use a seam finish on all unfinished edges of each completed sample. The samples may be protected by enclosing them in clear plastic or cellophane folders.

7. The pattern markings on the patterns in the manual are printed on only one side of the pattern pieces. Before you use each pattern piece, place the wrong side of the pattern down directly onto the carbon side of carbon paper and trace over all pattern markings, making the markings visible on both sides of the pattern.

8. Before beginning each lesson, press fabric and pattern pieces to remove wrinkles and fold lines.

SUPPLIES AND EQUIPMENT

The following items will be needed to complete the lessons in the manual.

Loose leaf binder - 3 holes.

Large envelope - 9" x 11".

Biology paper - 25 pages.

Fabric - 4 yards of 45" wide, firmly woven, plain weave. Percale or a blend containing at least 50% cotton is suggested.

Interfacing fabric - 1 yard, firmly woven, lightweight. Color should be similar to fabric's color. (A nonwoven or a fusible may be used if your instructor approves.)

Bias tape - 18" length, double fold or narrow edge binding.

Sewing machine - Threaded and ready to sew. Zigzag model will be needed.

Scissors - Shears for cutting fabric. Scissors with sharp points for cutting threads and buttonholes.

Pinking Shears

Measures - Tape measure and straight edge ruler.

Pins - Dressmaker, silk, or ballpoint pins.

Pincushion

Pencil - Soft lead.

Tracing wheel

Dressmaker's carbon paper

Press cloth - Cheese cloth is suggested.

Iron - With steam setting.

Cardboard or Tagboard - 9" x 11".

Seam pressing board or Seam pressing roll

Pressing ham

Sleeve board

Ironing board - With pad.

Needles - For hand sewing.

Sewing Thread - Two spools: one color-matched to fabric, one contrasting color.

Fabric - 21" width, 10" length. Lightweight, loosely woven, such as batiste, voille, or gauze.

Buttons - 3 flat buttons with sew-through eyes.

Hooks and eye - 2 hooks. One straight metal eye.

Snap - One.

Note: Preshrink all fabric. Preshrink woven and nonwoven interfacing. Do not preshrink Fusible interfacing.

SEAMS

OBJECTIVES

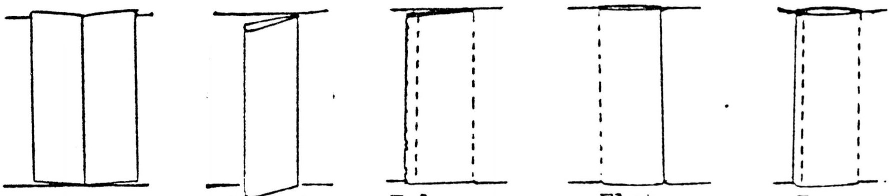
I. To identify common seam constructions.
II. To sew common seam constructions.
III. To sew seams with straight even stitches and balanced tension.
IV. To press seam constructions.

INTRODUCTION

Stitched seams are a method used to join textile fabrics together for clothing or other purposes.

The most commonly used seam in garment construction is the plain seam. The plain seam is stitched with the right sides of the fabric together. Other seam constructions used in contemporary garments include french seams, false welt seams, flat felled seams, and true welt seams.

Inside View of Seams



French seams are often used on sheer dress and blouse fabrics; true welt seams and flat felled seams are durable constructions which are used on tailored wear such as men's shirts, sportswear, blue jeans, and work clothes; the false welt seam is frequently substituted for the true welt since it is easier and quicker to construct.

Since the raw seam edges are enclosed in the french, true welt, or flat felled seams, these seams are appropriate for fabric which ravels or for unlined garments in which a finished interior appearance is desirable. The false welt seam with the second line of stitching resists raveling, but does not give a finished appearance.

Seams such as french, felled, or welts which include more than one line of stitching plus fabric folds will be stronger, but also bulkier and stiffer than plain seams.

Commercial pattern companies usually allow 5/8 inch seam allowances. In most constructions, seam stitching lines will be 5/8 inch from and parallel to the cut edges unless the pattern or instructions indicate otherwise.

The length and type of machine stitch used in a garment is determined by the fabric and by the end use of the seam. Most seams are sewn with approximately 12 stitches per inch. A shorter stitch, 16 to 18 stitches per inch, gives more stretch in knits and in areas such as crotch seams where stretch may be needed.

Straight stitches are used on woven fabrics and fabrics which do not stretch. A narrow width zigzag or stretch stitch may be used on all fabrics which stretch, unless a stretch resisting element such as tape or interfacing is included in the seam. When stitching stretch fabrics, it may be necessary to loosen the machine tension slightly and to adjust the stitch length.

Seams need to be tied, back stitched, or lock stitched at both ends to prevent the seams from pulling apart during the construction, wear, or care of a garment. For a neat appearance, clip all loose thread ends as soon as each line of stitching is completed.

All stitched seams should be pressed before being crossed with other stitching or before being enclosed in another seam.

A ballpoint or small size machine needle will prevent snags and pulls in silk-like or knit fabrics. To prevent skipped stitches or distorted seams in lightweight or silky knits and in sheer fabrics, place strips of tissue paper under the seam, next to the feed dog, and stitch the paper along with the seam. (Note: Single thickness toliet tissue may be substituted for tissue paper) Remove the paper after the seam is completed.

A completed seam should be flat, free of puckers, and free of seam edge imprints on the right side. The line of stitches should be parallel to the cut edges and the thread tension should be balanced between the layers of fabric. The length of the stitch will be appropriate for the end use and will hold the seam securely during wear.

ACTIVITY

Supplies:

Fabric - 40" width, 9" length
Sewing machine
Scissors
Iron
Seam pressing board or roll
Measure
Pins

Cutting Fabric:

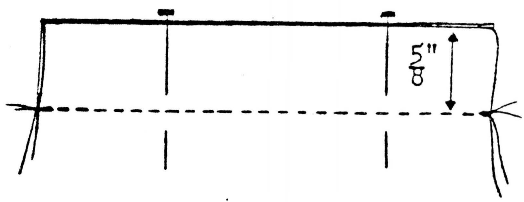
1. Cut fabric into 10 lengthwise strips, each 4" x 9".

Seam Constructions:

1. Plain Seam:

a. Using two fabric strips, pin right sides together with two of the lengthwise edges even. Place pins perpendicular to the stitching line with heads at outer edge of the seam allowances. The pins can then be slipped out easily at the sewing machine.

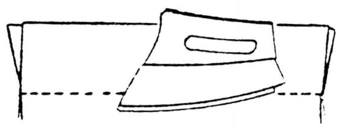
b. Stitch 5/8" from the pinned lengthwise edge. Tie threads, lockstitch, or backstitch at both ends of the line of stitching. Use 12 stitches per inch.

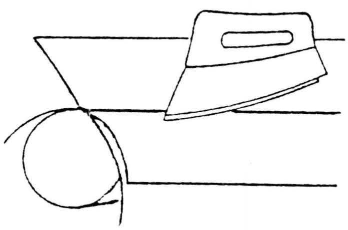


Remove pins as you stitch up to them. Clip loose threads at both ends of the seam.

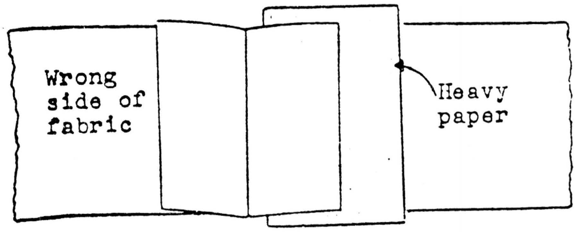
c. Pressing Plain Seams:

1) Press the line of stitching flat on the wrong side to set the stitches in the fabric.
2) Place the seam, wrong side up, over a seam board or pressing roll.
3) Use the tip of the iron to press seam open. Avoid sliding the iron along the seam; lift the iron from the fabric each time the iron is moved to a new position.





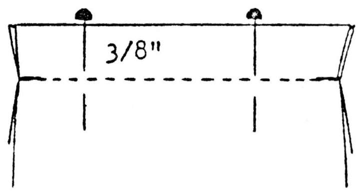
4) To prevent the cut edges from forming ridges or imprints in the outer fabric, slip heavy paper or thin cardboard between the seam allowance and the outer fabric.



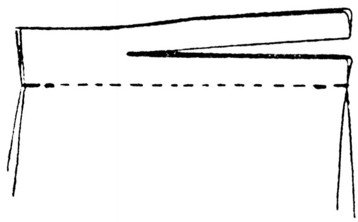
5) Use the same pressing techniques to press the seam from the right side. Use steam or a press cloth to avoid marring the fabric's appearance.

2. French Seam:

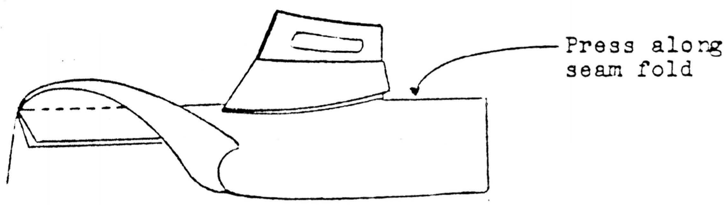
a. Pin the wrong sides of two fabric strips together, matching two lengthwise edges.
b. Stitch 3/8" from the matched lengthwise edge.



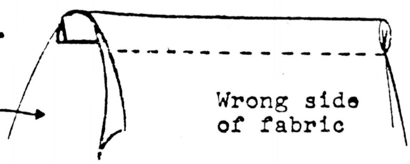
c. Trim the 3/8" seam allowance in half.
d. Press the trimmed seam open, following the instructions given for pressing a Plain Seam.



e. Turn the fabric so the right sides are together and the cut edges are inside the fold.
f. Press along the line of stitching.

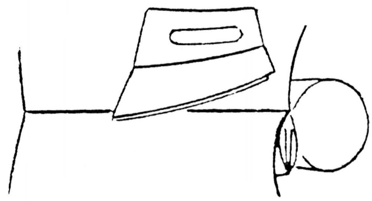


g. Stitch ¼" from the fold.



h. Press stitched seam flat, from the wrong side.

i. On the right side, <u>press along the seam line</u> with the <u>point</u> of the iron only. <u>Avoid pressing directly over the folded edges</u> as this will form imprints in the outer fabric.



3. <u>False Welt Seam</u>: (Also called Welt Seam and Top Stitched Seam)

a. Stitch a plain seam using two fabric strips, <u>right</u> sides together.

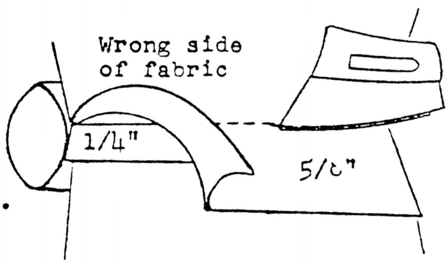
b. Press flat to set stitches.

c. Trim one seam allowance to 1/4".

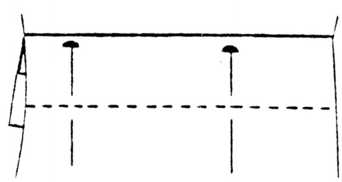
d. Place seam <u>wrong side</u> up over pressing roll and press the long seam allowance flat over the trimmed seam allowance, pressing both seam allowances in the same direction.

(Note: In a garment, the long seam allowance of horizontal false welt seams is pressed down, while the long seam allowance of vertical seams is pressed towards the center front or center back.)

e. Pin the longer seam allowance flat over the 1/4" seam. Pin baste, placing the pins perpendicular to the stitching line. Place the pins on the right side for easy removal when stitching.



f. Top stitch from the <u>right side</u>. Keep stitches parallel to the seam line. Stitch 3/8" to 1/2" from the first line of stitching.

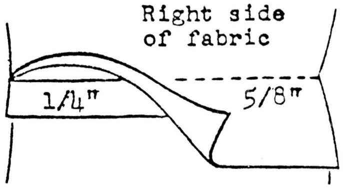


(Note: Remove pins as you stitch up to them, if machine doesn't stitch straight over pins.)

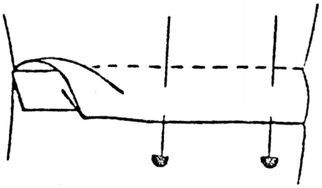
g. Press seam flat to set stitches.

4. Flat Felled Seam:

a. Pin the wrong sides of two fabric strips together. Stitch a 5/8" seam.
b. Press seam flat to set stitches.
c. Trim one seam allowance to 1/4".
d. Press both seam allowances in one direction as you did in the False Welt Seam.

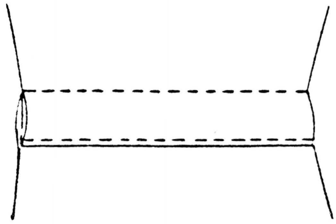


e. Turn the edge of the wide seam allowance under 1/4" and press the folded seam allowance flat over the cut-off seam allowance. Pin baste.



(Note: If a narrow flat felled seam is desired, trim the under seam to 1/8" and the top seam to 3/8" before turning the top seam edge under.)

f. Top stitch close to the pressed fold and parallel to the first line of stitching.



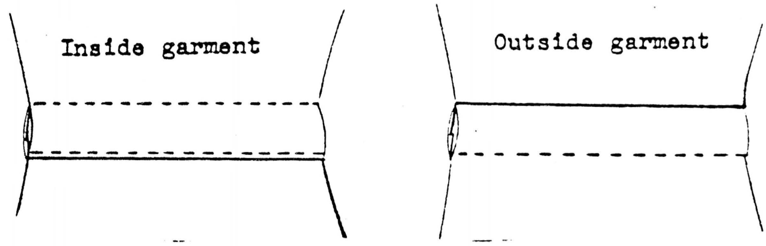
g. Press seam flat.

5. True Welt Seam:

(Note: The True Welt Seam is made exactly as the Flat Felled Seam except it is made on the inside of the garment.)

a. Stitch a plain seam, right sides together.
b. Press seam flat.
c. Trim one seam allowance to 1/4" width.
d. Press the long seam allowance flat over the short seam allowance.
e. Turn the edge of the wide seam allowance under 1/4".
f. Press folded seam allowance flat over the cut seam allowance. Pin baste.

g. Top stitch close to pressed fold.
h. Press seam flat.



Evaluation:

1. Evaluate your stitched seams. Repeat any steps which are needed to perfect your seam constructions.

2. Attach the finished samples to Sample Pages.

3. Answer the questions in the Self Test. Review the Introduction to check the accuracy of your responses.

EVALUATION

Indicate by checking Yes____ or No____ whether each seam construction satisfies the evaluative criteria.

1. Plain Seam:

   a. Seam is pressed open — Yes____ No____

   b. Seam is wrinkle and pucker free — Yes____ No____

   c. Suitable number of stitches per inch was used — Yes____ No____

   d. Tension is even with threads meeting in middle of seam — Yes____ No____

   e. Seam allowances are an even 5/8" width — Yes____ No____

   f. Stitching is straight and even — Yes____ No____

   g. Stitches are securely fastened at both ends — Yes____ No____

2. French Seam:

   a. Raw edges are completely encased — Yes____ No____

   b. Seam is narrow, 3/8" width or less — Yes____ No____

   c. Suitable number of stitches per inch was used — Yes____ No____

   d. Final line of stitching is on original 5/8" seam line — Yes____ No____

   e. Seam is even width — Yes____ No____

   f. Seam is wrinkle and pucker free — Yes____ No____

   g. Tension is even — Yes____ No____

   h. Stitching is straight and even — Yes____ No____

   i. Stitches are securely fastened at both ends — Yes____ No____

3. False Welt Seam:

a. Top stitching is parallel to seam line — Yes____ No____

b. Top stitching is straight — Yes____ No____

c. Seam allowances are caught in top stitching — Yes____ No____

d. Seam is wrinkle and pucker free — Yes____ No____

e. Suitable number of stitches per inch was used — Yes____ No____

f. Tension is even — Yes____ No____

g. Stitches are securely fastened at both ends — Yes____ No____

4. Flat Felled Seam:

a. Seam is free of ravels on right side — Yes____ No____

b. Rows of stitches are straight and parallel to each other — Yes____ No____

c. Row of stitches are 1/4" - 3/8" apart — Yes____ No____

d. Second row of stitching is parallel to and close to fold — Yes____ No____

e. Seam is wrinkle and pucker free — Yes____ No____

f. Suitable number of stitches per inch was used — Yes____ No____

g. Tension is even — Yes____ No____

h. Stitches are securely fastened at both ends — Yes____ No____

5. <u>True Welt Seam</u>:

a. Raw edges are completely encased — Yes____ No____

b. Top stitching on outside of garment is straight and parallel to the seam line — Yes____ No____

c. Second row of stitching is 1/4" - 3/8" from seam line — Yes____ No____

d. Seam is wrinkle and pucker free — Yes____ No____

e. Suitable number of stitches per inch was used — Yes____ No____

f. Tension is even — Yes____ No____

g. Stitches are securely fastened at both ends — Yes____ No____

SELF TEST

1. Describe a plain seam.____________________________________

____

2. How many machine stitches per inch are used in most seam constructions?______________________________________

3. When would a slight zigzag or stretch stitch be appropriate to be used in seams?_____________________________

____

4. Why are threads tied or lockstitched at the ends of stitched seams?____

5. Describe a professionally constructed seam.______________

____

____

6. Describe the identifying characteristics of the following seam constructions:

   a. True Welt Seam____________________________________

   ____

   b. Flat Felled Seam__________________________________

   ____

   c. French Seam_______________________________________

   ____

   d. False Welt Seam___________________________________

   ____

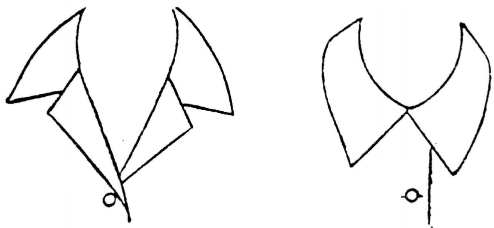
CONVERTIBLE COLLAR

OBJECTIVES

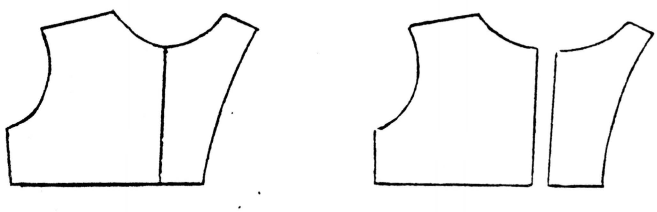
I. To construct a collar.
II. To interface a collar.
III. To attach a convertible collar to a garment neckline.

INTRODUCTION

Convertible collars may be worn open as a V-shaped neckline or buttoned at the neckline.



Bodice facings for convertible collars may be cut as extensions of the front bodices, or they may be cut as separate facing pieces and seamed along the front edge. The front neckline facing extends up to the shoulder seam to give a finished appearance when the collar is worn open.



Collars are usually finished as a unit and then attached to the garment. Before applying a collar to a garment, garment neck edges are staystitched, shoulder seams are completed, and free edges of facings are finished.

An under collar (also called collar facing) is often cut slightly smaller than the corresponding upper collar. Thus, when the collar is stitched with upper and under collar edges matching, the outer edge seam will be pulled to the underside and the under collar will not be visible from the top.

A collar should not be eased or stretched as it is applied to the neckline. It may be necessary to clip the garment neckline seam allowance to get the small curved bodice neck seam to stretch to fit the straighter collar seam.

The outer edges of under collars may be understitched to help conceal the under collar and to keep outer collar edges smooth and flat.

Interfacing is used in collars for support, to give shape, and to maintain style lines. Interfacing may be applied to the upper collar or to the under collar. When applied to the upper collar, interfacing conceals seam ridges and prevents seam edges from being visible in sheer fabrics. When applied to the under collar, interfacing provides support for the upper collar and may be pad stitched.

Fusible interfacing is usually applied to the under collar. A loose catch stitch which is invisible from the outside is used to attach non-fusible interfacings to garments. The zigzag progression of stitches holds the interfacing securely without distorting the outer appearance of the garment.

Before collars are turned to the right side, the enclosed seams are graded.

ACTIVITY

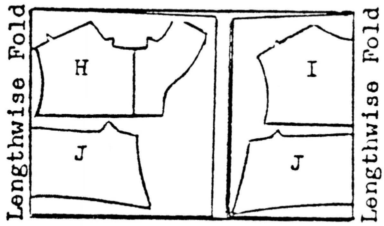
Supplies:

- Fabric - 39" width, 12" length
- Interfacing - 16" width, 12" length
- Patterns H, I, J
- Scissors
- Seam pressing board or roll
- Iron
- Pins
- Measure
- Sewing machine

Cutting Fabric and Interfacing:

1. Fabric Layout:

   a. Straighten fabric grain, if needed. Pin patterns to fabric as indicated in Layout Guides.



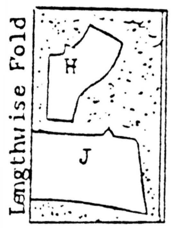
Fabric Layout Guide

2. Cutting and Marking Fabric:

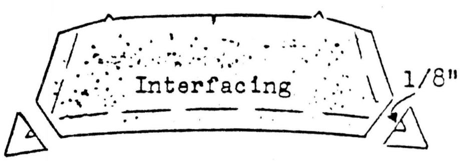
   a. Cut out fabric.
   b. Mark center front, fold line, center back, and small •'s with small clips in seam allowances.

3. Interfacing Layout:

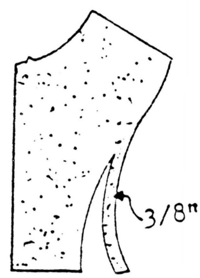
   a. Cut off extended facing along fold line. Use this facing for interfacing pattern.
   b. Cut out collar and facing interfacing.
   c. To reduce bulk in collar points, cut off points of collar interfacing 1/8" inside point's seam line intersection.



Interfacing Layout Guide



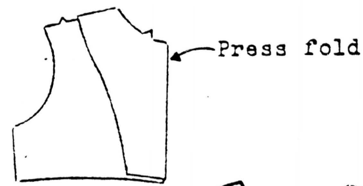
   d. Trim 3/8" from the bodice interfacing's long curved edge. To prevent raveling, stitch 1/4" from this trimmed edge with regular machine stitching.



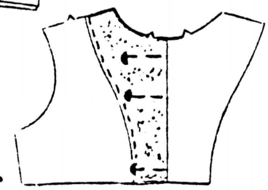
Bodice Construction:

1. Attaching Interfacing:

   a. Fold and press both bodice extended facings to the wrong sides along fold lines.
   b. Place interfacing on wrong sides of both bodice fronts. Match neck edges.
   c. Pin baste interfacing straight edges along creased bodice fold lines. (If fusible interfacing is used, fuse to the facings.)



a.

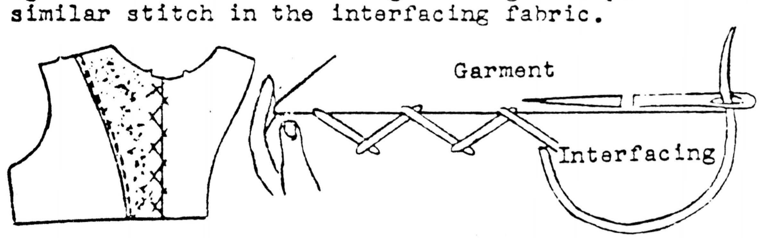


c.

   d. Baste or catch stitch (directions follow) interfacing to bodice fronts along fold lines, beginning at neckline seam line.

2. Catch Stitch:

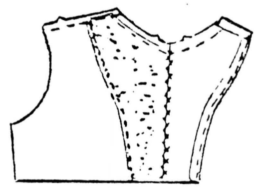
   a. Starting at the neckline 5/8" seam line, fasten one end of sewing thread in interfacing by taking 2 or 3 small stitches in place.
   b. Place a small stitch across the interfacing cut edge in the fold line of the bodice. Insert the needle parallel to the fold and grainline, catching only one or two yarns of fabric. The line of stitches moves towards the right, while the needle is inserted pointing towards the left.
   c. Again cross the interfacing cut edge and place a similar stitch in the interfacing fabric.



   Notice in the illustration that the stitches criss-cross the edge being joined. They are usually from 1/4" to 1/2" apart. (Note: The catch stitch allows some movement between the layers it joins.)
   d. Continue the length of the fold, alternately catching the interfacing and the bodice fold.
   e. Fasten thread securely at the end of the stitches.

3. Staystitching:

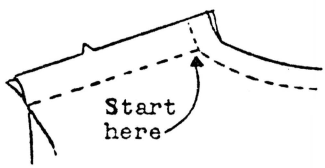
a. Staystitch neck edges and shoulder seams of bodice front and back.
b. Trim interfacing close to staystitching.



4. Facing:

a. Clean finish the long unnotched edge of facing. Pless flat.
b. Press facing shoulder seam under along 5/8" seam line.

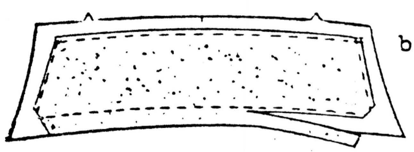
5. Bodice Seams:



a. Beginning at staystitching at neckline seam, stitch bodice front to bodice back along shoulder seams, right sides together; backstitch at both ends. Press seams open.
b. Finish seams with an appropriate seam finish.

6. Collar Construction:

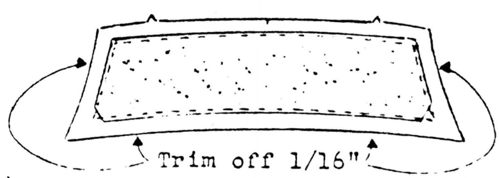
a. Pin interfacing to wrong side of under collar. Stitch 1/2" from cut edges.



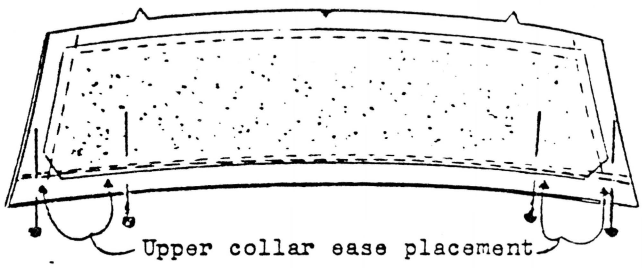
b. Trim interfacing seam allowances close to stitching.

c. To make under collar smaller than upper collar, trim 1/16" from the unnotched seam allowances.

(Note: The amount trimmed will vary with the size and roll of the collar and with the thickness of the fabric.)

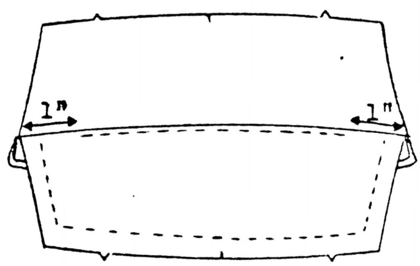


d. With right sides together, edges and center backs matched, pin baste under collar to upper collar along the long unnotched edge. (Note: The upper collar is bigger. This extra width is eased in close to the points, providing space for the folds of fabric which are enclosed in the point.) Stitch this seam, using finger tips to push and ease the upper collar extra length in at the ends, 1/2" inside the seam line intersections.



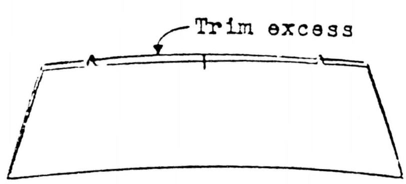
e. Layer stitched seam.

f. Press seam allowances toward under collar. Understitch , beginning and ending understitching 1" from the ends of collar.



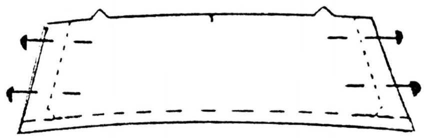
g. Fold and press collar along understitched seam, right sides out.

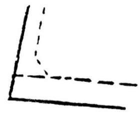
If under collar appears to be wider than upper collar at notched neckline seam, trim the excess from under collar. (The excess is a result of the new seam fold line which understitching produces.)



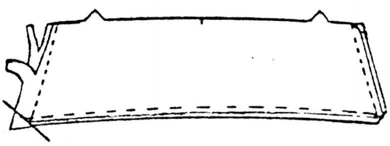
h. Refold collar with right sides together. Pin baste collar ends together.

i. Using small stitches, 15 to 18 per inch, stitch from neck edge to within 2 stitches of seam at outside edge of collar. Next, pivot the collar and stitch diagonally across the point; then pivot and stitch directly along seam line for 4 or 5 stitches. (Note: The edges of corners and points are better defined and turn more evenly when stitched with small stitches.)

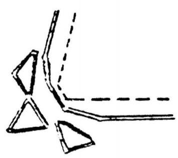




j. Layer collar end seam allowances.



Layer seam allowances diagonally across points. Trim very close to points.



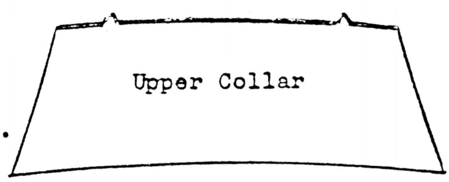
k. Press collar end seams open over a seam board. (Note: Seams turn easier when they are first pressed open.)

l. Turn collar to right side.

To Pull Out Corners:

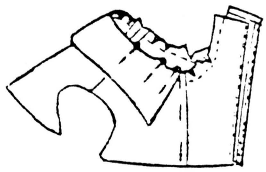
Gently pry out the corner with a large blunt needle (needlepoint needle), or gently lift the point with a double thread which has been run under the stitches in the point seam crevice.

m. Press collar so understitching and seam are not visible when collar is viewed from the right side.



7. Attaching Collar:

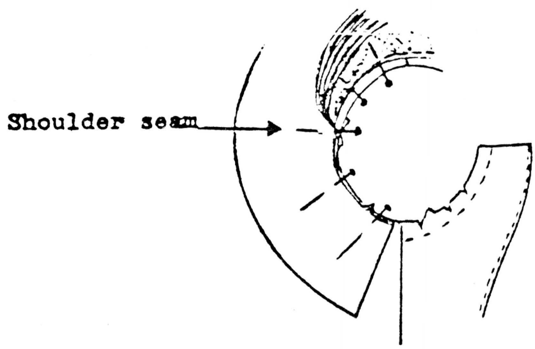
a. Clip the curved bodice neck edge and extended facing edge seam allowances almost to the stay-stitching, clipping at 1/2" intervals.



b. Position collar along neck edge, right sides up.

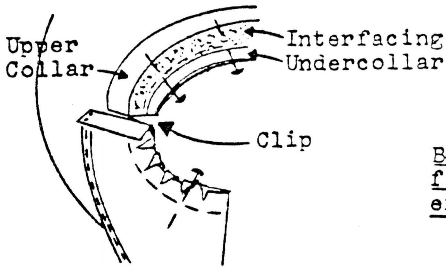
c. Pin baste all layers of collar to front neck edge at center fronts, shoulder seams, and notches.

d. Pin interfaced under collar only to bodice back edge, matching center backs. (Upper back portion of collar remains free between shoulder seams.)



e. Turn front facing extension back over collar along the front fold line.
Pin baste facing over collar at neck edge.
Check to see that the fold at the upper edge of the extended facing lies along the bodice shoulder seamline.

f. Clip collar neck seam allowances through all thicknesses at small dot at shoulder seam. Be careful not to cut the extended facing. Make clip exactly 5/8" long.

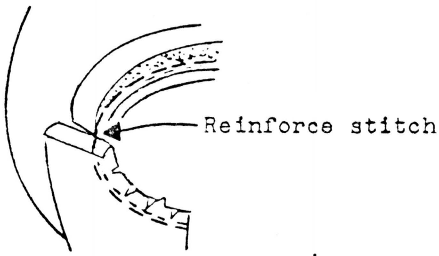


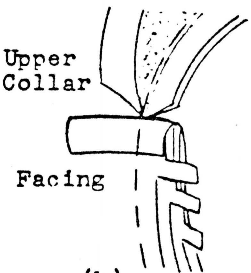
Be careful to miss the facing. Make clip exactly 5/8" long.

g. Turn free portion of upper collar back away from neck seamline and stitch entire neck edge seam.

Tie or lock thread ends.

Reinforce stitch 1/2" each side of clip, using short stitches.





(h)

h. Layer stitched neck seam from shoulder clip to front fold line only.

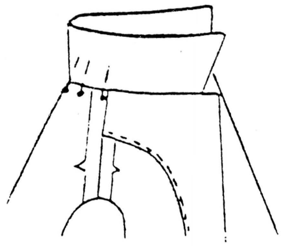
i. Press front neckline facing section of seam open over seam board.

j. Trim back neck seam to 3/8" between shoulder seams.

k. Press back neck seam up towards collar.

l. Turn facing to inside of bodice. Press front fold and facing portion of neck seam.

m. With point of iron, press under 5/8" on remaining unnotched free edge of upper collar.



n. Pin baste the pressed fold so that it slightly overlaps the neckline seam.

o. By hand, blind stitch (also called slip stitch) the folded collar edge to the bodice from shoulder seam to shoulder seam. (Directions for blind or slip stitch follow.)

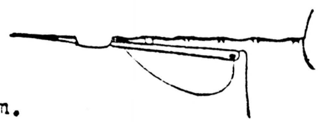
8. Blind Stitch:

a. Fasten the thread securely at the neckline seam under the folded edge, beginning at one shoulder seam.

b. Directly above this stitch, slip the needle inside the upper collar fold and bring it out at the edge of the fold 1/8" to the left.

c. Pick up one yarn of the garment fabric directly below and in line with the end of the slip stitch.

d. Insert the needle back in the fold directly opposite the end of the tiny stitch.

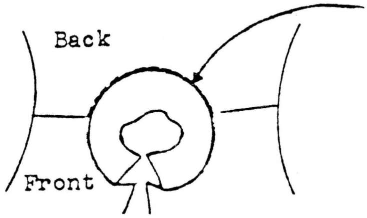


e. Continue to other shoulder seam.

9. Attaching Back Facing By Machine:

(Note: With instructor's permission, machine stitching may be used instead of hand blind stitch.

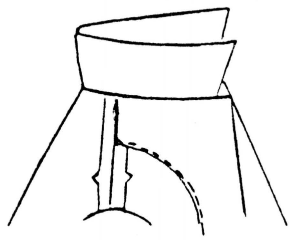
a. With right side of garment up, stitch in the back neckline seam crevice. Stitch from shoulder seam to shoulder seam.



The pressed collar fold should be caught by the stitches.

10. Attaching Facing at Shoulders:

a. Use invisible hand stitches to attach facing to shoulder seams.



Evaluation:

1. Evaluate the completed convertible collar. Repeat any steps which are needed to perfect your convertible collar construction and application.

2. Attach the finished sample to a Sample Page.

3. Answer the questions in the Self Test. Review the Introduction to check the accuracy of your responses.

EVALUATION

Indicate by checking Yes___ or No____ whether your collar construction and application satisfy the evaluative criteria.

1. Bodice Construction:

a. Seams are stitched straight	Yes____ No____
b. Seams are finished appropriately	Yes____ No____
c. Threads are tied at end of lines of stitching	Yes____ No____
d. Seams are pressed open and right side is free of seam imprints	Yes____ No____

2. Collar Construction:

a. Outside edges form smooth continuous line	Yes____ No____
b. Points are clearly defined	Yes____ No____
c. Points are bulge free	Yes____ No____
d. Collar is interfaced	Yes____ No____
e. Collar is understitched	Yes____ No____
f. Under collar is not visible from right side	Yes____ No____
g. Collar folded seam edges are flat	Yes____ No____
h. Both collar points and extended front edges are equal in size and length	Yes____ No____

3. Attaching Collar to Garment:

a. Neck seam is pucker free	Yes____ No____
b. Collar and facing points are symmetrical	Yes____ No____
c. Clipped neckline seam is ravel free	Yes____ No____
d. Back neckline stitching is straight and parallel to the folded inside edge of the upper collar (or hand stitching is invisible).	Yes____ No____

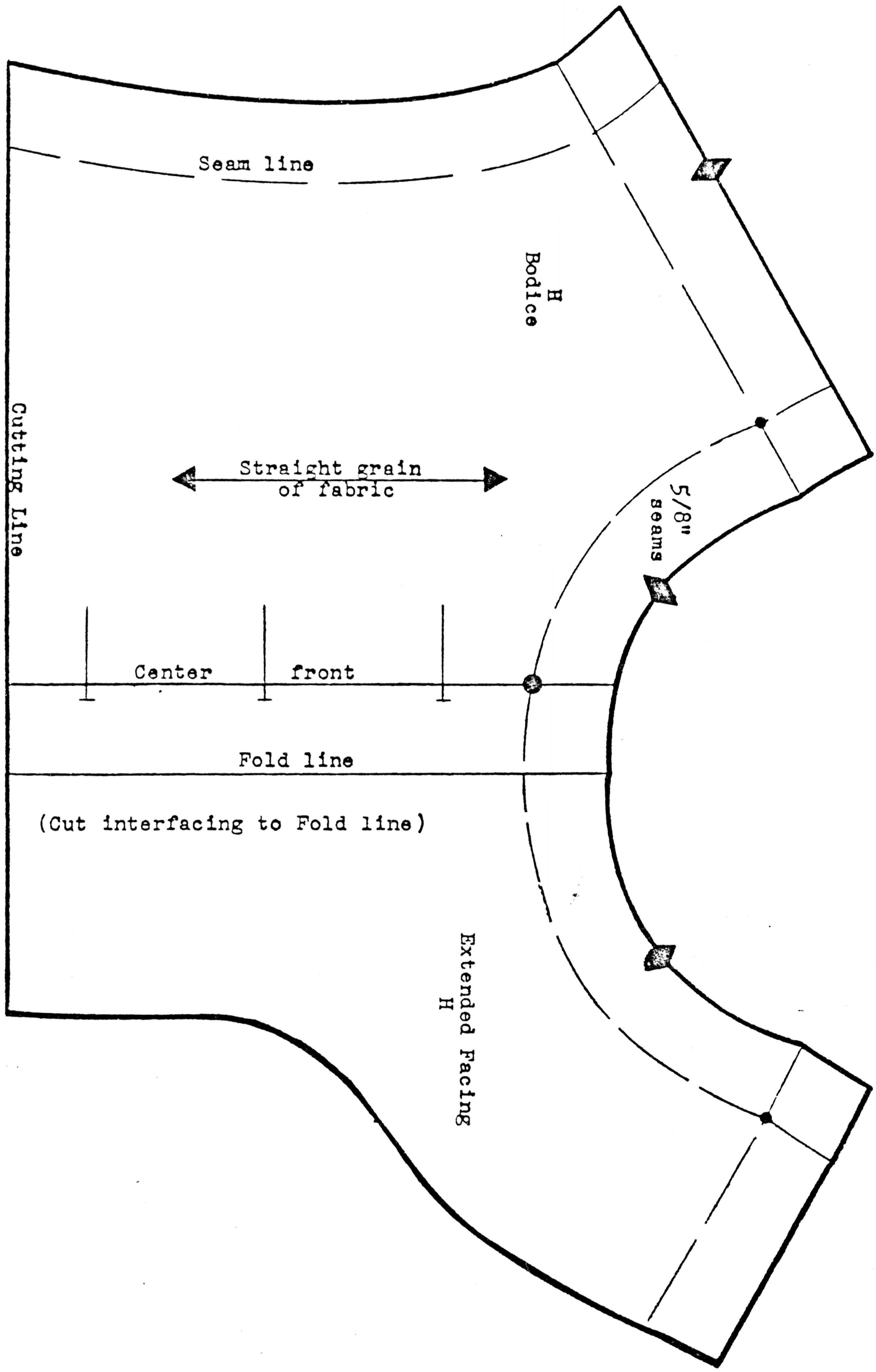
SELF TEST

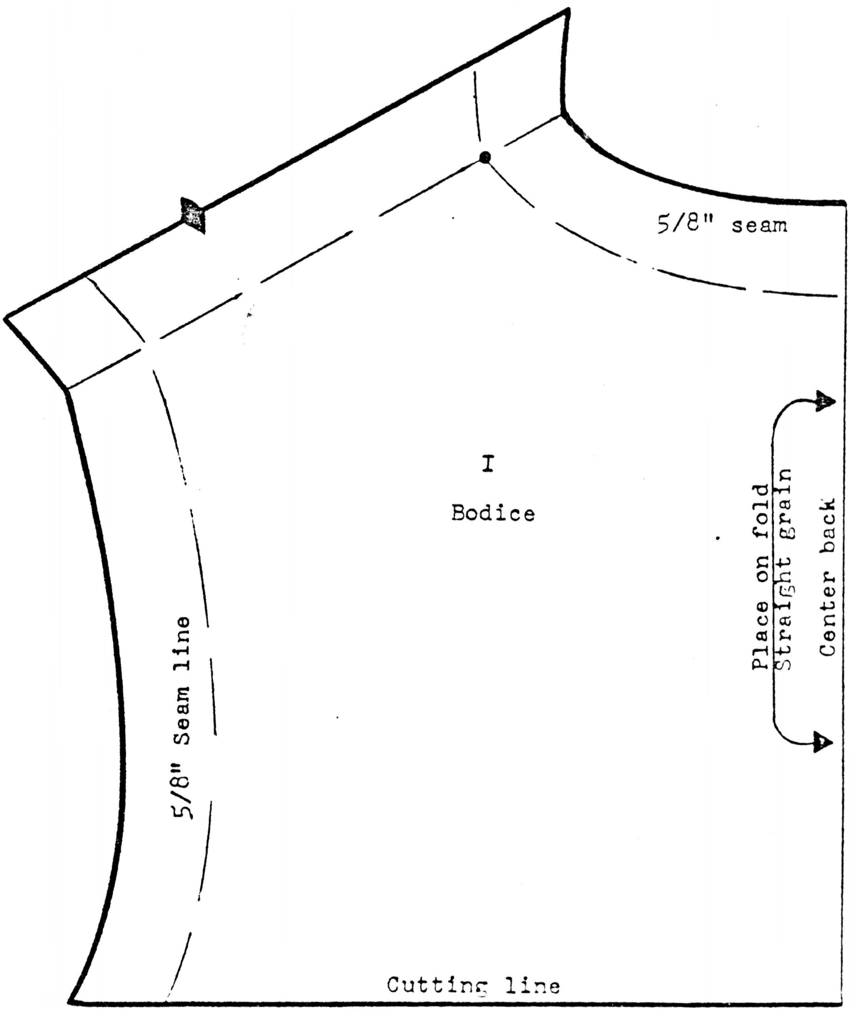
1. Describe a convertible collar.______________________________
____
____

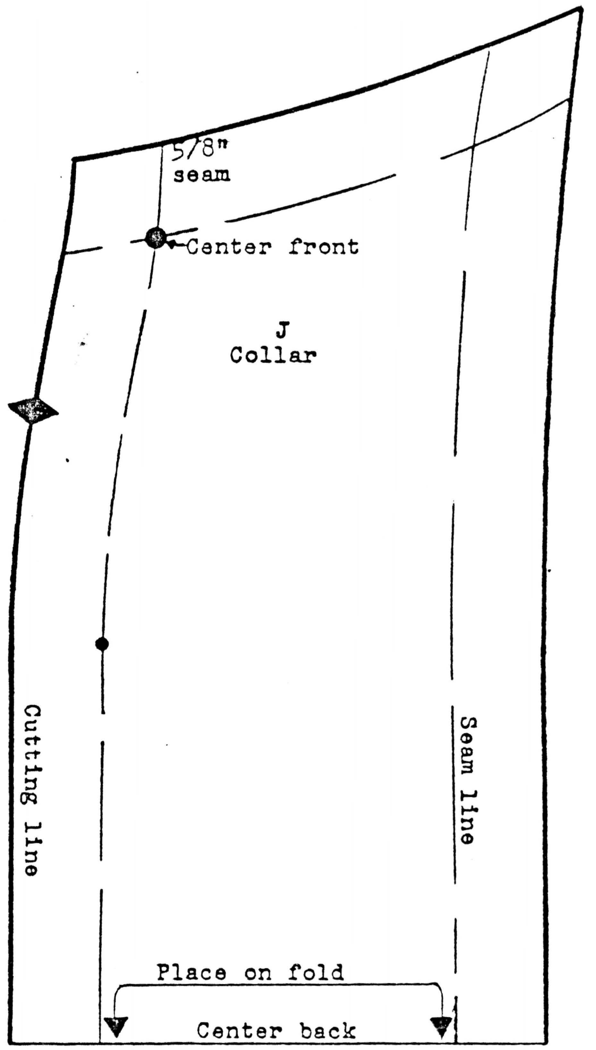
2. Why is the under collar cut smaller than the upper collar?
____
____

3. Why is interfacing used in collars?________________________
____

4. Why are collar seams graded?_______________________________
____
____


Seam line
H
Bodice
Cutting Line
Straight grain
of fabric
5/8"
seams
Center
front
Fold line
(Cut interfacing to Fold line)
Extended Facing
H


5/8" seam
I
Bodice
Place on fold
Straight grain
Center back
5/8" Seam line
Cutting line


5/8"
seam
Center front
J
Collar
Cutting line
Seam line
Place on fold
Center back

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