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An Assessment of the Apparel Industry in the State of Utah and Needed Training in Vocational Clothing in Utah High Schools

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AN ASSESSMENT OF THE APPAREL INDUSTRY IN THE STATE OF UTAH AND NEEDED TRAINING IN VOCATIONAL CLOTHING IN UTAH HIGH SCHOOLS

by

Ann Sessions

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by

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The purpose of this study was to make an assessment of the industry and needed qualifications of sewing machine operators in the apparel industry in the State of Utah. Feedback received may serve as guidelines in curriculum development for vocational clothing classes. Information was gathered by means of a questionnaire administered to plant or personnel managers. The questionnaire was hand carried or mailed to fifty-six plants across the state. Ninety-eight percent of the plants responded and were used in the statistics.

The questionnaire ellicited information on the following items:

1. The following points about Utah's apparel industry:
   a. Availability of jobs
   b. Geographic locations of plants and jobs statewide
   c. Types of positions available
   d. Training and/or skills
   e. Machines and equipment used

f. Types of garments manufactured

2. Information for training programs:
   a. Types of training present employees have received
   b. Identified skills to be included in high school programs
   c. Identified equipment needed in high school programs
3. The work activities of an entry level operator:
   a. Ability to use machines
   b. Skills in handling machines and fabric
   c. Construction methods used

The study identified the machines used most often and the work activities needed for employment in the apparel industry. It is suggested that teachers and the industry cooperate with each other so that needs and practices of both can be of service one to another in the training of future employees.

(64 pages)

INTRODUCTION

The educational system in Utah is in a period of change and growth. Utah's secondary schools are encouraging academic achievement and college preparation by offering advanced placement programs. They are also accepting the responsibility of providing students with vocational education classes to prepare them for the world of work. The State Board of Education has stated that students upon graduation from high school will have received seventy-five hours work experience (Trimble, 1979). This is to be in affect by 1980. This change in education has created a need for Home Economists to broaden the scope of their teaching to include vocational classes. Vocational clothing is an area which relates directly to the apparel industry.

The apparel industry is of growing importance to the economy of the United States. In recent years this industry has developed into the third largest consumer industry and the fourth largest employer of production workers in manufacturing (Focus, 1971). The Utah industry is experiencing a rapid growth period and expansion of facilities is occurring.

The apparel industry directly relates to vocational clothing and affords employment opportunities for those trained in vocational clothing classes. Information concerning the apparel industry in the State of Utah and the skills needed by employees is valuable to the industry as well as teachers of vocational courses. Due to the relative newness of the vocational classes and the apparent lack of communication and data from the industry, there is no current information which assesses the employment needs of the apparel

industry across the state. The skills desired of the prospective employee have not been documented. Therefore, a survey of the apparel industry was needed to gather data for the development of curriculum which would be relevant to the needs of the apparel industry.

Vocational education has been referred to as the bridge between man and his work (Advisory Council, 1968). Millions of people need this education in order to earn a living. Providing for an individual's employability as he leaves school as well as throughout his life is one of the major goals of vocational education. Vocational education looks at a person as a part of society and as an individual. Never before has attention to the individual as a person been so imperative (Advisory Council, 1968). National legislation reflects this change.

The 1917 Smith-Hughes Vocational Education Act has grown out of 'the demands of an economy just reaching industrial maturity. Its primary objective was to meet the needs of the labor market. The 1963 Act was the product of a growing sensitivity to human welfare. Its emphasis was on the people who needed skills rather than upon the occupations which needed skilled people. In a true sense, the Act of 1963 became people oriented. In place of the previous focus on several occupational categories as the boundaries of federally supported vocational education, the dimensions of the new act were the employment oriented educational needs of various population groups (Evans, 1969).

The present study, therefore, was designed to gather information about the apparel industry in Utah and the skill requirements of an entry level operator, guided by the following objectives:

1. To make an assessment of the following:
   a. Availability of jobs
   b. Geographic location of plants and jobs statewide
   c. Types of positions ranked greatest to least demand
   d. Training and/or skills
   e. Machines and equipment used
   f. Types of garments manufactured in the state
2. To obtain information for training programs:
   a. Type of training program an employee has received
   b. Skills to be included in high school training programs
   c. Equipment needed in a high school training program
3. To assess the work activities of an entry level operator:
   a. Ability to use machines and their make up
   b. Skills in handling machines and fabrics
   c. Construction methods used
4. To open lines of communication between the Utah apparel industry and the high school instructors teaching the training programs.
5. To develop guidelines which a teacher could use as a base for high school training courses.

REVIEW OF LITERATURE

Profile of the Apparel Industry

The apparel industry is an outgrowth of man's basic clothing needs. Early man clothed himself with the bare essentials from available raw materials. Today man's resources include a limitless array of fabrics, styles, and fashions.

If you were to ask the average person about the apparel industry, few would be able to make any significant comment about the nature and make-up of this industry. Some would identify it with the "textile" industry, while others would comment on the "sweatshop" operation. Yet one deals with clothing daily and is aware of fashion change. Everyone can see, purchase, and wear apparel of their choice.

The apparel industry in the United States is relatively young. There was little production prior to the Civil War years. The turn of the twentieth century brought a great increase in productivity. The industry emerged from "sweatshop" status of the late 1800's to become a vital part of the American economy. In recent years, with the move toward mechanization, new plants and production systems, the manufacture of wearing apparel has moved from the out of date, backroom operation to the present-day industrial complex. Plants are provided with some of the most up-to-date production techniques and the latest machinery and equipment available.

Due to this growth the apparel industry has risen to a position of major importance in the American economy. According to Priestland Associates (1972), the American Apparel Industry ranks as follows:

1. sixth in number of manufacturing establishments.
2. third largest consumer industry.
3. fourth largest employer of production workers.

A large number of plants make up the apparel industry in this country. Many have a very few employees, others require as many as 500 employees to carry on their operations. Approximately 25,000 plants employ 50 or more people. The industry as a whole employs 1.4 million workers.

The apparel industry is composed of some firms that perform all aspects of apparel production: designing, cutting, sewing, finishing, packaging and shipping the final product to the retailer. These firms are called manufacturers. Others are involved in cutting or sewing. These are termed contractors. Still others take orders, buy fabric and then find a firm to produce the product. These are called jobbers.

The apparel industry makes a unique contribution to the American economy. Many plants are located in small towns where, they may be the only industry in town or at least the largest employer. Such firms offer opportunity for on-the-job training of unskilled and semiskilled workers. Opportunities are provided for many persons in these small towns.

Despite the enormous strides the industry has made in recent years, productivity in the clothing factories has not increased to an extent comparable to other American industries.

Apparel production is a labor intensive industry. The sewing machine requires constant personal attention with excessive handling

time, as do many of the other operations in the clothing factories. Until a revolutionary change occurs, laborers will be the prime concern of the industry. Wages of the employees account for 30-40% of the wholesale cost of the goods being produced (Cobrin, 1970).

The American Textile Manufactures Institute (1968) reports "that there will be decreasing opportunities for low skilled workers but increasing opportunities for well-trained persons." The opportunities for skilled persons in the apparel and its related industry is on the increase and because of this there is a large demand for schools which offer classes in vocational clothing.

The apparel industry is one which is very diverse, in that some of the jobs require only minimal training and others require greater skill development before a person becomes proficient. Salmon (1971) reported the largest percentage of jobs in the apparel industry is for the machine operators. Employers have not reached a unified opinion when it comes to types of training programs for sewing machine operators. Many employers would prefer hiring persons who have received some type of experience, starting them on an entry level position while others prefer training their own help (Dickerson, 1966).

Effective training of sewing machine operators has proved difficult. Only five percent of the industry factories who do their own training do an effective job (American Apparel Manufactures Association, 1968). Many failures in training can be traced to the poor testing and selection procedures when hiring and interviewing a new employee. Other failures can be traced to the lack of

properly trained instructors. Training in many factories is done by the production supervisor whose first responsibility is to get the work out. Failure to follow up on a trainee's progress and to detect and correct mistakes also contributes to operator problems.

The AAMA (1968) stated that in some cases hiring of new employees is based not on their skills and capabilities, but simply because they are simply available at the time. The employee fills out an application, is given a time card and reports to work. Often the new employee becomes completely confused by the operating floor activity.

Despite the need, good training in the clothing industry has not progressed far in the last ten years. Pope (1970) found that training remains unsystematic, not utilizing modern advances in training practices. Manufactures sometimes consider training an unnecessary expense and spend a minimal amount of time on it. Others feel skillful training is a luxury which they cannot afford.

A few manufacturers with a more realistic view feel effective-operator training is a positive means of improving efficiency. Like a new piece of equipment, training can be used to increase production and profits for their plants. Although these companies are still in the minority, the minority is growing (AAMA, 1968).

The first step to finding people with the ability to do the job is accomplished through testing and screening. Testing is not foolproof but does help single out probable failures. Testing is not meant to take the place of the employer's judgment, rather to supplement it--thus eliminating an applicant who does not meet the standards of manual dexterity and/or mental comprehension. Even after testing, only about fifty percent of all the trainees hired

will be able to complete the training process and become sewing machine operators (Bedford, 1950).

Three of the many available types of tests used for screening an applicant are: (1) the pin board set which tests the applicants' ability to do fine work with their fingers and to make rapid finger movements neatly and accurately; (2) the form board which measures the applicant's intelligence; (3) the perception test which tests the applicant's ability to perceive patterns.

At present the AAMA (1972) reports there are five different ways the industry trains sewing machine operators: (1) the "sink or swim" method, (2) operator assisted or "buddy" system, (3) production line, (4) conventional vestibule, and (5) the scientific training method.

The first one, the "sink or swim" method, should not be considered as a method for training since the employee is left on his/her own to learn by observation, and to make and correct his/her own mistakes. This is the poorest of all methods used in training new operators. It results in slow up in the production line and poor quality workmanship. This method is not frequently used in the training of operators.

The "buddy" system of training consists of assigning a trainee to an experienced operator in the production line to be trained. The same problems tend to occur in the production with this system as with the "sink or swim" method. The main problem with this method is the experienced operator is more concerned with producing than teaching (Dickerson, 1966).

The production line method is the most common method used throughout the clothing industry. In this method the new employee

receives training on the production floor surrounded by experienced operators and the activity of the floor. The advantage of this approach is the sense of belonging created through contact with the supervisor. The disadvantage is that the production supervisor must train new employees in addition to keeping production up, which is difficult.

In the vestibule training method, the new operator is taught the complete work cycle at once. Then slowly, as skills, speed, and stamina are gained, the speed is increased until the operator is ready to work in the production line.

The scientific method is a new concept in operator training and has established itself as the most effective way to train an operator. This is because of its concentrated approach to learning. An essential part of the scientific training method is to reduce each operation to its basic components. This is done after a careful analyzation of the skills required for a specific job. The training usually takes place in a separate training center off the production floor. However, excellent results have been obtained using the scientific method on the production floor (AAMA, 1968).

According to Solinger (1966), one New York manufacturer stated that his training costs were about $3000 a year due to operator turnover. However, he failed to include power, supervisory, and capitalization changes that increase the cost per unit, plus the loss of sales due to late production. When these things were pointed out to him, he realized that the cost was many times more than he had originally estimated.

The cost of training the average operator varies from $250 to $750. This cost could be reduced to almost zero according to Solinger (1966) if the industry could employ vocationally trained skill operators. Solinger (1966) believes sewing machine operators should receive their training in public schools. Students graduating from such a course should be able to earn their keep within the first two weeks on the job as an operator. If the school course cannot meet this, then their vocational program for training sewing machine operators is not as good as it should be.

The beginning level operator must be given a basic understanding of the sewing machine and the parts to be operated. Some of the recommended tasks are threading the machine, adjusting the tension, regulating the stitch length, replacing the bent or broken needle, cleaning and oiling the machine at regular intervals, and attaching and/or adjusting attachments such as folding guides (Solinger, 1966).

In addition, it is important to know how to join simple seams properly, and sew straight lines, angles and curves. The emphasis in training should be on the muscular control, relaxation, rhythm, coordination and sight reading. Skill, speed, and quality will then automatically come (Solinger, 1966).

Vocational Education - Needs-Growth-Development

Today's accelerating and changing technology has placed man, his education, and his work in a new relationship in which education becomes a bridge between man and his work (Venn, 1968). Clark (1964) stated the amount of education, or the educational attainment bridging the gap between man and his work is considered an asset rather

than a liability to modern society. Many economists have become aware that education is actually an investment in humanity which brings increased economic value to the individual and influences the economic growth of the nation.

Vocational education can create and preserve jobs. The program of vocational education has proved to be a vital link in the chain of economic development. Vocational education is proving its worth in hundreds of communities around the nation.

As in other states in the U.S., Utah is concerned with the growth and development of vocational education in the public school system. Governor Scott M. Matheson commissioned a "blue ribbon" study of vocational education; the study will be conducted during 1978 and 1979 and will evaluate the need for vocationally trained people to 1985 and beyond. The study will be conducted by a commission of 34 members; 20 will be appointed by the Governor and 14 will be representatives of agencies such as the State Board of Regents and the State Board of Vocational Education (Prospector, 1978).

The Utah Public School System has developed a five-year plan for vocational education. The functions of this plan are to:

1. Assess current and future needs for job skills throughout the country.
2. State the goals that vocational education will seek to achieve within the next five years with regard to job skills.
3. Specify planned uses of state, local and federal vocational education funds for each fiscal year and show how these

uses will achieve the stated goals.

4. Establish policies to assure equal access to programs by both men and women.
5. Set up a program to assess and meet needs of persons identified as generally in the consumer and homemaking dual role who must seek employment.
6. Set out criteria which have been developed for coordinating Comprehensive Employment and Training Act (CETA) with vocational education programs (Utah Public School System Annual Report, 1977 p. 17).

The plan will help regulate and govern vocational education classes across the state and provide for a more successful training opportunity for the students involved.

Industry's demand for trained people is constantly on the increase. Barker (1979) states that we should not overlook the growing shortage of skilled employees. This problem is becoming critical and could soon influence the quality and nature of our industrial existence.

This manpower shortage extends from the west coast to the eastern seaboard and is not particular to any region of the country. In 1958, plant managers across the country listed as their number one problem that of finding trained, qualified, professional skilled-trade workers. Twenty years later plant managers still list manpower as their number one problem (Barker, 1979).

Utah's labor market is no different from the national statistics in its lack of skilled persons. Carpenter (1979), former Director of Utah Industrial Development Division, recently explained that

job prospects in Utah are extremely good and getting better. A review of want ads in the newspaper along the Wasatch Front shows hundreds of openings primarily in the skilled area for which vocational education prepares people (Prospector, 1979).

Job service data suggests that 30 percent of technical jobs filled within the last year were filled by people moving in from outside the State of Utah. The Vocational Advisory Council publication demonstrated that the state is not producing as many vocational trained education graduates as the job market needs or can absorb.

In a recent evaluation the Utah State Advisory Council recommended that, "the state must better relate to output of students from the education system with the employment opportunities" (Prospector, 1979).

The literature reviewed revealed a need for vocational education classes to train students in order to meet the manpower shortages. This may be accomplished through education and cooperation of the classroom teachers and persons involved in the industry.

METHODS AND PROCEDURES

Survey Procedures

A questionnaire was developed which requested plant managers or personnel managers of the fifty-six apparel manufacturers in Utah to report facts about their individual plants. Information was also gathered concerning the training of power machine operators. It provided questions which assessed general information about availability of jobs, geographic location, machines and equipment, garments manufactured, training and skills. This questionnaire was assessed by Mr. Ross Fillmore, President of Utah NeedleCraft Industry Association (UNIA) for clarity, ease of completion, and coverage of relevant material. The revision was then administered to two plant managers in Salt Lake City for the purpose of attaining their suggestions and comments about format and/or content. The final questionnaire was approved by the graduate committee of this project. The questionnaire was personally delivered to plants which were north of Fillmore, Utah. The others were mailed with a letter of explanation and a letter of support from Fillmore, with his endorsement of the study. A copy of these two letters are in Appendix A.

Population and Data Collection

The sample involved in the study consisted of fifty-six apparel manufacturing plants throughout the State of Utah. Fifty-two of the plants contributed useable questionnaires. Two plants on the

original list had closed down their operation or had moved to another area of the country, and two did not respond.

Obtaining the names of individual plants which manufacture wearing apparel in the State of Utah was accomplished by referring to the Directory of Utah Manufactures which is prepared by Utah Job Service in Salt Lake City, Utah. Additional help in this area was received from Ross Fillmore.

Personal appointments were set up with the plant managers. The questionnaire was used in an informal interview in order to gain the desired information. In addition some information was also exchanged with regards to training, skills, and vocational clothing course development. Some plant managers were contacted at a monthly meeting of the Utah NeedleCraft Association.

The plants which were not accessible for personal interviews were mailed a form letter and a letter of support along with the questionnaire which is found in Appendix B. A self-addressed envelope accompanied the letter and questionnaire for return.

Table 1 shows the plants throughout the state which participated in the study. The fifty-two plants were divided into three categories, depending on their geographic location. The three categories are as follows: Northern Utah (Logan-Salt Lake City), Central Utah (Orem-Richfield), and Southern Utah (Fillmore-Southern Stateline). This division was made to allow an assessment of the geographic availability of jobs throughout the state. It provides a look at similiarities and differences of each region, so training programs can be structured for the region where they are located. The

categories or regions were patterned after the suggestions from the Utah Travel Council and the Directory of Utah Manufactures (1977-78).

Table 1

Number of Plants According to Geographic Location

Location	Plants
Northern Utah	28
Central Utah	15
Southern Utah	9

Analysis of Data

The responses of fifty-two plants were used for purposes of analysis. The items from the questionnaire were programmed into a computer. The program was written and developed by George Jensen, a computer science student at Viewmont High School, Bountiful, Utah.

Data was analyzed to fulfill the purposes of the study. The responses to the items in Part A and Part B were tabulated providing a frequency count by item. These were converted into percentages for discussion and comparison.

Data from Part C and Part D consisted of statements to which plant managers were to rate factors in operator training from least important to most important. A scale of 1-5 was assigned each statement with 1 least important and 5 most important. This data was analyzed by computing a percentage for each number on the scale.

Information obtained in Part E which asked for comments or suggestions was summarized for reporting.

RESULTS AND DISCUSSION

Organizing Information

The information gathered from the fifty-two questionnaires administered to managers in apparel manufacturing in Utah was used as the basis of this study. This was the total number which replied and returned questionnaires. After checking the completed questionnaires, it was decided all fifty-two had useable information and the analysis contained information from all returned questionnaires. The questionnaires were divided for the analysis; this division is shown on Table 1 page 16. Also an analysis for the state is shown.

Assessment of the Industry's Background

An assessment was made by analyzing the information from Part A questions 6, 8, 9, and 10, which gives an overview of the make up of the industry and its operation. This presents a clear cut picture of background characteristics of 98% of the states plants represented in the study.

The number of employees in each region and the state is shown in Table 2. This number varied slightly as production increased and decreased, and as plants expanded their operations. Three plants, one in the central region and two in the southern region, gave an approximate or varied number of employees; therefore, the total number for the state could be slightly higher or lower because an average was used in the totals from these plants.

The plant managers were asked for their response to how many shifts per day their plant was in operation. Table 3 shows the

Table 2

Number of Employees Working in the Apparel Industry in Utah

Region	Number Employed	Percentage
Northern	3349	59%
Central	1850	32%
Southern	503	9%
Statewide	5702	100%

plants that operate either one, two, or three shifts per day. These were figured as being eight-hour shifts, and a five-day work week. The largest number of employees in the apparel industry in Utah are employed to work a forty-hour work week. As noted in Table 3 none of the plants operate twenty-four hours a day or three shifts. Workers in the apparel industry were on the job during a day shift with a few working an afternoon or evening shift.

Table 3

Plants Operating One, Two, or Three Shifts Per Day

No. of Shifts Per Day	Northern		Central		Southern		Statewide	
	#	%	#	%	#	%	#	%
1	24	83	14	94	8	89	46	89
2	4	17	1	6	1	11	6	11
3	0	0	0	0	0	0	0	0

Question eight in Part A of the questionnaire dealt with plants hiring employees who worked full or part time and to determine if there was a seasonal variance in the industry in Utah. A category labeled "other" was placed on the questionnaire to detect if there was any work done other than full, part or seasonal times that would be significant in the industrys' workings. Table 4 shows the plants who employ people full and part time. The summer seasonal shifts of employment were found to be in plants where outdoor wear was manufactured. The managers indicated this was because ski clothing was made during the summer months to have ready for shipment to the retailer in the early fall.

One plant in the southern region indicated that they employed people to work in the category labeled "other." This plant hired persons who owned power machines and worked out of their individual homes. They do piece work on a contract for a set amount per article. This was the only statement made by any plant in the state in the "other" category.

Table 4

Plants Hiring Full and Part Time Employees

Employee	Northern		Central		Southern		Statewide	
	#	%	#	%	#	%	#	%
Full Time	28	100	15	100	9	100	52	100
Part Time	21	78	5	40	8	88	34	69

The employees working in the apparel plants in Utah are not in support of a union. Nine and six-tenths percent of all employees in the apparel industry throughout the state are members of a union. The southern region has no support of union membership from its employees, while the northern has 7% support. Most union support is in the central region where 20% of the employees are members of a union.

The industry management in the state was asked in question 5, Part B of the questionnaire to give opinion of the employment opportunities in the area of their plant. The responses were stated in one of five adjectives. From programming and calculation the five adjectives were listed as: excellent, very good, good, fair, and poor. The results are reported in Table 5.

Table 5 shows the percentage of plant managers who gave their opinion of the employment opportunities as being one of the listed adjectives. Statewide the opportunity for employment was stated as "good" by 42% of the managers. The northern region responded that opportunity was excellent to very good, while the central and southern regions were of the opinion that the employment opportunity was good. None of the managers stated that the industry offered a poor opportunity for employment.

Assessment of Positions Available and Turn Over Rate

Question 5 of Part A was developed to assess which plants hire employees to fill the following positions:

1. Design garments
2. Develop patterns

Table 5

Plant Managers Opinion of Employment Opportunity

	Northern	Central	Southern	Statewide
	%	%	%	%
Excellent	39	27	12	28
Very Good	30	20	13	22
Good	26	53	44	42
Fair	12	0	11	8
Poor	0	0	0	0

3. Spread and cut
4. Repair machines
5. Inspect and quality control
6. Supervise
7. Operate power machines

The number and percentage of plants in Utah that hire employees to fill the listed positions is shown on Table 6. Inspection and quality control, supervision, and machine operators were the three positions in the state and each region that 90% or more of the plants hired employees for.

Garment designers are hired in eight plants in Utah. Designing is done mainly in the fashion capitals of the world and sent to the plants ready for manufacturing. The plants who have designers produce their own line of fashions for the areas clientele. Pattern developing is much the same as designing in the apparel industry in

Table 6

Plants Hiring Persons to Fill the Listed Positions

Position	Northern		Central		Southern		Statewide	
	#	%	#	%	#	%	#	%
Design Garments	6	17	2	20	0	0	8	12
Develop Patterns	12	42	6	40	0	0	18	27
Spread & Cut	23	85	10	66	2	22	35	58
Repair Machines	22	78	13	86	4	44	39	69
Inspect & Control Quality	26	92	15	100	6	77	47	90
Supervision	24	89	15	100	9	100	48	96
Operator Power Machines	27	96	15	100	9	100	51	99

Utah. There is only a slight increase in the number of pattern developers in comparison to designers. Pattern work is done along with the designing in other areas of the country.

Thirty-five plants hire employees to do the cutting of garments. The others receive pre-cut garments from other branches of their company or from a contract shop. Repairmen are not hired in every plant because managers and supervisors are often skilled in maintenance and repair of machinery.

Positions which have the highest rate of turn over in the apparel industry were listed by the plant managers as being:

1. Power machine operators

2. Supervisors

3. Office or secretarial help

Power machine operators were listed by 48 of the plants as being the position which is vacant or hired for most often. This is in relation to the high proportion of operators in the plants operation. Each manager stated that they face the problem of keeping operators for the manning of their equipment and constructing the needed amount of garments to fill the demand. There were never ending requests by plant managers for trained operators. Want ads and job service are advertising for and seeking out persons who can fill these vacancies.

Supervisors were second on the list of employee turn over. Twenty-seven of the plants stated this. Sixteen of the managers listed office help as third in employee turn over. Office help may not directly relate to the assessment of the apparel industry, but it is necessary in the operation of the plant. Inspectors that maintain and control the quality of the garments produced and repairmen to service machines were the only other positions mentioned on the questionnaire to have a turn over in personnel.

It was noted that the smaller plants in the state left question 7, dealing with employee turn over, blank more often than the larger plants did. This may indicate that plants with small employee number or plants in less populace areas of the state have fewer problems with turn over rate in their employees.

Machines Used and Garments Manufactured

An assessment of the machines the apparel industry of Utah uses in the manufacture of wearing apparel was made. The

questionnaire asked for the number of each machine that was used in the plant. Over half were returned with a check mark indicating that the particular machine was used, but not stating the number in use. Therefore, a percentage was tabulated with the number of plants using each machine rather than giving the number as was requested in question 4 Part A.

Table 7 shows the percentage and the number of plants in each region as well as statewide which use or have in operation the nine listed power sewing machines. The three power sewing machines that were listed with highest percentages statewide are:

1. Serger, Overlock, Overedger
2. Lockstitch, Single Needle
3. Buttonhole

In the cases where a number of machines was given, the blind-stitch machine was in a greater quantity than the buttonhole machines. This varied according to the article or garment being constructed, and directly influenced the number of operators. The pinking machine was deleted from the listing in the computer program because no use of it was found.

The item asked for a statement of "other" machines in use gathered the following responses:

1. Bar tacker
2. Embroidery
3. Felling
4. Collar turner
5. Memory stitch

Table 7

Plants Operating the Listed Power Machines

Position	Northern		Central		Southern		Statewide	
	#	%	#	%	#	%	#	%
Lockstitch Single Needle	25	89	15	100	7	78	47	89
Blindstitch	21	75	13	100	6	67	40	76
Serger, Overlock, Overedger	27	96	15	100	8	89	50	95
Buttonhole	22	78	14	93	9	100	45	90
Multiple Needle	21	75	13	87	7	78	41	80
Needle Feed	12	43	9	60	6	67	27	56
Chainstitch Blind Tacker	13	46	4	26	3	33	20	35
Chainstitch	15	54	8	53	2	22	25	43
Button	22	79	12	80	9	100	43	86

This item was not programmed because of the limited responses. However, in compiling the results there were four plants using the bar tacker, three using the embroidery machine, and one plant using each of the others listed.

An assessment of the garments manufactured in the apparel plants in the state gives an overview of the type of production and operation that the industry is involved in. This overview also shows the garments which are available for purchase by retailers in the state and the type of garments which are exported from the state.

Many plants across the state are involved in the production of more than one type of garment. Therefore, the number of plants listed on Table 8 does not total 52 because of the overlap of garments that are manufactured.

Sportswear is a big part of Utah's wearing apparel industry. It is made in twenty-five plants across the state. Fourteen of these plants produce sportswear only, while the other eleven manufacture additional types of garments. This is an indication of the buying habits and lifestyle of the people in Utah. It also shows the garments which might be available for exporting from the state.

The items infant wear and children wear appeared separately on the questionnaire, but in the tabultion it was found that six plants are responsible for the manufacture of both types of wearing apparel. Only two plants made children wear and not infant wear. The techniques and machines used in the manufacture of both these lines of apparel appeared to be very closely related.

Twelve of the plants indicated that in their production both women's wear and sportswear was manufactured. Seven of the nineteen plants listing women's wear manufacture just women's wear. Nineteen plants across the state cater to the fashion demands of women.

There were four plants which gave a response to the "other" category of this question. Three of the four responding make one type of sports apparel. The three garments were:

1. Skiclothes
2. Swim wear
3. Athletic uniform jerseys

The fourth company responding was a lingerie company in Salt Lake City. They manufacture temple clothes and garments for the Mormon Church whose headquarters is in Salt Lake City. This is a plant which supplies garments to accommodate people of the area and their needs. The category of fashion accessories was not rated by any of the fifty-two managers, so it was deleted from the listing. Table 8 shows the number and percentage of plants which manufacture the type of garment listed.

Table 8

Garment Types Manufactured in Utah's Apparel Industry

Garment Type	Northern		Central		Southern		Statewide	
	#	%	#	%	#	%	#	%
Infant Wear	3	11	3	20	0	0	6	10
Children Wear	5	18	3	20	0	0	8	13
Womens Wear	10	39	4	27	5	56	19	41
Sportswear	12	46	7	53	6	67	25	55
Underwear	3	11	0	0	0	0	3	4
Lingerie	4	17	1	7	0	0	5	8
Outdoor Wear	4	17	1	7	0	0	5	8
Uniforms	1	4	0	0	0	0	2	5
Custom Wear	2	7	0	0	1	11	3	6
Mens Wear	5	18	4	27	2	22	11	22

Assessment of Employee Training Prior to Employment

The training a person receives prior to the present employment situation is widely varied across the state. The plant managers in the state's apparel industry responded to question 1 Part B of the questionnaire, stating that forty-one percent of their employees received one type of training or another prior to their hiring the person. The southern region had a forty-four percent figure, the central had a forty percent and the northern had the lowest percentage with thirty-nine percent.

An assessment was made of the training the employees had received. Each region of the state has its own possibilities of training situations, dependent on the availability of training centers or locations.

Table 9

Training Employees Received Prior to Employment in Present Plant

Northern	Central	Southern
Intermountain School, Brigham City	Utah Technical College, Provo	Utah Technical College, Provo
Skills Center, Ogden	Prior experience in other plant	Prior experience in other plant
Utah Technical College, Provo		Basic sewing skills
Prior experience in other plant		
Experience in home sewing or power machine operation		

The only formal training or school training received by employees throughout the state's plants was the course taught at Utah Technical College, which was listed by plant managers in all three regions. Plant managers stated that this course was the most beneficial for operator training.

The apparel industry was asked if they could hire a trained person what type of training they would prefer the person have. Question three Part B of the questionnaire was designed to gather the preferred training types. These are listed on Table 10; each regions plant managers had similar ideas as to types of training desired. Therefore, the list include the entire state rather than each region separately.

Twenty-six of the managers would prefer the person they are hiring to have skills developed in the operation of power machines. The single needle, lockstitch and serger were the two machines identified by the managers as specific machines for training. The other listings on Table 10 were mentioned by the number of managers indicated.

The industry benefits from the students who are trained in vocational clothing classes in the state's high schools. The industry's knowledge of these training classes in the high schools was assessed. This information was asked for in question four Part B of the survey. The plant managers listed the following high schools as having vocational clothing courses:

1. Bonneville High School
2. Weber High School

Table 10

Types of Training Preferred by Plant Managers

Across the State

State of Utah	# of Managers
1. Power Machine Operators	26
a. Serger, Overlock, Overedger	6
b. Lockstitch Single Needle	14
2. Experience on the Job	4
3. All Types of Basic Sewing Skills	4
4. Fabric Knowledge	4
5. Garment Construction Knowledge	3
6. Inspection and Control of Quality	3

3. Ogden High School
4. Murray High School
5. Granger High School
6. Orem High School
7. Tooele High School
8. Blanding High School

This does not represent all the high schools in Utah where vocational clothing is offered as part of their curriculum. It is representative only of those of which plant managers were aware.

Utah Technical College was listed by several plant managers in this category. Utah Technical College is a post-secondary institution and was, therefore, deleted from the listing of high school's offering vocational clothing. This institution does provide an

excellent course in vocational clothing and was given very favorable reviews by plant managers.

Identification of Skills and Equipment Used Most Often

Part C and D of the questionnaire were set up to assess the skills needed by an entry level operator. Also the power machines that a person at the entry level position would need to have an understanding of operating was assessed. This section of the survey was designed using a scale of 1 through 5 as an answering device. One on the scale was of least importance to the plant manager with 5 being of most importance. This scale was used for gathering information in both Part C and D.

The activities dealing with the mechanics of machines used are shown on Table 11. Included also is the rating of how important the manager felt it was for an entry level operator to be able to perform the listed activity. This study has shown that managers have the need to hire single needle lockstitch and serger operators. Also these two machines were suggested as the major ones for use in training programs, as they are the most often used in the industry. The entry level operator should be trained on these two machines primarily. It was be assumed that the importance rating is dealing with the most often used machines.

The threading of power machines varies for each machine type. Also the degree of difficulty of the activity depends on the machine being threaded. Thirty-two of the managers felt that it was of most importance that an entry level operator be able to thread a power

Table 11

Importance Rating for Knowledge of Machines

Activity		Northern		Central		Southern		Statewide	
Threading Machines		#	%	#	%	#	%	#	%
Least	1	3	12	3	20	1	11	6	14
	2	2	8	0	0	0	0	2	2.5
	3	2	8	0	0	0	0	2	2.5
	4	6	22	1	7	0	0	7	10
Most	5	14	50	10	73	8	89	32	71
Adjust Thread Tension									
Least	1	3	11	1	7	1	11	5	10
	2	2	7	2	13	0	0	4	6
	3	9	32	1	7	2	22	12	20
	4	5	19	5	33	2	22	12	25
Most	5	7	31	6	40	4	45	17	39
Clean & Oil									
Least	1	5	18	2	13	1	11	8	14
	2	3	10	1	7	0	0	4	6
	3	3	12	2	13	0	0	5	8
	4	4	14	1	7	2	22	7	14
Most	5	13	46	9	60	6	67	28	58

machine. This indicates a need for teaching and practice of the threading of the most often used power machines.

The adjustment of tension is a mechanical adjustment done depending on the fabric being sewn. Teaching an operator to adjust tension is an involved process and would need constant attention during the training period. The opinion of the plant managers across the state was spread out on the importance rating scale. Therefore, the adjustment of tension is not one of the most important and pressing activities for an entry level operator to possess.

Cleaning and oiling is a maintenance operation for power machine operators. The techniques are the same for all machines with a variation in the places needing oil. Twenty-eight of the managers rated cleaning and oiling as most important. Eight managers listed it as least important, with the explanation that this activity was taken care of by repairmen as part of a weekly maintenance plan in their plant.

Familiarity of the parts of the machines and the functions they perform were assumed to be essential in the operation of a power machine. The parts and their functions on each machine would vary greatly. The spread of the responses from the managers on the importance scale is shown on Table 12 and would indicate that there is not a unified opinion on this matter.

Attachments and folders imply ability to use these parts on a single needle lockstitch machine that allows it to perform a varied function. Table 13 shows the managers rating of attachment and folder use. The managers stating a 5 on the scale are the ones whose plants use this type of skill in their operation. The managers

Table 12

Importance Rating of Knowledge of Machine Parts and Use

Activity		Northern		Central		Southern		Statewide	
Familiar with Parts & Their Functions		#	%	#	%	#	%	#	%
Least	1	6	22	5	34	2	22	13	26
	2	4	14	3	20	0	0	7	12
	3	3	11	4	26	0	0	7	12
	4	8	30	3	20	1	11	12	20
Most	5	6	23	0	0	6	67	12	30

Table 13

Importance Rating of Use of Folders and Attachments

Activity		Northern		Central		Southern		Statewide	
Use Folders & Attachments		#	%	#	%	#	%	#	%
Least	1	2	8	4	27	1	11	7	15
	2	3	12	1	7	1	11	5	10
	3	9	33	2	13	0	0	11	16
	4	5	18	3	20	2	22	10	20
Most	5	8	27	5	33	5	56	18	39

listing it as least important are the ones that do not use these skills or techniques in their plants. This activity would be one that an entry level operator could be trained on the job with

instead of in a training course. This would allow individual plants some training of skills for their own plant's operation.

Garment construction methods were evaluated by the plant managers and given a rating on the 1-5 scale. These skills are ones which an entry level operator would need to develop in vocational clothing courses. Table 14 shows the plant and percent of the plant managers ratings for this skill.

Table 14

Importance Rating on Garment Construction

Activity		Northern		Central		Southern		Statewide	
Assemble Garment		#	%	#	%	#	%	#	%
Least	1	2	7	1	7	2	22	5	12
	2	1	5	0	0	0	0	1	2
	3	2	7	2	13	0	0	4	7
	4	3	12	3	20	1	11	7	14
Most	5	19	69	9	60	6	67	34	65

The assembling of a garment was rated by 34 plant managers as being a most important activity for an entry level operator to understand. The teaching of garment assembly would vary depending on the garment being manufactured. This skill would be developed through practice and repetition on a variety of types of garments. Adjustments of techniques could then be made easily once the operator was on the job site.

The choice of the correct needle and thread type is an activity an operator should know. The selection of needle and thread is made for the fabric type an operator would be working with. This activity received a rating on the scale that was evenly spread 1 through 5. Table 15 shows the spread of responses. The managers' opinions would indicate that a vocational course in power sewing cover the selection process, but the plant would reinforce the knowledge on the job.

Table 15

Importance Rating of Needle and Thread Selection

Activity		Northern		Central		Southern		Statewide	
Correct Needle & Thread		#	%	#	%	#	%	#	%
Least	1	5	18	5	33	4	45	14	32
	2	5	18	4	27	0	0	9	15
	3	5	18	3	20	2	22	10	20
	4	4	15	1	7	1	11	6	11
Most	5	9	31	2	13	2	22	13	22

Pile and slippery fabric were selected to be represented on the activity list because they are fabrics which require special skill in handling during construction. Table 16 indicates the number and percentage of managers' ratings of these two fabrics.

Pile fabric was given a rating of least important by twenty-three of the managers. Only six listed it as most important. Therefore, training of an entry level operator would not need to include the ability to or knowledge of sewing with a pile fabric.

Table 16

Importance Rating of Fabric Handling Skills

Activity	Northern		Central		Southern		Statewide	
Pile Fabric	#	%	#	%	#	%	#	%
Least 1	13	45	9	60	1	12	23	40
2	6	22	2	13	2	22	10	20
3	4	14	2	13	2	22	8	13
4	2	8	1	7	2	22	5	13
Most 5	3	11	1	7	2	22	6	14
Slippery Fabrics								
Least 1	1	5	7	47	1	11	9	22
2	2	8	1	7	1	11	5	10
3	6	22	2	13	3	33	11	23
4	7	25	4	27	1	11	12	21
Most 5	8	30	1	6	3	34	12	24

Pile fabric is not often used in the manufacture of wearing apparel and is not currently used extensively by the apparel industry.

Slippery fabrics such as a nylon tricot, quiana, or satin were listed by 24 managers as either 4 or 5 on the scale. This skill is a more important one in the manufacture of wearing apparel than sewing on pile fabric. The handling of a slippery fabric should be included in the training of an entry level operator.

Sewing skills were rated by the plant managers across the state according to their importance; the figures of these are shown on Table 17. The skills that were listed for response were sewing angles, curves, and doing top stitching.

Sewing an angle is the ability to change the directon that is being sewn. It is done by stitching, pivoting the needle, and continuing to stitch. This skill is used in such activities as constructing collars, cuffs, and plackets. The ability to sew a curve or in a circular motion is needed for setting in sleeves, appling a patch pocket, or facing an armseye or neckline. Top stitching is the finishing or decorative touch given a garment according to the design. Top stitching is in full view on the garment; therefore, the operator must guide the fabric carefully and know the correct placement on the garment.

Thirty-seven of the managers rated the three sewing activities: angles, curves, and top stitching above four on the rating scale. This would indicate that all three should be taught and practiced repeatedly in a vocational clothing course.

Record keeping is the process of keeping track of the amount sewn by each operator. This procedure varies in the manner in which it is handled from plant to plant. This record is the scale on which the operator's salary is based. The operators are paid by the number of items produced in an hour. Twenty of the managers rated record keeping as being most important as shown on Table 18. Due to the variations in the methods of record keeping, this activity would be

Table 17

Importance Rating of Sewing Skills

Activity		Northern		Central		Southern		Statewide	
Sew Angles		#	%	#	%	#	%	#	%
Least	1	0	0	2	13	1	11	3	8
	2	1	5	0	0	1	11	2	5
	3	6	22	3	20	0	0	9	14
	4	8	30	7	47	1	11	16	29
Most	5	12	43	3	20	6	67	21	45
Sew Curves									
Least	1	0	0	1	14	0	0	2	5
	2	5	18	0	0	1	11	6	9
	3	2	8	3	20	1	11	6	13
	4	9	33	5	33	1	11	15	26
Most	5	11	41	5	33	6	67	22	47
Top Stitch									
Least	1	1	4	2	13	0	0	3	5
	2	2	9	0	0	1	15	3	8
	3	3	12	4	27	0	0	7	13
	4	7	25	4	27	1	15	12	26
Most	5	14	50	5	33	6	70	25	50

best handled in the classroom showing a variety of methods and then taught on the job using the plant's method.

Table 18

Importance Rating of Keeping Records

Activity	Northern		Central		Southern		Statewide	
Keep Records	#	%	#	%	#	%	#	%
Least 1	3	9	2	13	2	22	7	15
2	7	25	2	13	1	11	10	16
3	4	15	4	27	0	0	8	14
4	5	18	1	7	1	11	7	12
Most 5	9	33	6	40	5	56	20	43

Part D of the questionnaire assessed the machines which the industry feels are the most important for an entry level power machine operator to know how to operate. The position of machine operator is the most difficult position for the apparel employer to keep employees employed at. This is due to the fact that machine operators make up the largest proportion of the total employees in the plants. The assessment was made as to which machines were used in most of the plants across the state. This knowledge would help in the purchasing of the correct machines to equip a school for teaching power sewing courses. The single needle lockstitch machine and the serger were given a rating of either 4 or 5 by 75% of the plant managers statewide.

Table 19 shows the machines and the rating scale from the questionnaire Part D. This is the number and percentage of managers who gave each machine a rating from 1-5 for operating knowledge at the entry level position. The pinking machine was deleted from the listing due to its receiving a rating of 1 by 100% of the managers. Each machine is reported separately.

Table 19

Plant Managers Rating of Power Machine

Operators Knowledge

Machine		Northern		Central		Southern		Statewide	
Single Needle Lockstitch		#	%	#	%	#	%	#	%
Least	1	1	7	0	0	1	11	2	6
	2	1	4	1	9	0	0	2	4
	3	1	8	2	15	2	22	5	11
	4	1	4	0	0	0	0	1	2
Most	5	21	77	11	76	6	67	38	73
Blindstitch									
Least	1	4	15	1	8	1	12	6	8
	2	6	22	5	36	2	22	13	25
	3	7	25	3	20	2	22	12	23
	4	5	19	0	0	1	11	6	12
Most	5	5	19	5	36	3	33	13	25

Table 19, Continued.

Machine		Northern		Central		Southern		Statewide	
Chainstitch		#	%	#	%	#	%	#	%
Least	1	3	15	3	22	1	11	7	10
	2	5	18	3	22	2	22	10	19
	3	10	37	3	22	2	22	15	29
	4	5	18	1	7	1	11	7	14
Most	5	6	22	4	27	3	34	13	25
Serger, Overlock Overedger									
Least	1	3	11	1	7	0	0	4	6
	2	1	4	0	0	1	11	2	4
	3	3	11	2	13	2	22	7	15
	4	4	15	4	26	2	22	10	21
Most	5	17	61	8	54	4	45	29	54
Buttonhole									
Least	1	5	19	5	30	0	0	10	18
	2	10	35	4	26	2	22	16	29
	3	7	25	3	22	2	22	12	25
	4	5	18	0	0	1	11	6	11
Most	5	1	4	3	22	2	22	6	17

Table 19, Continued.

Machine		Northern		Central		Southern		Statewide	
Button		#	%	#	%	#	%	#	%
Least	1	6	22	4	27	0	0	10	17
	2	8	29	5	34	2	22	15	28
	3	9	33	3	17	2	33	15	28
	4	3	11	0	0	0	0	3	4
Most	5	1	4	3	22	2	22	6	17
Multiple Needle									
Least	1	5	18	4	28	0	0	9	15
	2	7	27	1	8	2	22	10	19
	3	9	33	4	28	1	11	14	24
	4	3	11	1	8	1	11	5	10
Most	5	3	11	4	28	2	22	9	20
Needle Feed									
Least	1	5	18	4	28	0	0	9	17
	2	4	15	1	8	1	11	6	11
	3	13	47	4	28	3	33	20	39
	4	0	0	1	8	0	0	1	2
Most	5	6	20	4	28	2	22	12	19

Table 19, Continued.

Machine		Northern		Central		Southern		Statewide	
Chainstitch/ Blind Tacker		#	%	#	%	#	%	#	%
Least	1	7	25	6	42	1	11	14	25
	2	8	30	1	8	3	24	12	23
	3	8	30	2	14	2	22	12	22
	4	1	4	1	8	1	11	3	4
Most	5	3	11	4	28	2	22	9	18

This study raises the question of whether the machines used by the industry are dictated by the garments that are manufactured. In many cases specialty machines such as buttonhole, button, chainstitch, and multiple needle were used when a certain group of garments were manufactured. This was very clear in the category of both infant and children wear, where the use of needle feed and multiple needle machines were the greatest. Also the plants using embroidery machines were those constructing infant and children wear. Sportswear manufactures had the largest variety of machines in use in their plants. As the number of variety of garments produced went up so did the number of different machines. The serger, single needle lockstitch and blindstitch machines were used in most plants no matter what garments were being constructed.

The statewide total does not in every case equal 100%. This was because all managers did not have a response for every machine listed.

Part E from the questionnaire was hand tabulated. A decision of the information and suggestions was felt to have more meaning and significance in the section of summary and conclusions.

Feedback to the Apparel Industry and School Programs

The results from the assessment of the industry were presented at the May 3, 1979 meeting of the Utah NeedleCraft Association, to inform the membership of the industry's characteristics in the State of Utah. Many of the managers involved in the study were in attendance at the meeting to receive feedback on their participation in the findings. The results will be available for any teacher of vocational clothing courses in the Utah High Schools.

SUMMARY AND CONCLUSIONS

Introduction

An Assessment of the apparel industry in the State of Utah would be useful to those associated with the industry and those who are responsible for program development and instructors of the vocational clothing courses. For this reason, a survey of the industry's background and training information was conducted and analyzed.

Objectives

The objectives of the survey were:

1. To provide an assessment of the apparel industry in the area of:
   a. Job availability
   b. Geographic location
   c. Positions and job demand
   d. Machines and equipment used
   e. Garments manufactured
2. To assess the work activities and machine knowledge of an entry level power machine operator.

Method

The questionnaire developed was presented to the fifty-six apparel manufactures in the State of Utah. The plant or personnel managers were asked to give information concerning their plants operation such as: machines used, garments manufactured, employee numbers, training prior to employment, preferred training, work

activities, and machine knowledge. The information from fifty-two returned questionnaires was computer programmed and analyzed. The fifty-two plants were divided into three regions depending upon their geographic location. The analysis was done for each region as well as the entire state. A number and percentage was figured for each item on the questionnaire and the findings are presented on the tables in the results and discussion section. Data was divided into regional areas: Northern, Central and Southern. The information concerning machines and training skills that an entry level operator should be familiar with were analyzed. The results were given to the plant managers that participated in the survey.

Summary of Findings

It was found that there are 5700 employees involved in the manufacture of wearing apparel. The northern region of the state employs fifty-nine percent of the employees in 28 plants. This region is from Logan to Salt Lake City, which is the Wasatch Front area where most of Utah's population is located. Central Utah plants employ thirty-two percent of the workers, while only nine percent are employed in the southern region where the population is less dense.

Ten percent of the plants in Utah are operating two shifts per day. The plants where two shifts were used employed more part time workers than those operating just one.

The employment opportunity in the apparel industry was stated as being good by 42% of the managers who responded to the survey. This was the largest percentage; therefore, it would be accurate to

list the employment opportunity throughout the state as good. Each region had an opinion of their own on employment; the northern region managers had a much more encouraging outlook. Sixty-nine percent felt the opportunity in the apparel industry was very good to excellent. The central region and southern region were of the opinion that the opportunity was very good to good. None of the managers stated that the opportunity was poor, and only eight percent felt that it was only fair.

The northern region managers had a much harder time and more pressing problem getting and keeping power machine operators in their plants, than did the central and southern managers. It was noted that in the northern plants the managers advertised frequently for persons who could be trained to work as a power machine operator.

In small towns in central and southern Utah, often the apparel industry may be the only opportunity a person would have for employment; therefore, the manager has a more available work force. Also, employees would remain on the job longer due to the lack of other employment possibilities.

Union membership of the apparel employees in the state is at the ten percent mark. The matter of union membership was discussed by the members of the NeedleCraft Association at their March 1979 meeting. The body at this meeting presented the feeling that the garment union was making a push to enter the plants in Utah and to present the union's views to the employees. The managers at the meeting felt that by meeting with their employees on matters concerning their wants and desires, they could accomplish the same service as a union.

The apparel industry's greatest need in Utah is for power machine operators. This is shown in the findings of employee turn over and the number of plants hiring operators. Power machine operators were listed by the plant managers as the position with the highest rate of employee turn over. Ninety-nine percent of the plants hire power machine operators; this is because one plant surveyed produced ready-to-sew kits and did not hire operators.

Conclusions

The assessment of the apparel industry resulted in the following conclusions:

1. That jobs available across the state in the industry are mostly for power sewing machine operators.
2. Many types of power machines are used in the plants; however, the single needle lockstitch, serger, and blindstitch machines are used to the greatest extent.
3. A wide variety of garments are manufactured in Utah's apparel industry, but sportswear is manufactured in the largest number of plants.
4. The employment opportunity is good throughout the state.
5. One-third of the employees receive training prior to their present status of employment.
6. Employers would prefer hiring persons trained to operate:
   a. Sergers, Overlock, Overedger
   b. Single Needle Lockstitch Machines
7. An entry level operator should be trained in the following activities:

a. Machine threading

b. Garment construction

c. Record keeping

d. Top stitching

e. Sewing of curves and angles

8. An entry level operator should be skilled in the operations of the following power machines:

a. Serger, Overlock, Overedger

b. Single Needle Lockstitch

c. Blindstitch

Guidelines

1. It is recommended that teachers of vocational clothing classes and persons from the apparel industry be in constant contact with one another, such as an Advisory Board situation. This would allow for an exchange of ideas and procedures between the two bodies, and better training of persons in the classes would result.

2. It is suggested that training of operators in the classroom be structured to meet the needs of the industry as assessed in this study.

Suggested Training Procedures

1. The classroom be equipped with the machines most frequently used by the apparel industry such as: serger and single needle lockstitch.

2. The students be skilled in the following activities:

a. Machine threading

b. Garment construction

c. Record keeping

d. Ability to sew curves, angles, and top stitch

3. Stress business-like atmosphere of the industry in the classroom setting.

4. Repetition of one or more steps of construction rather than complete garment construction.

5. Stress quality of workmanship as well as a constant work pace.

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APPENDIXES

APPENDIX A

Explanatory and Support Letters to Plant Managers

February 4, 1979

Dear Sir:

Attention: Plant Manager or Personnel Manager

I am writing this letter in hopes that you can take a few minutes out of your busy day to answer the survey I am enclosing. This survey is the information gathering device I'm using to get the data collected for my thesis. I am in hopes that the information I gather can be used to inform and enlighten the State Board of Education to the need the state has to have students trained in power sewing skills in high school.

I would appreciate your cooperation in answering these questions and returning it to me at your earliest convenience in the enclosed self-addressed envelope. Thank you for your time in helping me accomplish my goals.

Sincerely,

Ann Sessions

Ann Sessions
Graduate Student
Utah State University

MODE O'DAY Company
A DIVISION OF GAMBLE-SKOGMO, INC.
PLANT NO. 2 • 2955 SOUTH MAIN STREET, SALT LAKE CITY 15, UTAH

UTAH NEEDLECRAFT INDUSTRY ASSOCIATION

U "N" I

To Whom It May Concern:

This letter is to introduce Ms. Ann Sessions. She is a teacher in the Davis School District and a graduate student at Utah State University.

Ms. Sessions is making a survey, statewide. The positive, end result for us in the Apparel Industry is that we hope to have developed Secondary Vocational Power Sewing Classes in many of the high schools and some junior high schools within the state.

Please take a few minutes from your busy schedule and assist Ms. Sessions with the survey.

Sincerely,

Goss

R. C. Fillmore
President

RCF/ef

APPENDIX B

Questionnaire

A. Please respond to each of the following questions concerning your plant's operation:

1. Name of Company_____

2. Location (City)_____

3. Check the types of garments manufactured in your plant:

Infant Wear_____	Sportswear_____	Outdoor Wear_____
Children Wear_____	Underwear_____	Uniforms_____
Women's Wear_____	Lingerie_____	Custom Wear_____
Fashion Accessories_____ (Hats, Gloves, Scarves, etc.)		Men's Wear_____
		Other_____

4. Please indicate the number of each type of machine that you use.

1. _____ Lockstitch, Single Needle
2. _____ Blindstitch
3. _____ Serger, Overlock, Overedger
4. _____ Buttonhole
5. _____ Multiple Needle
6. _____ Needle Feed
7. _____ Chainstitch/Blind Tacker
8. _____ Pinking
9. _____ Chainstitch
10. _____ Button
11. _____ Other (Specify)

_____

5. Check if your plant (locally) hires employees who:

Design garments_____	Inspect & Control quality_____
Develop patterns_____	Supervise_____
Spread & Cut_____	Operate Power Machines_____
Repair Machines_____	

6. Number of Persons Employed_____

7. What three positions have the highest rate of employee turn over?

   1. _____ 2. _____ 3. _____

8. Does your plant have persons who work:

   a. Full time_____ c. Seasonal_____
   b. Part time_____ d. Other_____

9. How many shifts a day does your plant operate?

   1. _____ 2. _____ 3. _____

10. Are your employees members of a union?

    Yes_____ No_____

B. 1. Do the majority of your employees receive training prior to employment in your plant?

    Yes_____ No_____

2. If yes, where or what type of training have they received?

   _____

   _____

3. If you could hire trained persons what type of training would you prefer they have?

   _____ _____

4. To your knowledge is there a vocational high school training program in your area?

   Yes_____ Where_____

   No _____

5. In your opinion what is the employment opportunity in your industry.

C. How important do you feel it is for an Entry Level power machine operator to perform the following work activities?

Rate on a 1 - 5 Scale
1 = Least important
5 = Most important

	1	2	3	4	5
1. Thread typical types of industrial sewing machines.	____	____	____	____	____
2. Adjust thread tension on typical industrial sewing machines.	____	____	____	____	____
3. Clean and oil the machine properly.	____	____	____	____	____
4. Regulate stitch length and width.	____	____	____	____	____
5. Be familiar with parts and their functions on each machine.	____	____	____	____	____
6. Assemble various garment pieces correctly.	____	____	____	____	____
7. Knows correct needle and thread for fabric type.	____	____	____	____	____
8. Sew on thick pile like fabric.	____	____	____	____	____
9. Sew thin slippery types of fabric.	____	____	____	____	____
10. Sew angles and squares correctly.	____	____	____	____	____
11. Sew curves and circles correctly.	____	____	____	____	____
12. Do top stitching and edging correctly.	____	____	____	____	____
13. Use folders and attachments correctly.	____	____	____	____	____
14. Keep records of amount sewn.	____	____	____	____	____

D. How important do you feel it is for a Entry Level power machine operator to operate following machines?

1. Single Needle Lockstitch machine	____	____	____	____	____
2. Blindstitch machine	____	____	____	____	____

	1	2	3	4	5
3. Chainstitch machine					
4. Serger or Overedge machine					
5. Buttonhole machine					
6. Button machine					
7. Multiple Needle machine					
8. Needle Feed machine					
9. Chainstitch/Blind Tacker machine					
10. Pinking machine					

E. Suggestions and Comments:

VITA

Ann Sessions

Master of Science

Thesis: An Assessment of the Apparel Industry in the State of Utah and the needed curriculum and training in Vocational Clothing courses in Utah High Schools.

Major Field: Home Economics and Consumer Education.

Biographical Information:

Personal Data: Born in Salt Lake City, Utah on March 9, 1954, daughter of Phillip J. and Jeannette H. Sessions.

Education: Attended elementary school in Centerville, Utah; graduated from Viewmont High School in 1972; received the Bachelors of Science degree from Utah State University with a composite major in Home Economics and Consumers Education in 1975; completed requirements for Master of Science degree in Home Economics and Consumers Education from Utah State University in 1979.

Professional Experience: Teacher at Viewmont High School for the Davis County School District, Bountiful, Utah 1976-present; Summer Teacher for Salt Lake City School District, Salt Lake City, Utah, 1975; Internship with Utah State Extension Service, Farmington, Utah, 1974.