AN EVALUATION OF THE CLOTHING EXEMPTION TEST

AT OKLAHOMA STATE UNIVERSITY

By

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CHAPTER I

INTRODUCTION

Students entering the College of Home Economics vary in their

abilities and experiences in clothing construction. Some students have

completed as many as six years of home economics in junior and senior

high schools and/or several years in 4-H Club work; however, the qual-

ity and type of their experiences vary. These variations occur as the

result of levels of interest, degrees of achievement, development of

innate skills, and differences in instruction.

Pretests can be used to measure each student's level of understand-

ing of basic principles.

> Pretests generally have been valuable to teachers in (a) plac-
> ing students in homogeneous groups, (b) exempting students
> from certain courses, (c) determining the level at which in-
> struction should begin, (d) giving encouragement to deficient
> students, and (e) challenging capable students. With over-
> crowding of colleges and universities and with a shortage of
> qualified teachers, it has become more important than ever
> to avoid repeating learning experiences of students enrolling
> in college courses. (14)

Several universities have developed pretests and exemption tests

for use as placement devices to determine the student's level of

achievement in clothing construction. The Department of Clothing, Tex-

tiles, and Merchandising at Oklahoma State University uses an exemption

test to place students in appropriate clothing courses.

Purpose of Study

The purpose of the study was to evaluate the Clothing Exemption Test at Oklahoma State University. Since the test is currently in use, a copy was omitted from the study.

The objectives were:

1. To subject the Clothing Exemption Test to an item analysis.

2. To determine the reliability of the Clothing Exemption Test.

3. To compare scores on the test given as an exemption test with scores on the same test given as a final examination.

It was hypothesized that the mean score of those taking the exemption test after completion of the beginning clothing course would be higher, and the standard deviation would be lower, than of those taking the exemption test before taking the clothing course.

Assumptions

These assumptions were basic to the study:

1. A wide range of knowledge and skills in clothing construction exists among students entering college home economics programs.

2. Education is a process which strives to develop facts and principles which change the behavior of human beings.

3. Evaluation is a process of determining the extent of behavior change.

4. A reliable and valid pretest will indicate the level at which a student's instruction should begin.

Definition of Terms

Pretests are evaluative instruments used prior to instruction to
determine the educational status of students.

Item analysis is an examination of each item included in a test for
the purpose of discovering its strengths and weaknesses.

Item difficulty refers to the proportion or percentage of students
who answered the item correctly.

Discriminating power refers to "the ability of the test item to
differentiate between pupils who have achieved well (the upper group)
and those who have achieved poorly (the lower group)." (1)

Distractors are incorrect choices on multiple choice items.

Reliability is a statistical concept showing the degree of consist-
ency of a test.

Limitations of the Study

The study was limited to an item analysis of scores on the Clothing
Exemption Test as given to two groups. Group I consisted of 267 stu-
dents at Oklahoma State University who took the test during spring se-
mester 1970, summer orientation 1970, and fall semester 1970. Group II
consisted of 131 students who took the test as a final examination in
the beginning clothing construction course during fall semester 1970,
and spring semester 1971.

Need for the Study

Of the 267 students who have taken the exemption test only eight
have scored the required 85 or above for exemption from the beginning

course (CTM 1103). Although several revisions have been made since the exemption test was first developed, no item analysis has been done on the form which is now being used. The instructors in the Department of Clothing, Textiles, and Merchandising are concerned about the value of the test. Strengths and weaknesses of the test need to be defined in order to determine the value of the test as an exemption device.

Organization of the Study

The study was organized into five chapters.

Chapter I presented the purpose of the study, the hypothesis, assumptions, definition of terms, limitations of the study, and the need for the study.

Chapter II gave a review of clothing placement tests used in other universities and a review of tests used at Oklahoma State University.

Chapter III described the statistical procedures and the conditions for administering the tests.

Chapter IV gave the analysis and presented the data.

Chapter V presented the summary, conclusions, and recommendations.

CHAPTER II

BACKGROUND FOR THE STUDY

A review of studies completed in home economics discloses the use
of several pretests for placement of students in college clothing
courses. Some studies deal with written tests, others with performance
tests, and some with a combination of the two.

In a study at Purdue University, Wright and Henkel (20) attempted
to find the effect of past clothing experiences on achievement in a
freshman clothing course. Achievement included (1) knowledge, as meas-
ured by a paper and pencil test, (2) skills, as measured by a practical
test, and (3) attitudes, as measured by a questionnaire. Participants
in the study were 179 students enrolled in a beginning clothing course
at Purdue University. Data were obtained by a pretest-retest, a prac-
tical test, and a questionnaire. Ninety-two per cent of the students
answering the questionnaire were in favor of placing students on the
basis of previous experiences, and eight per cent were indifferent. No
one was opposed to grouping students on the basis of past experiences.
Most students in the study believed their past clothing experiences were
helpful in the clothing construction course. It was Wright's conclusion
that earlier experience in clothing construction does affect achievement
in a university clothing course; however, the amount, rather than the
type, determines the achievement and interest on the student's part.

At Southern Illinois University, Collins (6) sent questionnaires concerning the use of pretests to 71 colleges and universities that were long established in the field of home economics. On the basis of 60 returns, 29 per cent of the universities used pretests for placement of students in beginning clothing courses and 39 per cent used a pretest for exemption purposes. Twenty-two institutions used a written objective type test while seven used a practical examination in combination with a written test. Three of the institutions used a checklist concerning the students' previous experiences in clothing construction. Eight sample tests received from other universities were used as a guide in constructing a pretest for use at Southern Illinois University. The test consisted of multiple choice test items and a practical examination. A questionnaire regarding previous experiences in home economics was also employed. On entering the Home Economics Department, all students who had not fulfilled the requirements of a beginning clothing course were required to take the test. Test results were to be used for placement of students in homogeneous groups and as a guide for instructors in planning course work. The test was not intended to be used for exemption purposes. Collins recommended (1) that the test be checked for validity and reliability and revisions be made to make the test more significant, and (2) that the test be used as a retest to measure achievement in the beginning clothing construction course.

In 1959, Hoskins (11) developed a pretest at New Mexico State University as an aid in determining the level of understanding of basic principles in a beginning course in home economics. Hoskins' purpose was to construct a pretest that could be administered with a minimum expenditure of time, energy, and money. Her test was administered to a

sample of high school girls having completed two or more years of home
economics in high school or four or more years of 4-H Club work. Gener-
alizations were formulated from an analysis of questionnaires returned
by other colleges in New Mexico. These generalizations were used as a
guide for the areas to be tested. The tests were scored and the mean,
the standard deviation, and an item analysis were computed. The results
of the test showed that students possessed relatively high levels of
skills but frequently lacked understanding of basic principles. The
test was considered valuable for sectioning classes, for determining
emphases in the amount and kind of course work, and for exemption from
the basic clothing course. However, Hoskins recommended that a practi-
cal test should accompany the written test to be more successful as an
exemption tool.

Semeniuk (13) in a study at South Dakota State College, developed
an objective type pretest as a possible aid in classifying students in
a clothing course. The pretest was based on the content and objectives
of the beginning clothing construction course taught at South Dakota
State College. Of the total of 116 items selected for the pretest, 45
dealt with factual information, 49 with knowledge or understanding of
basic principles of clothing construction, and 22 with the application
of facts. A questionnaire was developed that would provide information
about the students' past experiences in clothing construction and their
attitudes toward sewing. An item analysis was made and the test seemed
to be of average difficulty. According to Semeniuk, the correlation
between scores on the pretest and class performance of the students was
too low to be used as the sole basis for classification purposes;

however, the test combined with other criteria, such as a practical test, would be more reliable.

An objective type pretest was developed by the clothing instructors at Texas Woman's University in 1963. The purpose of the test was to establish guides for the exemption of qualified students from the beginning clothing course. In 1964, Arthur (2) made a study which dealt with the investigation of the Texas Woman's University pretest. Arthur's purposes were (1) to analyze the pretest and determine its effectiveness as a discriminating tool, and (2) to determine the relationship between the student's background experiences and her performance on the test. In order to gain information about the student's background experiences a personal interview was conducted. Students with high academic records in high school scored higher on the written test, scored higher on the practical test, and made better grades in the first clothing construction course in relation to the other students. The pretest was analyzed by an item analysis. The average difficulty level of the test items was 57 per cent. A large portion of the test items had a difficulty level of between 20 and 80 per cent. Arthur concluded the pretest did reflect, to some degree, the student's past experiences and her performances in a clothing course. It was recommended that the pretest and questionnaire be given in the revised form and that further study be done on the practical part of the test which was not included in this study.

At the University of Tennessee instructors used a pretest to identify strengths and weaknesses of students. Results helped instructors in planning more meaningful experiences for all students and identifying those who would benefit from extra laboratory sessions. In 1966,

Marshall (12) developed a pretest that was administered to 70 beginning

clothing students. Discriminating power and difficulty level were cal-

culated for each item and the test was revised. The revised test was

given to students enrolled during spring quarter 1967. A questionnaire

was developed to gain information concerning the background experiences

of the students. Correlation coefficients were calculated to show the

relationship between the pretest and the Nelson Denny Reading Test, the

California Test Bureau's Survey of Object Visualization, and the Ameri-

can College Test score. At the .05 level of significance, the relation-

ship of the pretest and the four evaluation instruments had meaning;

however, it was not significant at the .01 level. Marshall recommended

that (1) the pretest, the questionnaire, the California Test Bureau's

Survey of Object Visualization, and the American College Test scores be

used in evaluating beginning clothing students at the University of

Tennessee, (2) those students who score 60 or below on the pretest be

required to attend the extra laboratory session, and (3) a profile sheet

be kept for each student for future reference by instructors.

Summary

In the five studies reviewed consideration of previous clothing

experience was an important factor in determining placement in college

courses. In all of the studies a written test as one instrument for

evaluation of students was used. According to the results of each

study, a performance test plus a written test was a more reliable method

of determining a student's ability in clothing construction than a

written test only. In all of the studies the authors indicated concern

as to how the tests could be improved. However, different methods of analyzing the tests were used.

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Development of Clothing Pretests at

Oklahoma State University

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Prior to 1959, all beginning home economics students at Oklahoma State University were required to enroll in the beginning clothing course regardless of previous experience in clothing construction. In 1959, a questionnaire was developed by Walsh (16) to determine the amount of previous clothing construction of the students. Her study presented evidence of the need for an evaluation instrument to determine students' competence in clothing construction regardless of previous training and experience. Walsh revised an existing departmental pretest in an attempt to identify the experienced clothing student. Each item on the test was analyzed and content validity of the test items was established by: "(1) direct comparison with objectives of instruction, (2) comparison with expert opinion (faculty members)" and "(3) comparison with text books and other source material" (16).

Scores on the test were used as a basis for placement of students in sections of the beginning clothing course. The students scoring highest were placed in a section in which clothing construction was omitted. Walsh recommended her test be used and revisions made. She stated, "The most effective way to insure having a better test is to use the one now developed, study the results and offer criticisms and suggestions for improvements and then continue to use their successors."

In 1961, Witt (18) conducted an item analysis on the responses to the Walsh test by 112 freshmen clothing students enrolled at Mississippi

State College for Women and Oklahoma State University during the fall
semester, 1960. The items which proved to be discriminating were used
as a basis for revision of the pretest. New items were added to the
test and a new format was devised. All matching items, all multiple
choice items, and all true-false items were grouped together. A stand-
ard answer sheet was used making it possible to score the test by ma-
chine.

Witt also developed seven practical problems to be given as a
station-to-station test. Materials and instructions for each problem
were provided for the students at different tables in the clothing labo-
ratory. Each table was identified as a "station." During the 50 minute
period the students moved to each of the various stations and performed
the assigned tasks. After the students completed all problems, the
instructor rated the performance of each student. An item analysis was
performed to determine which items were discriminating. According to
Witt, the station-to-station test had more discriminating items than did
the written test.

A questionnaire-check list was developed and administered to de-
termine the previous clothing experiences of college freshmen. Re-
sponses to the questionnaire-check list showed that students enter col-
leges with varied clothing experiences. In Witt's conclusions she
stated,

> There was a lack of consistency between responses to items
> evaluating the different clothing competencies. Low corre-
> lations of scores evaluating the competencies indicated that
> either high or low ratings on one competency did not assure
> one of a comparable score on another competency. There was
> also a lack of consistency between the previous clothing
> experiences of students and the scores which they made on
> the written and practical tests. (18)

Witt recommended that additional study be made for refinement and development of devices to evaluate competencies not included in her study.

In 1963, further revisions were made by Berry (3) and Gould (9) with Berry revising the paper and pencil test and Gould developing the laboratory test. Berry conducted a pilot study to obtain information to be used as a basis for the revision of the Oklahoma State University pretest. An item analysis of the pretest developed by Witt was made to obtain data which could be used as a guide in revising the test. The revised pretest was administered to 76 beginning clothing students and the data obtained were used in correlating student performance with (1) rank on the unrevised pretest, (2) scores made on the Nelson Denny Reading Test, and (3) final course grade. An item analysis of the revised clothing pretest was made in order to determine the need for further revision of the test. The item analysis data revealed many of the test items were not of the difficulty and discrimination range considered desirable for an evaluation instrument. Berry concluded that the mean scores made by the beginning clothing students on the original pretest and on the revised test tended to be similar. The performance on the pretest was not strongly related to the students' reading comprehension scores on the Nelson Denny Test; however, there tended to be some relationship between pretest scores and course grade. Berry recommended that the test be revised before use and that a variety of evaluative instruments along with a written test be used.

The purpose of Gould's (9) study was the development and revision of a performance test which was to be used in conjunction with the paper and pencil test. Twenty-four students participated in a pilot study to determine revisions needed in the station-to-station test developed by

Witt. Disadvantages of the station-to-station test were (1) confusion,
created by the constant moving of the students between stations, (2)
traffic congestion, caused by some problems requiring more time than
others, and (3) a shortage of supplies, caused by students using more
supplies than needed. In addition, students working on the same problem
tended to influence each others' work. The test was revised on the
basis of the results from the pilot study and five problems were se-
lected for use in the test.

Since assembling the equipment and supplies required a great deal
of time for the instructor, the method of administering the test was
changed. The instructions and the supplies needed for each problem were
placed in a large manila envelope for the students' use. At the end of
the hour the students handed the envelope back to the instructor for
scoring. The revised performance test reduced the time needed for set-
ting up the room and reduced the cost of administering the test to ten
cents per student.

The revised test was given to 77 students enrolled in beginning
clothing courses during spring semester, 1963. An item analysis of the
test using a formula by Ahmann and Glock (1) was performed. Forty-one
per cent of the test items had a difficulty level between 40 and 70 per
cent. Twenty-two per cent had a difficulty level above 70 per cent and
37 per cent had a difficulty level below 40 per cent. A correlation
was calculated to determine the relationship between scores on the pen-
cil test and on the performance test. According to Gould a correlation
coefficient of .70 indicated that scores on the two tests were related
to some degree; however, a high score on one test did not insure a high
score on the other test.

Walsh (16), Witt (18), Berry (3), and Gould (9) agreed that pretesting in the area of clothing construction is more effective when a performance test is used in addition to a written test. During the next few years an increasing number of students taking the test presented an excessive time element problem. Therefore, in 1968, a part time instructor made a revision in which the laboratory test was omitted. This revised test is currently being used at Oklahoma State University. Those students who achieve a score of 85 per cent or above are exempted from Clothing, Textiles, and Merchandising 1103 and are allowed to enroll in a more advanced clothing construction course.

CHAPTER III

PROCEDURE

The problem undertaken in this study was an evaluation of the
Oklahoma State University Exemption Test. The test is made up of 91
multiple choice and matching questions having five choices and nine
questions having two choices. The test was given to two groups of stu-
dents. Group I consisted of 267 students who took the test as an exemp-
tion test. Group II consisted of 131 students who took the test as a
final examination after completion of the beginning clothing construc-
tion course (CTM 1103).

The tests were scored and the results were statistically treated
by computer. The mean, standard deviation and reliability of the test
scores of Group I and Group II were determined and a comparison of the
two groups was made.

Kuder Richardson Formula Number 20 was used to determine reliabil-
ity.

$$R = \frac{N}{N-1} \left[1 - \frac{\Sigma PQ}{S^2} \right]$$

R = reliability

Σ = the sum of

N = number of items on the test

S^2 = the variance of the test (standard deviation squared)

P = the proportion of students who answer an item correctly

Q = 1-P.

An item analysis was performed on the test using responses of students in Group I and Group II and the results were compared. The test was analyzed by computer for item difficulty and item discrimination using formulas stated by Ahmann and Glock (1).

To determine the level of difficulty of an item, a tabulation was made of the students' correct answers on each item. Then, this figure was divided by the total number of the students attempting the item. To express the difficulty in terms of per cent, the quotient was multiplied by 100.

$$P = \frac{N_r}{N_t} \, (100)$$

P = percentage of students who answer the item correctly

N_r = number of students who answer the item correctly

N_t = total number of students who attempt to answer the item.

To determine the discriminating power of the test, the papers were ranked from highest to lowest in total scores and only the top 27 per cent and the bottom 27 per cent were used. According to Downie and Heath (8), it is customary to compare the top 27 per cent of the papers to the lowest 27 per cent of the papers because those papers clustering about the median tend to reduce the sharpness of the difference between the two groups.

Correct responses to each test item by the upper 27 per cent (U group) were tabulated for Group I and Group II. The same was done for

the lower 27 per cent (L group). The difference between the two values is the discrimination power of a test item. To express the discrimination power in terms of per cent, divide by the number of students in each group.

$$D = \frac{U-L}{N}$$

D = index of item discrimination power

U = number of students in upper group who answer the test item correctly

L = number of students in lower group who answer the test item correctly

N = number of students in each of the two groups.

Conditions for Administering the Test

Group I Students

The test was given at the testing center at Oklahoma State University. Separate IBM answer sheets and special pencils were used by the students. Specific instructions were given and only sixty minutes were allowed for the test. The tests were machine graded.

Group II Students

The test was given as a final examination after completion of Clothing, Textiles, and Merchandising 1103. IBM answer sheets and special pencils were used by the students. The tests were machine graded. Two hours were allowed for the test and only one half of the students

finished the test in one hour. The average time required to complete
the test was one hour and ten minutes. The range was 50 to 90 minutes.

CHAPTER IV

PRESENTATION OF DATA

The analysis consisted of a comparison of two groups. Group I was composed of students taking the test for exemption purposes. Group II was made up of students who took the test as a final examination for the beginning clothing construction course (CTM 1103).

It was hypothesized that the mean score of those taking the Exemption Test after completion of a beginning clothing course would be higher and the standard deviation would be lower than of those taking the Exemption Test before completion of a clothing course. In order to test this hypothesis, the Exemption Test was administered to the previously defined groups. The mean score of students in Group I was 64.8 and the mean score of students in Group II was 77.7. The standard deviation of the test for Group I was 14.12 and the standard deviation of the test for Group II was 10.24; therefore, the hypothesis was supported. (See Table I.)

If the Exemption Test is discriminating, Group II should have a higher mean score on the test. The above statistics reveal a discrimination; however, there was only a slight difference in the high scores. The high score was 94 for Group I students and 97 for Group II students. The greatest difference between the two groups occurred in the low scores. A low score of 8 was registered by students in Group I compared to 52 for students in Group II.

TABLE I

ANALYSIS OF PRETEST SCORES FOR GROUP I[a]
AND GROUP II[b] STUDENTS

	Number of Students	Score			Standard Deviation	Reliability
		Low	High	Mean		
Group I	267	8	94	64.08	14.12	.9148
Group II	131	52	97	77.7	10.24	.8675

[a]Group I consisted of students who took the test as an exemption test.

[b]Group II consisted of students who took the test as a final examination after completion of the beginning clothing course (CTM 1103).

The test scores of students in Group I had a wider range of scores and a higher reliability coefficient than did the test scores of students in Group II. According to Downie (7), a wide range of scores results in high reliability coefficients and a restricted range results in low reliability coefficients. A test used under different conditions has different reliability coefficients. A well constructed achievement and aptitude test should have a reliability coefficient above .90. The reliability coefficient of the test when given to students in Group I was .9148 and when given to students in Group II was .8675. (See Table I.)

A comparison of the scores of students in Group I and Group II is shown in Table II. Approximately 3 per cent of the students in Group I ranked above the required 85 per cent for exemption, while approximately 27 per cent of the students in Group II ranked in this range.

Twenty-eight students taking the test after completion of the beginning clothing course (CTM 1103) had previously taken the test as an exemption test and failed to achieve the 85 per cent required for exemption. All 28 students scored higher on the latter test. The range of improvement was from 3 to 41 points. The average improvement of scores was 17.4 points (Table III).

TABLE II

DISTRIBUTION OF TEST SCORES FOR GROUP I[a]
AND GROUP II[b] STUDENTS

Score	Group I		Group II	
	Number	Per Cent	Number	Per Cent
5-9	2	0.7	0	0
10-14	0	0	0	0
15-19	1	0.4	0	0
20-24	0	0	0	0
25-29	2	0.7	0	0
30-34	0	0	0	0
35-39	9	3.4	0	0
40-44	10	3.8	0	0
45-49	12	4.5	0	0
50-54	21	7.9	2	1.5
55-59	33	12.4	6	4.6
60-64	41	15.4	7	5.4
65-69	28	10.5	15	11.5
70-74	40	15.0	16	12.2
75-79	32	11.9	18	13.7
80-84	28	10.5	32	24.4
85-89	6	2.2	21	16.0
90-94	2	0.7	8	6.1
95-99	0	0	6	4.6

[a]Group I consisted of 267 students who took the test as an exemption test.

[b]Group II consisted of 131 students who took the test as a final examination after completion of the beginning clothing construction course (CTM 1103).

TABLE III

SCORES OF STUDENTS TAKING THE TEST AS
A PRETEST AND RETEST

Students	Pretest Scores	Retest Scores	Difference
1	62	82	+20
2	68	80	+12
3	57	97	+40
4	68	92	+24
5	59	86	+27
6	63	85	+22
7	76	84	+08
8	65	83	+18
9	69	83	+14
10	39	80	+41
11	55	77	+22
12	67	77	+10
13	63	75	+12
14	58	71	+13
15	49	67	+18
16	45	65	+20
17	66	74	+08
18	82	87	+05
19	62	69	+07
20	68	90	+22
21	63	84	+21
22	78	92	+14
23	81	95	+14
24	58	80	+22
25	80	83	+03
26	62	84	+22
27	56	69	+13
28	71	87	+16

Difficulty Level

The difficulty level of the test was determined by the formula ..
stated by Ahmann and Glock (1). According to Downie and Heath (8), "To
have a test which discriminates over the entire range, items are se-
lected which range from very easy to very difficult and which average to
a difficulty value of 50 per cent." Items with a difficulty level of
80 per cent or over are considered easy, whereas those below 20 per cent
are considered too difficult. An item is too easy to function effec-
tively as a discriminating device if 90 per cent or more of the students
answer it correctly (10).

When the test was administered to students in Group I, 45 of the
test items had a difficulty level between 40 and 70 per cent. Forty-
four of the test items had a difficulty level above 70 per cent. Eleven
of the test items had a difficulty level below 40 per cent. The average
difficulty was 65.5. When the test was administered to students in
Group II, 25 of the test items had a difficulty level between 40 and 70
per cent. Seventy-three of the test items had a difficulty level above
70 per cent. Two of the test items had a difficulty level below 40 per
cent. The average difficulty level was 77.5.

In Table IV, the difficulty level of each of the 100 items on the
test is shown. The difficulty level was higher for 88 items on the test
when administered to students in Group II than when administered to
students in Group I. The difficulty level was above 90 per cent in 30
items on the test when administered to students in Group II and in eight
items on the test when administered to students in Group I. Forty-nine
per cent of the items had a difficulty level of 80 or above for students

TABLE IV

DIFFICULTY LEVEL OF ITEMS USING RESPONSES
OF GROUP I[a] AND GROUP II[b] STUDENTS

| | Group I | | Group II | |
| | Number | | Number | |
Item No.	Correct Responses	Difficulty Per Cent	Correct Responses	Difficulty Per Cent
1	130	49.1	85	64.9
2	169	63.5	108	82.4
3	166	62.4	74	56.5
4	99	37.6	53	40.5
5	231	86.8	109	83.2
6	229	86.1	116	88.5
7	217	81.9	122	93.1
8	137	51.5	121	92.4
9	196	73.7	89	67.9
10	131	49.4	93	71.0
11	203	76.9	116	88.5
12	167	63.3	81	61.8
13	219	82.3	122	93.1
14	161	60.5	88	67.2
15	213	80.1	125	95.4
16	105	39.6	53	40.5
17	90	34.0	36	27.5
18	102	38.5	79	60.3
19	116	43.6	98	74.8
20	142	53.6	101	77.1
21	198	74.4	104	79.4
22	135	51.1	68	51.9
23	147	55.2	83	63.4
24	146	55.5	76	58.0
25	194	72.9	95	72.5
26	145	54.7	100	76.3
27	156	58.6	82	62.6
28	155	58.2	82	62.6
29	107	40.2	85	64.9
30	183	68.8	114	87.0
31	221	83.1	123	93.9
32	113	42.8	94	71.8
33	226	85.3	121	92.4
34	45	17.1	70	53.4
35	253	95.5	129	98.5
36	163	61.7	104	79.4
37	39	14.8	37	28.2
38	135	50.9	83	63.4
39	127	47.9	93	71.0
40	104	39.5	83	63.4
41	244	92.4	126	96.2

TABLE IV (Continued)

Item No.	Group I		Group II	
	Number Correct Responses	Difficulty Per Cent	Number Correct Responses	Difficulty Per Cent
42	155	58.7	82	62.6
43	259	98.1	125	95.4
44	252	95.4	129	98.5
45	116	44.1	71	54.2
46	129	49.2	72	55.0
47	110	42.0	58	44.3
48	221	84.0	113	86.3
49	187	71.9	97	74.0
50	242	92.0	120	91.6
51	225	85.5	117	89.3
52	123	46.8	61	46.6
53	192	73.3	94	71.8
54	225	85.5	118	90.1
55	219	83.9	112	85.5
56	191	72.6	103	78.6
57	155	59.2	92	70.2
58	166	63.4	93	71.0
59	232	88.2	105	80.1
60	119	45.4	94	71.8
61	185	71.4	122	93.1
62	155	59.8	104	79.4
63	171	65.8	117	89.3
64	167	64.2	125	95.4
65	116	44.6	104	79.4
66	99	38.1	62	47.3
67	200	76.3	111	84.7
68	69	26.4	62	47.3
69	172	65.9	96	73.3
70	117	44.7	92	70.2
71	179	68.6	113	86.3
72	205	78.2	113	86.3
73	185	70.9	112	85.5
74	117	45.1	104	79.4
75	218	83.8	126	96.2
76	97	37.6	80	61.1
77	179	69.1	111	84.7
78	67	25.8	69	52.7
79	168	65.9	102	77.9
80	129	50.2	101	77.1
81	239	92.3	129	98.5
82	176	68.2	123	93.9

TABLE IV (Continued)

Item No.	Group I		Group II	
	Number Correct Responses	Difficulty Per Cent	Number Correct Responses	Difficulty Per Cent
83	158	61.0	98	74.8
84	210	81.7	115	87.8
85	199	77.4	110	84.0
86	154	60.2	121	92.4
87	239	92.6	125	95.4
88	205	81.0	118	90.1
89	231	89.9	126	96.2
90	212	82.8	123	93.9
91	227	88.3	126	96.9
92	226	87.9	123	93.9
93	203	79.9	122	93.1
94	171	66.8	122	93.1
95	221	86.3	115	87.8
96	196	77.2	122	93.1
97	237	93.3	124	94.7
98	173	68.4	107	81.7
99	236	93.3	129	98.5
100	237	95.2	120	92.3

[a]Group I consisted of 267 students who took the test as an exemption test.

[b]Group II consisted of 131 students who took the test as a final examination after completion of the beginning clothing construction course (CTM 1103).

in Group II and none had a difficulty level of 20 or below. Twenty-eight per cent of the items had a difficulty level above 80 for students in Group I while 2 per cent had a difficulty level below 20.

Discriminating Power

A test item with maximum discriminating power would be one which every student in the upper group would answer correctly and every student in the lower group would answer incorrectly. If the same per cent of students in the high and low groups answer an item correctly, the item does not discriminate between students who possess knowledge and those who do not.

Ahmann and Glock (1) consider discriminating values above 0.40 as good, values between +0.40 and +0.20 as satisfactory, and values between +0.20 and 0 as poor. None should have negative values as this indicates a differentiation among students in the wrong direction. The maximum size of the discriminating index is +1.00 and the minimum is -1.00. In a well built informal achievement test, more than 50 per cent of the items on the test should have discriminating values above +0.40, 40 per cent should have values between +0.40 and +0.20, and less than 10 per cent should have values of +0.20 and below. The discriminating value of the 100 items on the test is shown in Table V.

When the test was administered to students in Group I, 31 per cent of the items had good discriminating values, 55 per cent had satisfactory discriminating values, and 14 per cent had poor discriminating values. No item on the test had negative discriminating values. When the test was administered to students in Group II, 23 per cent of the items had good discriminating values, 38 per cent had satisfactory

TABLE V

DISCRIMINATING POWER OF ITEMS USING RESPONSES OF
UPPER AND LOWER TWENTY-SEVEN PER CENT
OF GROUP I[a] AND GROUP II[b] STUDENTS

	Group I		Group II	
Item No.	Discrimination (Per Cent)	Rating[*]	Discrimination (Per Cent)	Rating[*]
1	0.29	Satisfactory	0.40	Good
2	0.35	Satisfactory	0.40	Good
3	0.40	Good	0.20	Satisfactory
4	0.25	Satisfactory	0.34	Satisfactory
5	0.19	Poor	0.20	Satisfactory
6	0.22	Satisfactory	0.14	Poor
7	0.40	Good	0.14	Poor
8	0.12	Poor	0.03	Poor
9	0.42	Good	0.26	Satisfactory
10	0.43	Good	0.49	Good
11	0.21	Satisfactory	0.17	Poor
12	0.14	Poor	0.11	Poor
13	0.32	Satisfactory	0.06	Poor
14	0.50	Good	0.40	Good
15	0.25	Satisfactory	0.03	Poor
16	0.08	Poor	0.00	Poor
17	0.33	Satisfactory	0.23	Satisfactory
18	0.32	Satisfactory	0.11	Poor
19	0.36	Satisfactory	0.26	Satisfactory
20	0.25	Satisfactory	0.31	Satisfactory
21	0.40	Good	0.46	Good
22	0.32	Satisfactory	0.37	Satisfactory
23	0.15	Poor	0.40	Good
24	0.24	Satisfactory	0.51	Good
25	0.31	Satisfactory	0.34	Satisfactory
26	0.40	Good	0.43	Good
27	0.07	Poor	0.23	Satisfactory
28	0.36	Satisfactory	0.49	Good
29	0.47	Good	0.26	Satisfactory
30	0.36	Satisfactory	0.06	Poor
31	0.31	Satisfactory	0.11	Poor
32	0.40	Good	0.43	Good
33	0.26	Satisfactory	0.14	Poor
34	0.21	Satisfactory	0.46	Good
35	0.17	Poor	0.06	Poor
36	0.36	Satisfactory	0.20	Satisfactory
37	0.21	Satisfactory	0.26	Satisfactory
38	0.32	Satisfactory	0.43	Good
39	0.36	Satisfactory	0.34	Satisfactory
40	0.36	Satisfactory	0.46	Good
41	0.17	Poor	0.09	Poor

TABLE V (Continued)

Item No.	Group I		Group II	
	Discrimination (Per Cent)	Rating*	Discrimination (Per Cent)	Rating*
42	0.42	Good	0.34	Satisfactory
43	0.08	Poor	0.06	Poor
44	0.14	Poor	0.03	Poor
45	0.54	Good	0.43	Good
46	0.44	Good	0.63	Good
47	0.25	Satisfactory	0.31	Satisfactory
48	0.28	Satisfactory	0.23	Satisfactory
49	0.28	Satisfactory	0.31	Satisfactory
50	0.14	Poor	0.17	Poor
51	0.33	Satisfactory	0.31	Satisfactory
52	0.46	Good	0.60	Good
53	0.37	Satisfactory	0.31	Satisfactory
54	0.25	Satisfactory	0.23	Satisfactory
55	0.31	Satisfactory	0.34	Satisfactory
56	0.33	Satisfactory	0.29	Satisfactory
57	0.69	Good	0.57	Good
58	0.39	Satisfactory	0.29	Satisfactory
59	0.17	Poor	0.20	Satisfactory
60	0.61	Good	0.46	Good
61	0.49	Good	0.17	Poor
62	0.49	Good	0.43	Good
63	0.50	Good	0.20	Satisfactory
64	0.32	Satisfactory	0.06	Poor
65	0.43	Good	0.43	Good
66	0.26	Satisfactory	0.49	Good
67	0.42	Good	0.14	Poor
68	0.08	Poor	0.23	Satisfactory
69	0.36	Satisfactory	0.31	Satisfactory
70	0.28	Satisfactory	0.29	Satisfactory
71	0.56	Good	0.23	Satisfactory
72	0.31	Satisfactory	0.29	Satisfactory
73	0.44	Good	0.40	Good
74	0.32	Satisfactory	0.31	Satisfactory
75	0.22	Satisfactory	0.03	Poor
76	0.26	Satisfactory	0.34	Satisfactory
77	0.53	Good	0.29	Satisfactory
78	0.15	Poor	0.49	Good
79	0.31	Satisfactory	0.14	Poor
80	0.62	Good	0.11	Poor
81	0.26	Satisfactory	-0.03	Poor
82	0.51	Good	0.14	Poor

TABLE V (Continued)

Item No.	Group I		Group II	
	Discrimination (Per Cent)	Rating*	Discrimination (Per Cent)	Rating*
83	0.58	Good	0.26	Satisfactory
84	0.31	Satisfactory	0.11	Poor
85	0.26	Satisfactory	0.20	Satisfactory
86	0.47	Good	0.03	Poor
87	0.25	Satisfactory	0.03	Poor
88	0.43	Good	0.00	Poor
89	0.28	Satisfactory	0.09	Poor
90	0.39	Satisfactory	0.03	Poor
91	0.29	Satisfactory	0.09	Poor
92	0.36	Satisfactory	0.11	Poor
93	0.57	Good	0.11	Poor
94	0.39	Satisfactory	0.17	Poor
95	0.39	Satisfactory	0.29	Satisfactory
96	0.51	Good	0.14	Poor
97	0.28	Satisfactory	0.17	Poor
98	0.54	Good	0.34	Satisfactory
99	0.28	Satisfactory	0.00	Poor
100	0.26	Satisfactory	0.09	Poor

[a]Group I consisted of 267 students who took the test as an exemption test.

[b]Group II consisted of 131 students who took the test as a final examination after completion of the beginning clothing course (CTM 1103).

*Any discriminating value +0.40 or above is considered good. Any discriminating value between +0.40 and +0.20 is considered satisfactory. Any discriminating value between +0.20 and 0 is considered poor (1).

discriminating values, and 39 per cent had poor discriminating values. One item on the test had a negative discriminating value. Three items on the test had 0 discriminating values.

The test items showed more discrimination value when the test was administered to students as an exemption test than when administered to students as a final examination at the completion of the beginning clothing course.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The problem undertaken in this study was an evaluation of the

Clothing Exemption Test currently being used by the Department of Cloth-

ing, Textiles, and Merchandising at Oklahoma State University.

The test was given to two groups. Group I consisted of 267 stu-

dents who took the test as an exemption test. Group II consisted of

131 students who took the test as a final examination in the beginning

clothing course (CTM 1103). Scores of the tests as given to both Groups

I and II were subjected to an item analysis and the results were com-

pared.

It was hypothesized that the mean score of those taking the test

after completion of the beginning clothing course would be higher, and

the standard deviation would be lower, than those taking the test be-

fore completion of the clothing course.

Assumptions were: (1) A wide range of knowledge and skills in

clothing construction exists among students entering college home eco-

nomics programs. (2) Education is a process which strives to develop

facts and principles which change the behavior of human beings. (3)

Evaluation is a process of determining the extent of behavior change.

(4) A reliable and valid pretest will indicate the level at which a

student's instruction should begin.

Current related literature was reviewed. The apparent value of pretesting in clothing construction was examined and analyzed. Pretests in beginning clothing courses at the college level have been used for many years. Students enter the college of home economics with varying abilities and experiences. In order for clothing courses to be meaningful and challenging for the experienced student and at the same time be encouraging for the inexperienced student, the status of each must be determined.

Conclusions

It was concluded that the discriminating power of the test was greater as an exemption test than as a final examination. Based on the data from the item analysis, the test was an acceptable measuring device. The difficulty level of the 100 test items when given as an exemption test was 65.5 per cent with 70 per cent of the items having a difficulty level between 20 and 80 per cent. Thirty-one per cent of the items had good discriminating power and 55 per cent had satisfactory discriminating power. Fourteen per cent had poor discriminating power.

The excessive range of scores (8 to 94) supported the assumption that students entered college with different levels of knowledge and skills in clothing construction. Students who completed the beginning clothing course scored within a smaller range (52 to 97).

Recommendations

It is recommended that:

(1) Areas of the test in which students in Group II made low scores

be identified and special emphasis be put on these areas in the beginning clothing course.

(2) A questionnaire be developed to determine past experiences of students in clothing construction and the exemption test be given only to students who have had a specified amount of high school home economics and/or 4-H Club experience.

(3) A reconsideration of the acceptable score for exemption be made.

(4) A follow up study be made to determine if students who make high scores on the test also make high scores in clothing construction classes.

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