T H E S I S

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A STUDY OF THE RELATIONSHIPS BETWEEN THE INTELLIGENCE RATINGS OF GIRLS TAKING HOME ECONOMICS IN THE SAN MARCOS, TEXAS, HIGH SCHOOL AND THEIR ACHIEVEMENTS AS MEASURED BY OBJECTIVE, PRACTICAL AND PROBLEM MEASUREMENTS

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Submitted by

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In Partial Fulfillment of the Requirements

for the Degree of Master of Science

Colorado Agricultural College

Fort Collins, Colorado

July 21, 1932

COLORADO AGRICULTURAL COLLEGE

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GRADUATE WORK

July 20 1932

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY BESS BARNES

ENTITLED "A STUDY OF THE RELATIONSHIPS BETWEEN THE INTELLIGENCE RATINGS OF GIRLS TAKING HOME ECONOMICS IN SAN MARCOS HIGH SCHOOL AND THEIR ACHIEVEMENTS AS MEASURED BY OBJECTIVE, PRACTICAL AND PROBLEM MEASUREMENTS." BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS

FOR THE DEGREE OF MASTER OF SCIENCE

MAJORING IN HOME ECONOMICS EDUCATION

Six credits

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I

ACKNOWLEDGMENTS

It would have been a much less pleasant and a far more difficult task to assimilate the educational data contained in this thesis had it not been for the kind assistance of those individuals associated with me in the work. To Miss Maude Williamson, Associate Professor of Home Economics Education, Colorado Agricultural College, under whose direction the work was done, the writer wishes to take this inadequate means of expressing appreciation for her friendly encouragement, which served at all times as a very great stimulus, and her very pertinent and practical suggestions, many of which are incorporated into this thesis. Miss Cora Lay, Head of the Home Economics Department of the Southwest Texas Teachers College, San Marcos, Texas, and the members of her special methods class aided greatly in the collection of these data and the checking of scores, computations, and statistical results. A very wise counsellor and adviser was found in Mr. W. I. Woodson, Head of the Education Department, Southwest Texas Teachers College. His attitude toward this study was one of helpful interest and practical aid. Without the cooperation of these persons this study would have been much less valuable.

II

INTRODUCTION

In the last two decades there has been a very great amount of research in the educational field, resulting in many definite types of measurement of intelligence and achievement. As evidence of the importance with which leading educators regard this measuring of intelligence and achievement, quoting Madsen [1] as a representative of the group: "Measurements become necessary from time to time in order to determine the changes brought about as the result of teaching." Scientific methods have entered the educational field as test after test has been devised, carefully checked, and given to thousands of individuals over a wide range of territory. These tests have resulted in reasonably sure means of measuring native ability and the results of various learning processes.

On the basis of this careful study, which is even now not near completion, educators have revised, indeed revolutionized, the school curricula to meet more nearly the needs as revealed by objective measuring. This process we call modern education. It has invaded our entire school system and every educator today who has a truly scientific

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[1] Madsen,I.N. Educational Measurements in the Elementary Grades, p.15. World Book Co. Yonkers on the Hudson, New York, 1930.

attitude and interest has endeavored to fit his particular subject into the trend, to contribute reliable data which will aid in putting his subject on an objective, working basis whereby worthwhile educational aims may be successfully accomplished. There is constant effort not only to correlate courses but to corrleate results and make education a unit.

The writer, as a student and teacher of home economics, has been interested for some time in the progress made in the measuring of results in home economics and has a true desire to see the course brought into line with the most advanced educational progress of the time. Often the home economics teacher becomes absorbed in the so-called practical training involved in a home economics course, with the result that she loses sight of basic educational methods and measurements. As an example of this, in many high schools a wide discrepancy in individuals' grades in home economics and in the academic courses has been accepted as a natural state of affairs. To a wise educator, however, this situation may be traced to one of two causes: namely, there is a difference in the interest of the individuals concerned in the respective courses or else there is a wide difference in the basic educational methods in measurement employed in home economics and in the academic courses, respectively.

Are the girls who choose home economics more or less of the academic type? Are home economics teachers as exacting in their standards as academic teachers? Are we

so organizing the work that we provide a basis for measurement of the work of each girl in proportion to her mental ability? Are home economics teachers keeping their methods of instruction up to date with the modern trend of education?

Statement of Problem

What are the relationships between the intelligence ratings of girls taking home economics in the San Marcos High School and their achievements as measured by objective, practical and problem measurements?

One underlying basis of measurement in educational fields is known as the intelligence test, which is an attempt to measure the native ability of the individual to learn. Using the intelligence test as a common yardstick, this study is an attempt to find any relation which may exist between the intelligence ratings and achievements in home economics of those students enrolled in the San Marcos, Texas, High School.

No pretensions have been made that this is an exhaustive investigation or that the quantitative results are final.

III

METHOD OF PROCEDURE

The high school in which this study was carried on is situated in San Marcos, Texas, a town of approximately five thousand persons. The presence in the town of a private boarding school and a demonstration high school in connection with the Southwest Texas Teachers College, limits the number of pupils in the public high school to 245, which is a figure lower than one would commonly find in a town the size of San Marcos. For the most part, however, those pupils enrolled in the high school come from families representing the permanent population of the town and may, therefore, be considered average and representative of those elements ordinarily found in a town of five thousand.

The writer selected three classes in home economics, which she taught, composed of 61 girls in all, for this investigation, which was carried on in the classroom where the process of education was actually taking place, where conditions were normal, and where all the agencies concerned were functioning in a normal manner. The group of pupils, 61 in number, was composed of 57 Americans and 4 Mexicans, coming from families varying in economic and

social status. It is not the intention of the writer to ignore the fact that social background in each individual case was a determining factor in the results obtained, but as the different environments represented probably covered a range found everywhere in American society, the writer considers the group normal and therefore sees no necessity for going into unwarranted detail regarding the social background of the pupils enrolled in the home economics courses.

The classes referred to above were entitled Home Economics I, Home Economics II, and Home Economics III; Home Economics I being a class in clothing construction and selection, Home Economics II being a class in foods and meal preparation, and Home Economics III being a class in family and community problems. These three phases of home economics were taught by means of unit courses varying in length and follow rather closely the recommended outline of units in a three-year course in home economics as contained in a bulletin[1] issued by the Texas State Department of Education. The units selected for testing were:

> Home Economics I, a unit on clothing for children (selection problem), covering 20 lessons.
>
> Home Economics II, a unit on meal planning and preparation with special emphasis on dinners, covering 50 lessons.
>
> Home Economics III, a unit on the entertaining of children, based on a preceding unit, which was guidance of children, and covering 15 lessons.

1 Course of Study in Home Economics for Texas Public Schools

By selecting these particular units, three phases of Home Economics were represented: Clothing, Foods and Child Care.

The tests that will be presented in detail at a later point in this study were given at the conclusion of the respective units and during the first semester of the school year 1931-1932.

Intelligence Ratings

As the first step in this study, the intelligence ratings to be used as the basis of comparison with the achievement tests, were determined by applying the Otis Group Intelligence Test Form A and thereby arriving at the intelligence ratings of the pupils to be tested. The measure used in this study was Index of Brightness which is referred to in this study as the Intelligence Rating. The writer thinks it unnecessary to attempt to explain or defend this basis of measurement, as the Otis Group Intelligence Test is one which is widely used, and is the one used exclusively in the San Marcos High School. Tables I, II and III show the distribution of the intelligence ratings of the three groups.

TABLE 1

Distribution of Intelligence Ratings* of Students in Home Economics I of the San Marcos High School (31 cases)

*(Indices of Brightness)

Numerical Distribution		Graphic Distribution
Frequency	I. R. (I.B)	Each star represents the position of pupils.
1	165-170	*
2	160-164	* *
	155-159	
1	150-155	*
2	145-149	* *
2	140-144	* *
	135-139	
	130-134	
2	125-129	* *
5	120-124	* * * * *
	115-119	
2	110-114	* *
4	105-109	* * * *
2	100-104	* *
	95-99	
3	90-94	* * *
	85-89	
	80-84	
1	75-79	*
1	70-74	*
	65-69	

TABLE I
(Continued)

Numerical Distribution		Graphic Distribution
Frequency	I. R.(LB.)	Each star represents the position of pupils.
	60-64	
1	55-59	*
	50-54	
	45-49	
1	40-44	*
1	35-39	*

Median 111 Mean 113.5

In Home Economics I the range of brightness is from 35 to 170, with the mean 113.5 and median 111.

TABLE II

Distribution of Intelligence Ratings of Students in Home Economics II of the San Marcos High School (16 cases)

Numerical Distribution		Graphic Distribution
Frequency	I. R. (I.B.)	Each star represents the position of pupils.
1	170-175	*
	165-169	
1	160-164	*
	155-159	
	150-154	
	145-149	
	140-144	
1	135-139	*
1	130-134	*
	125-129	
1	120-124	*
1	115-119	*
	110-114	
	105-109	
3	100-104	* * *
	95-99	
1	90-94	*
1	85-89	*
	80-84	
2	75-79	* *
2	70-74	* *
1	65-69	*

Median 120 Mean 106.3

In Home Economics II the range of brightness is from 65 to 175, with the mean 106.3 and median 120.

TABLE III

Distribution of Intelligence Ratings of Students in Home Economics III of the San Marcos High School
(14 Cases)

Numerical Distribution		Graphic Distribution
Frequency	I. R(I.B.)	Each star represents the position of pupils
1	165-170	*
	160-164	
1	155-159	*
	150-154	
1	145-149	*
1	140-144	*
2	135-139	* *
1	130-134	*
2	125-129	* *
	120-124	
1	115-119	*
	110-114	
2	105-109	* *
1	100-104	*
1	95-99	*

Median 129 Mean 129.2

In Home Economics III the range of brightness is from 95 to 170, with the mean 129.2 and median 129.

The second step was to select and apply achievement tests over the units studied. The measures used were tests of three types: namely, Objective, Practical and Problem as follows:

Objective Tests

The writer was unsuccessful in securing a standardized test on Construction and Selection of Children's Clothing for Home Economics I, therefore, the test was composed of the best items on this subject from Engle-Stenquist Home Economics Clothing tests, Forms A and B [1] and from those issued by the Home Economics division of the Texas State Department of Education.[2]

The objective test for Home Economics II consisted of the standardized test by Engle-Stenquist, Foods and Cookery, Form A.[3]

In Home Economics III, as in Home Economics I, the writer was unsuccessful in securing a standardized objective test on the unit Child Guidance, therefore, the test for Home Economics III was devised by Miss Cora Lay, Head of the Home Economics Department of the Southwest Texas Teachers College, the college students of the Home

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[1] Engle-Stenquist Home Economics Clothing Test Forms A and B.

[2] The State Department of Education Division of Home Economics, State of Texas.

[3] Engle-Stenquist Foods and Cookery test, Form A.

Economics Special Methods class and the writer. The test was revised after being first given to members of the Home Economics class in the Demonstration School of the Southwest Texas Teachers College who were taking a similar course in Child Guidance. A copy of the objective tests given to these three classes will be found in the Appendix. They are so long that to include them here would tend to confuse the reader. It should be noted that they are largely informational in type.

These objective tests were given by the writer but scored by Miss Cora Lay and five members of the Special Methods class in Home Economics. After the papers were marked, they were arranged in order of rank and the scores tabulated.

Practical Tests

The problems for the Practical tests for the three units in Home Economics I, II, and III were devised by Miss Cora Lay, five members of the special methods class in Home Economics and the writer.

Home Economics I.- The practical test for Home Economics I, a Problem in Selection of Clothing for Children, was given in the clothing laboratory of the Home Economics department. For this test garments for pre-school children were used, eight dresses, six suits and six undergarments which were personally selected by the writer from the children's department, Scarboroughs Department Store, Austin, Texas. The garments were numbered and

placed on hangers about the room in order that the girls could see and examine them. The following problems were given for this test.

Problem 1

From the garments displayed select the best play dress and suit for a pre-school child, considering the following points:

a. Materials
b. Design
c. Workmanship
d. Cost

Write the number of the garment chosen and list briefly the reasons for your choice.

Problem 2

List the name of the materials of each dress in Problem 1.

Problem 3

List the desirable and undesirable points of each of the six undergarments shown from the standpoint of:

a. Material
b. Design
c. Workmanship
d. Cost

At the beginning of the test, the girls were given the above mimeographed problems and asked to write out their answers to each problem. The time allowed for the test was two hours.

The tests were then scored by Miss Cora Lay and the college students, according to the following plan. On the day before the test was given to the girls of Home

Economics I, Miss Cora Lay and the five college students judged the garments and individually decided upon the answers to the three listed problems. These six people then met and pooled their decisions in group judgment. After the test was given, the paper of each individual high school girl was compared with the group findings of the six judges and the paper of each girl was given the numerical score which its rank justified.

Home Economics II.- The practical test for Home Economics II, planning, preparing and serving a meal, consisted of this problem:

> Plan, prepare and serve a dinner for twelve, eight members of the family and four guests.

The first part of this test consisted of planning the meal. The girls discussed the plans for the meal during which time the judges, Miss Cora Lay and the five college students, sat by carefully evaluating the questions and answers of each girl on the following points:

> Suitable food for a family dinner including composition, value in the diet, selection, cost, principles of cooking, method of preparation, and serving.

The class of 16 then divided into groups of four. Each group made out and submitted to the class as a whole a suitable menu, then the best one was selected by majority vote of the class. The menu chosen was:

Meat Loaf

Creamed Potatoes Buttered Asparagus

Chili Sauce Celery

Combination Salad

Rolls Butter

Pineapple Whip

The class as a whole then made out a plan for work including the market order, individual time schedules, duties, order of work, recipe cards, list of dishes, utensils to be used, and plan of service. The judges again scored the response of each girl.

The second part of the test consisted of preparing and serving the meal, during which time the girl did the duty assigned to her. The preparation of the food began at four and by six the meal was ready to be served. The judges again sat by and carefully observed the procedure of each girl. Rather than be judged by name or initial each girl wore a number pinned on her apron. A corresponding number with her duty was placed on the bulletin board for the benefit of the judges. In order to obtain a lack of self-consciousness, the girls were not told they were being judged for this particular study. The following score card was used by the judges, each of whom individually scored each high school girl. The individual judgment was then pooled for the final score.

Score Card for Judging the Planning, Preparing, and Serving a Meal

I. Planning the meal 10
   1. Menu
   2. Cost
   3. Marketing sufficient materials
   4. No waste
   5. Tasks listed, assigned, and time set for performance

II. Preparing the meal 25
   1. No material wasted
      a. In preparation of food for cooking
      b. By undercooking or overcooking
      c. By allowing foods to run over
      d. By not removing all foods from the utensils
   2. Time saved by
      a. Not using more utensils than necessary
      b. Assembling materials and utensils before beginning work
      c. Putting dishes to soak as soon as emptied
      d. Washing up as many dishes as possible before meal was served
      e. Having plenty of hot water at all times, especially for dish washing
   3. Neatness
      a. Desks, dishes, floor
      b. Manipulation
      c. Self (clean apron, head band, and holder)
      d. Drying hands on hand towel,not on apron or tea towel
      e. Using holder instead of towel or apron

III. Serving the meal 25
   1. Food ready to serve at the appointed time
   2. Food served at its best
   3. Dining room clean, attractive, and comfortable
   4. Table attractive
   5. Food attractive in appearance and flavor good
   6. Nothing forgotten that should have been placed upon the table
   7. Serving

IV. Atmosphere and Hospitality 25
1. Needs of the group foreseen and supplied
2. Conversation
3. Ease of manner

V. Cleaning up 15
1. Care of left-overs
2. Washing dishes properly
3. Care of linen (laundering and ironing)
4. Leaving rooms and equipment clean and in order

Home Economics III.- For the unit in Child Guidance in Home Economics III, the problem for the Practical test was:

Plan and give a party for the children who attended the play school.

In the San Marcos High School, the unit on Child Care for Home Economics III maintained a play school for two weeks during the first semester of 1931-1932. At the conclusion of the play school, the girls in Home Economics III expressed a desire to give a party for these pre-school children. The writer, who was the teacher of the class in Home Economics III, agreed with the girls that this would be a good project for them to carry out.

The first part of this test consisted in planning the party. The place, time, invitations, entertainment, refreshments and favors were discussed and decided upon by the girls in the presence of Miss Cora Lay and the five college students who carefully evaluated each girl's statements in order to judge her efficiency in planning.

Since the children's play school had been held in the Home Economics Clothing laboratory, the girls decided that this was the logical place for the party. Each girl wrote an invitation and submitted it to the class as a whole, then the class decided which was the best and it was used. Each girl also chose a duty in planning and carrying out the party.

The judges were present at the party and judged each girl for her knowledge of children's needs as shown by her part in the set-up for the party, and the application of knowledge gained in the child study unit. As in the Practical test for Home Economics II, rather than be judged by name or initial each girl wore a number pinned on her dress; a corresponding number with her duty was placed on the bulletin board for the benefit of the judges. The judges first gave individual values and then combined their individual judgment into a group judgment. The following points were considered by the judges in making their decision:

I. Efficiency in planning, as shown by the set-up for party.

II. Knowledge of children's needs as shown by the set-up for party.

III. The application of knowledge gain in Child Study unit.

IV. Objectives of unit of study used as a basis for scoring:

1. To teach the child self help.
2. To teach the child to consider others.

3. To develop aesthetic ability in the child
4. To satisfy, as far as possible, the child's curiosity
5. To direct the child's contact with other children
6. To guide the child's constructive ability
7. To teach table manners to the child
8. To aid in developing good health habits
9. To aid in developing good food habits
10. To aid in developing muscles

Problem Tests

The Problem tests for all three classes, Home Economics I, II, and III, were given in the same manner, and they were devised by Miss Cora Lay, the five members of the special methods class in Home Economics, and the writer.

At the time of giving the tests, the problems were written on the blackboard and the girls were asked to copy them and write out their answers to each. The papers were scored by Miss Cora Lay and the college students, using individual and group judgment. In Home Economics II, Problem I, a score card was used to evaluate the answers, and again the judges used individual and group judgment. The problems which were used for each test, follow.

Home Economics I.

Problem I

Mother wants me to make a "dress-up" dress for my little three-year-old sister. She wants it to be dainty and cool, and yet to launder well. What material and design shall I choose for

making this dress?

In the space below give reasons for your choice of:

a. Material
b. Design

(Basis for rating -- 50 percent for material
50 percent for design)

Problem 2

Mother wants a nice slip for my little sister. She has asked me to make or buy one ready made. In either case, what material and design shall I choose?

In the space below give reasons for your choice of:

a. Material
b. Design

(Basis for rating -- 50 percent for material
50 percent for design)

Problem 3

Inez is 14 years old; she is short and stout with dark brown short hair, brown eyes, and olive complexion. Mary Lillian is 14 years old; she is tall and thin with light curly short hair, blue eyes, and a fair complexion. Each girl wishes me to plan a suitable cotton dress for school wear. What shall I plan?

The plan for Inez's dress is as follows:

My reasons for this choice are:

My plan for Mary Lillian's dress is as follows:

My reasons for this choice are:

(Basis for rating -- Inez's dress 50 percent
Mary Lillian's dress
50 percent)

Home Economics II.

Problem 1

Helen's mother is to be her guest for Sunday dinner. Helen is responsible for this meal. Tell Helen how she can plan, prepare and serve this meal most efficiently. The family consists of Father, Mother, Billy age 18, Ruth age 12, and Helen, age 14. The estimated cost for the complete dinner is $2.00 to $2.50.

The following score card was used by the judges for this meal, with individual and group judgment used as the basis for scoring.

I. The Menu 40
- A. Dietetic Value
  - 1. Sufficient calories
  - 2. Sufficient protein of good quality
  - 3. Sufficient minerals and vitamins
  - 4. Other food stuffs
  - 5. Roughage
- B. Seasonable foods
- C. Digestibility
- D. Aesthetic factors
  - 1. Palatable
  - 2. Attractive
- E. Menu written in correct form
- F. Cost

II. Preparation 40
- A. Well cooked and seasoned
- B. Attractively served
- C. Prompt (Ready at appointed time)
- D. Prepared in reasonable amount of time.

III. The table set-up 20
- A. Seating of family and guest
- B. Plan for cover
  - 1. Proper placing of silver
  - 2. Napkins showing folds and edges
  - 3. Position of glasses

Problem 2

Mary's mother was called away from home early Saturday morning. Mary was asked to assume the responsibility about the house. One of her problems was to do the marketing, then store the perishable and semi-perishable foods properly in the refrigerator. Tell Mary how this can be accomplished. You may use a diagram showing placement of foods in the refrigerator if you wish.

In scoring these papers, Miss Cora Lay and the college students considered the following points:

I. Planning the menu
   - A. Dietetic value
   - B. Seasonable foods
   - C. Digestibility
   - D. Cost

II. Market order
   - A. Factors influencing cost
   - B. Quality to be looked for in buying food

III. Storing foods in refrigerator
   - A. Is it necessary that all food be placed in the refrigerator for proper preservation?
   - B. Are foods placed in the refrigerator so as to gain the greatest benefit from the varying degrees of temperature?
   - C. Are foods in correct type containers?
   - D. Due to the circulation of air in the refrigerator, is the food in correct location in order to prevent flavors mixing?

Problem 3

Suppose you bring a peanut butter sandwich from home for your lunch. From the following foods served at the cafeteria, what would you select and why? You have 10¢ to spend.

a. A glass of milk ..... .05
b. A bar of candy ..... .05
c. A baked potato ..... .05
d. A baked apple ..... .05

e. One-half grape fruit ..... .03
f. Potato salad ..... .02
g. Prune salad ..... .03
h. A cup of coffee ..... .02
i. A bowl of soup ..... .05

I would select the following foods:

My reasons for this selection are:

(Basis for scoring -- 50 percent for selection of food
50 percent for reasons given for selection)

Home Economics III.-

Problem 1

Plan a children's party for a special occasion or holiday, considering the following:
a. Time
b. Place
c. Invitations
d. Form of entertainment
e. Refreshments
f. Favors

In scoring, Miss Cora Lay and the college students used individual and group judgment.

Problem 2

Jane has been asked to take care of the neighbor's three-year-old boy on Saturday afternoon from 2 to 4 o'clock while the neighbor does her shopping. What will Jane's duties be?

Again individual and group judgment was the method used for scoring by Miss Cora Lay and the college students.

Problem 3

A friend of Jane's mother wished to buy the right

kind of toys for her three-year-old boy. Jane had been studying about toys at school, so the friend asked Jane to help by going to the toy store with her and showing her the good points of a toy and what to avoid in toys. What was Jane's advice?

The third and fourth steps of this study consisted of scoring the tests, computing each pupil's score, and tabulating the pupil's score for each group. All the scores were checked by the writer, then rechecked by the home economics students of the college, thereby reducing the possibility of error.

The fifth step was to compute the relationship between the intelligence ratings of the pupils and the scores on the various achievement tests, using the formula which is commonly referred to as the Spearman ρ formula:

$$\rho = 1 - \frac{6 \Sigma D^2}{N(N^2 - 1)}$$

The Probable Error formula used: $P.E._{\rho} = .7063 \frac{(1-\rho^2)}{\sqrt{N-1}}$

Since the number of cases used was small, the Spearman Rank Method was used in computing these relations as, according to Rugg,1

> "We can thus lay down a rule: Use the Rank Method only when N is small (say, less than 30). In such cases the means and the standard deviation are of little value, owing to the size of the Probable Errors. The result in cases of this sort can at best only indicate the Existence of Correlation and not the Closeness of the Relationship. Therefore, we must be extremely cautious in our interpretation of Rank correlations, or of any correlations computed for a small number of cases."

1 Rugg, Harold O. Statistical Methods Applied to Education. p.291. Houghton Mifflin Co. Chicago. 1917.

TABLE IV

Home Economics I
Intelligence Ratings and the Scores
in Objective, Practical and Problem Tests

I. R. (I.B.)	Objective test Score	Practical Test Score	Problem test Score
170	92	70	75
163	82	48	75
161	77	76	72
153	74	26	84
147	67	65	80
145	68	69	85
143	77	60	80
141	83	71	80
129	91	75	82
127	76	62	76
123	73	60	80
123	77	57	75
122	61	59	77
122	76	65	81
120	91	84	77
111	62	70	79
110	72	56	78
107	62	59	77
107	61	67	73
107	69	37	80
106	78	60	81
102	61	30	64
100	52	53	70
94	70	61	82
92	65	51	73
90	53	58	66
75	64	51	76
70	57	51	78
59	28	26	75
42	53	52	73
37	49	61	77

TABLE V

Home Economics II
Intelligence Ratings and the Scores
in Objective, Practical and Problem Tests

I. R.(IB)	Objective Test Score	Practical Test Score	Problem Test Score
175	115	77	94
160	86	77	79
139	91	84	81
133	111	75	82
131	104	67	77
118	108	87	74
102	91	67	86
100	84	73	78
100	84	77	81
94	100	75	88
86	105	77	79
78	111	80	81
76	80	85	64
71	88	77	81
70	77	85	77
68	100	67	86

TABLE VI

Home Economics III
Intelligence Ratings and the Scores
in Objective, Practical and Problem Tests

I. R.(IB)	Objective Test Score	Practical Test Score	Problem Test Score
168	77	..	85
152	76	86	82
148	74	79	87
140	69	76	83
137	72	66	87
135	78	76	80
133	71	76	86
125	72	70	72
125	74	66	75
119	71	76	81
108	63	76	74
106	70	..	80
100	67	86	84
95	65	93	81

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IV

RESULTS OF TESTS

Tables IV, V and VI record the scores in the Objective, Practical and Problem tests in Home Economics I, II and III. Table VII records the correlations between the intelligence ratings and scores in Objective, Practical and Problem tests.

TABLE VII

Correlations between Intelligence Ratings and Scores in Objective, Practical and Problem Tests in Home Economics I, II and III

ρ between I.R. and	H.E. I		H.E. II		H.E. III	
	ρ	P.E.	ρ	P.E.	ρ	P.E.
Objective Test	+ .75	± .055	+ .37	± .151	+ .73	± .087
Practical Test	+ .42	± .104	- .05	± .175	- .06	± .187
Problem Test	+ .31	± .114	+ .17	± .175	+ .49	± .143

Rugg,[1] interpreting correlations, states that,

"The experience of the present writer in examining many correlation tables has led him to regard correlation as negligible or indifferent when r is less than .15 to .20; as being present but low when r ranges from .15 or .20 to .35 or .40; as being markedly present or marked when r ranges from .35 or .40 to .50 or .60; as being high when above .60 or .70."[1]

The reliability of a coefficient is regarded as good if it is about 4 times its probable error. Ratios less than 4 indicate lower reliability, and less than 2, no reliability.

[1]Rugg, Harold O. Statistical Methods Applied to Education, p. 291. Houghton Mifflin Co. Chicago. 1917.

According to this interpretation the correlations between the intelligence ratings and Objective tests for Home Economics I and Home Economics III are high,and significant for Home Economics II. The correlations between intelligence ratings and Practical tests in Home Economics I are significant,but negligible for Home Economics II and Home Economics III. The correlations between the intelligence ratings and Problem tests in Home Economics I and III are significant, but insignificant for Home Economics II.

Considering the reliability of these results, it will be noted that they are reliable for the relations between the intelligence ratings and the Objective tests in Home Economics I and Home Economics III, but low in reliability for Home Economics II. The lower coefficient (.37) for Home Economics II indicates that there is less relation between intelligence ratings and Objective tests on Foods. The results with the Practical tests show good for Home Economics I, but no reliability for Home Economics II and Home Economics II and Home Economics III. With the Problem tests, the results show low reliability for Home Economics I, no reliability for Home Economics II and fair reliability for Home Economics III.

This low reliability may be due either to the small number of cases or to a low correlation or to both. When the correlation was high and the number of cases was larger, the Probable Error was small.

The correlations were low and Probable Errors were higher in all the results for Home Economics II than for Home Economics I and Home Economics III. This may possibly be explained by the tests which were given. These may not have been as well planned and evaluated as in the other two cases. The difference between this and Home Economics I may also be partly due to the smaller number of cases used.

V

CONCLUSIONS

In drawing conclusions in this study, it must be remembered that the groups were small and, therefore, the results are indicative only.

There is a fairly close relation between brightness of the pupil and ability in Home Economics as measured by Objective tests. Since these tests are largely informational in type and perhaps measure somewhat the same ability, this close relation is easily understood.

The relation between brightness of pupils and scores on Practical tests depends upon the nature of the Practical tests; for scores on judging children's clothing, it is good (Home Economics I), but for scores on planning, preparing and serving a dinner (Home Economics II) and for scores on planning and giving a children's party (Home Economics III) it is not high, as the low, unreliable coefficients are competent to show, and probably is zero.

The results indicate some relation between brightness of pupils and ability in Home Economics as measured by the Problem tests, since Home Economics I and Home Economics III each show positive correlations though low ones.

These results can only be taken to indicate a trend, which is that a relation does exist between intelligence and ability shown through Objective tests in Home Economics; lesser relation between intelligence and ability shown through Problem tests, and still less relation between intelligence and ability as shown through Practical tests.

It would seem that certain abilities are needed in order to solve problems and practical tests in Home Economics other than those abilities which are measured by the Objective test or by the Otis Group Intelligence Test. Therefore, it is advisable that, in teaching Home Economics all forms of testing - Objective, Practical and Problem - should be used in order to more nearly have a measurement of achievement which is fair to all girls.

Further study would be highly advisable with different types of problems, different methods of judging them, and with larger groups of pupils. The writer suggests that this study might to advantage be repeated in a school where a larger number of pupils will be available, and where these three forms of tests will be used over several units of work, testing various types of ability in practical work and judgment in different types of home-making situations.

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Rugg, Harold C. Statistical Methods Applied to Education, p. 291. Houghton Mifflin Co., Chicago, 1917.

Tests

Engle-Stenquist Home Economics Clothing Test, Forms A and B.

Engle-Stenquist Foods and Cookery Test, Form A.

Tests of the State Department of Education Division of Home Economics, State of Texas.

A P P E N D I X

Otis Group Intelligence Scale
Form A
Record Sheet
Home Economics I Students

Age					
Years	Months	Score	Norm	IB	PR
13	6	165	95	170	99.1
12	1	152	89	163	98.3
13	6	156	95	161	98
14	10	164	109	153	96.3
14	11	151	110	147	94.4
14	9	155	108	145	93.5
13	1	134	91	143	92.7
14	8	148	107	141	91.7
14	4	131	104	127	82
16	4	150	123	127	82
13	8	120	97	123	78
17	2	151	128	123	78
13	3	115	93	122	77
14	3	125	103	122	77
16	11	147	127	120	75
13	11	111	100	111	64
13	10	109	99	110	63
15	6	122	115	107	59
13	10	106	99	107	59
13	11	107	100	107	59
14	4	110	104	106	58
14	5	107	105	102	53
13	11	100	100	100	50
15	8	111	117	94	42
14	3	95	103	92	39
15	..	100	110	90	37
17	11	104	129	75	20
15	7	94	124	70	15.6
19	..	89	130	59	8.3
15	9	67	125	42	2.5
18	4	67	130	37	1.7

Otis Group Intelligence Scale
Form A
Record Sheet
Home Economics II Students

Age					
Years	Months	Score	Norm	IB	PR
13	2	177	102	175	99.43
15	1	160	102	160	97.9
14	..	151	112	139	90.6
13	2	135	102	133	86.7
14	3	136	115	121	76
14	5	135	117	118	73
12	9	90	88	102	53
16	9	108	108	100	50
15	3	113	113	100	50
13	11	105	111	94	43
15	7	110	124	86	32
17	11	107	129	78	23
14	6	93	117	76	21
14	..	83	112	71	16.4
14	1	71	101	70	15.6
15	5	92	123	68	14

Otis Group Intelligence Scale
Form A
Record Sheet
Home Economics III Students

Age					
Years	Months	Score	Norm	IB	PR
13	4	165	97	168	98.9
13	11	152	100	152	96
16	2	173	125	148	94.7
13	3	137	97	140	91.1
14	2	139	102	137	89.4
17	2	163	128	135	88.1
14	1	134	101	133	86.7
13	8	122	97	125	80
14	9	133	108	125	80
19	2	149	130	119	74
13	6	103	95	108	61
14	5	111	105	106	57
15	3	113	113	100	50
13	11	95	100	95	43

Objective Test
Home Economics I

Part I

Directions.- Four answers are given for each of the following statements. You are to choose the best answer, draw a line under it, and write its number in the parenthesis as shown in the sample.

Sample:

A material easy to launder is _____
1. Silk. 2. Wool. 3. Cotton 4. Wool and silk. (3)

1. Bastings are used to ____
1. Serve as a guide in sewing. 2. Save machine stitching. 3. Save time. 4. Hold the work in place. ( )1

2. It will help a girl to look well dressed if her coat has ____.
1. All the buttons sewed on. 2. Some buttons off. 3. Pins used instead of buttons.
4. No buttons for fastenings. ( )2

3. In cutting a garment, one must ____.
1. Watch for up and down on the fold. 2. Pay no attention to up and down when cutting.
3. Watch for up and down after cutting.
4. Watch for up and down before cutting. ( )3

4. To insure economical cutting of a garment, the ___.
1. Large pieces should be cut first. 2. Trimmings should be cut first. 3. Entire pattern should be placed on the cloth.
4. Small pieces should be cut first. ( )4

5. A dress suitable for school must be ____.
1. Complicated in design. 2. Of expensive material. 3. Simple and durable.
4. Dark blue. ( )5

6. The underwear easiest to launder is ____.
1. White. 2. Colored. 3. Colored with white trimmings. 4. White with colored trimmings. ( )6

7. When sewing, pins should be kept in the ____.
1. Pincushion. 2. Sewing box. 3. Garment.
4. Machine drawer. ( )7

8. In cutting out a slip, to obtain an even edge ____.
   1. Use long strokes of the scissors. 2. Use short strokes of the scissors. 3. Lift the cloth from the table and use short strokes of the scissors. 4. Lift the cloth from the table and use long strokes of the scissors. ( )8

9. A French seam on a slip is correctly made when __.
   1. No raw edges show. 2. The raw edges show. 3. The seam is ½ inch wide. 4. No raw edges show and the seam is not more than ¼ inch wide. ( )9

10. Before cutting a garment you should ____.
   1. Read the description of it given on the envelope. 2. Read directions given with the pattern and study the cutting chart. 3. Disregard the directions and depend upon the teacher. ( )10

11. A lengthwise fold is made by ____.
   1. Folding the material parallel to the selvedge. 2. Making the fold parallel to the crosswise threads. 3. Placing the cut edges of the material together. 4. Placing cut edges of material parallel to the crosswise threads. ( )11

12. Choosing a collar for a garment depends on the ____.
   1. Prevailing style. 2. Style given with the pattern. 3. Shape of the face. 4. Season. ( )12

13. A tall person may wear ____.
   1. Stripes running up and down. 2. Stripes running diagonally. 3. Stripes running across the figure. 4. No stripes at all. ( )13

14. For the neck that is too long, use ____.
   1. Collarless dresses. 2. Long ear rings. 3. V-neck line. 4. Choker beads. ( )14

15. The stout figure should wear ____.
   1. Skirt and blouse of the same color. 2. Skirt and blouse of different colors. 3. Bright colored belts and bands on the skirt. 4. Flounces or ruffles to conceal the hips. ( )15

16. The tall person should wear ____.
   1. Shoes, hose, dress and hat of one color.

2. Shoes and hat of the same color. 3. Shoes and hat of the same color. 3. Shoes, hat and dress of different harmonizing colors. 4. Shoes, hose, skirt of one color, blouse and hat of another color. ( )16

Part II

Some of the following statements are true and some are false. Put a plus sign to the left of the statement you consider true, and a zero (0) sign to the left of the statement you consider false.

1. A stout person should wear large plaid designs.
2. The tall, thin person should wear materials that cling.
3. Loud colors are better for sports wear than for afternoon wear.
4. The short, stout person should wear many ruffles on her clothes.
5. Long wide sleeves add width to the figure at the hips.
6. Simplicity of dress means beauty of dress.
7. A rough hard finish material is suitable for the young child's garment.
8. All designs are suited to all types of children. There is no individuality.
9. When the child's garments are uncomfortable he will become cross and irritable.
10. Long trousers are comfortable garments for the preschool boy.
11. It is convenient for the child to have three buttons in the back of its underwear.
12. Naturalistic designs are more attractive for little girl's dresses than the conventional.
13. Snaps are often mashed in laundering.
14. Thread loops twist easily and are difficult for a child to fasten.

15. Hooks and eyes are suitable for a child's garment because they hold so well after fastening.

16. When the child wears long hose it is practical and sensible for him to wear the round garter.

17. Taffeta would make a suitable dress for a little girl's Sunday afternoon dress.

18. In fitting the child's garment we must always consider comfort and freedom of movement.

19. In making notches on the garment they are always cut.

20. Dressmakers' scissors are usually ten inches long.

21. A needle which is too short may cause the machine to skip stitches.

22. The balance wheel is located on the left hand side of the machine.

23. Two types of basting are the uneven and even.

24. We press all the seams upon completion of garment, then remove the bastings lastly.

25. For the French seam we make our first line of stitching on the right side of the garment.

26. In cutting a garment we usually cut both sleeves at one time.

27. When we speak of construction lines we mean the pockets, buttons and cuffs.

28. A seam is a line of stitching joining two or more pieces of material together.

29. Pleating is used for decorative purposes and to give fullness.

30. When cutting the garment we pin and cut one section, then pin and cut another, until we have pinned and cut the whole.

31. Little children can wear nearly all colors because their complexions are so perfect.

32. Fancy dressing over-stimulates a child.

33. We should avoid selecting the loud, harsh colors for children's clothes.

34. Fur on a small child's coat shows good taste.

35. Smocking will make a simple voile dress attractive and desirable.

36. Self help garments are not necessary for children.

37. Little boys'and little girls' suits should have pockets

38. Our dressmaking rules tell us to alter the dress after it is cut rather than to alter the pattern.

39. It is very important to straighten the material before you cut it.

40. The small child's garment should hang from the shoulder.

41. The pre-school child's garment should have a large hem.

42. Big, ruffly collars are comfortable for little girls.

43. The wrist curve is lower toward the back to allow the necessary fullness for bending the elbow.

44. The sleeve cap is usually curved a bit higher at the back than the front.

45. A facing is a flat finish which shows on both sides.

46. The usual finish at the lower edge of a garment is a facing.

47. A flat-fell seam is used where a tailored appearance is desired and where a flat and durable finish is necessary.

48. A plan of work is not necessary when constructing a garment.

49. Orange, violet and green are the secondary colors.

50. The use of the dress has a decided influence on the design.

Part III

In the following statements some of the items are correct and some are not. Underline those you think are correct and place the letters corresponding to them in the parenthesis in the right hand margin.

Example:

The Primary colors are ____.
1. White. 2. Yellow. 3. Black. 4. Brown.
5. Blue. 6. Red. 7. Green. (2, 5, 6)

1. Analogous color schemes are ____.
a. Pink and brown. b. Yellow and yellow green.
c. Blue and blue green. d. Red and green. ( )1

2. The best play garments for children are ____.
a. Overalls. b. Organdy dresses. c. Silk socks.
d. Pajamas. ( )2

3. In buying a dress, the principal things to consider are ____.
a. The thread used for sewing. b. The cost.
c. The color. d. The kind of dyes used.
e. The design. ( )3

4. If a child's clothing is uncomfortable, he will become ____.
a. Cross. b. Playful. c. Irritable. d.Sleepy.( )4

5. Some mothers put elastic in the tops of bloomers because they think ____.
a. It saves laundry. b. It looks nicer.
c. Saves time. d. Is cooler. ( )5

6. If a child is squirming and pulling at his clothes constantly it is because ____.
a. Materials are scratchy. b. He likes the color. c. Seams rough or heavy. d. Bands are tight. e. He does not like them. f.They are new ( )6

7. Long crotch seams in trousers, bloomers and teddies are necessary ____.
a. Allow for growth. b. Comfort. c. Looks.
d. Easier made. e. To distinguish back from front. f. Allow for freedom of movement. ( )7

8. Sleeves or shoulder seams that are too long cause much ____.
a. Pleasure. b. Discomfort. c. Irritability.
d. Pulling at his clothes. e. Laundering.
f. More sewing. ( )8

9. If a child wears bloomers they should be ____.
a. Buttoned to an underwaist. b. Made to use elastic instead of band. c. Made to fit tightly over the hips. d. Hemstitched at top with no band. e. made to fit loosely. ( )9

10. Clothes that do not fit, or that are soiled or slovenly in appearance make a child ____.
a. Happy. b. Self-conscious. c. Ashamed. d. Friendly. e. Weak. f. Cross. g. Irritable. ( )10

11. Sun-suits should be made ____.
a. Of wool. b. Porous knit material. c. Prints. d. Gingham. e. Long sleeves. f. Made to expose large part of body to sun. ( )11

12. An important consideration in children's clothing is ____.
a. Attractiveness. b. Selecting design in large figures. c. For the mother to make the selection. d. Disregard the color. ( )12

13. The decoration on children's clothes should always be ____.
a. Elaborate. b. Simple. c. Conspicuous. d. Inconspicuous. e. Attract attention to garment. f. Attract attention to child. ( )13

14. To help children develop independence in dressing their clothing should be made with ____.
a. Side closings. b. Front closings. c. Few large buttons. d. Many small buttons. e. No buttons but snaps. ( )14

Part IV

Below on the left are several groups of phrases which will make complete statements if combined with a phrase from the right hand group. Taking one group at a time, find the **best** phrase which will complete the thought on the left hand group. Write its letter by the correct number on the right hand side.

Example:

1. White is	a. a primary color	1 (d)
2. Red purple is	b. a complement of blue	2 (c)
	c. the complement of yellow green	
	d. a combination of all colors.	

Group I

1. The boyish type should avoid wearing	a. the hands appear larger	1( )

2. The broad shouldered girl should avoid wearing	b. large enough to be comfortable	2( )
	c. dull shades only	3( )
3. It is	d. very fluffy clothes	
	e. bows on her short sleeves	4( )
4. Gloves should be	f. a person uncomfortable	5( )
5. Very light gloves make	g. poor taste to wear high heeled shoes with sport dresses	

Group II

1. For arms that are too long use	a. wool, silk	1( )
	b. round neck lines	2( )
2. For arms that are too short use	c. V-neck lines	3( )
	d. white or green	4( )
3. For the face that is too broad use	e. long,well fitting	5( )
	f. percale,gingham	
4. For the face that is too long use	g. double sleeves	
	h. scarf	
5. For the house dress use		

Group III

1. The stout person may wear	a. taffeta	1( )
	b. crystal or other shiny beads	2( )
2. White will make		
3. Stout people should not wear	c. the figure appear larger	3( )
4. Person with smooth neck may wear	d. red hats	4( )
	e. long strands of beads	5( )
5. Person with a long slender neck should wear	f. the figure appear smaller	
	g. dark shoes	
	h. her hair cut in round outline at nape of the neck	

Group IV

1. The success of a well fitted dress depends upon	a. to dress beyond your means	1( )
	b. materials about the same softness and weave	2( )
2. You should dress to emphasize		3( )
3. It is very unwise		4( )
4. Good taste in dress is secured by	c. The under garments worn	5( )

5. To successfully combine fabrics use	d. to buy good materials e. your best features and conceal your imperfections f. an understanding of line,material,color	

Group V

1. A beret may be worn	a. large figured woolens	1( )
2. Wool is used for	b. tall, slender and graceful	2( )
3. The best hose for sports wear are	c. with a sports dress d. its warmth	3( )
4. The willow type is	e. personality,figure, material and occasion	4( )
5. A pleasing costume is suitable to	f. lisle or mesh hose g. chiffon h. with a house dress	5( )

Part V

Fill in the blank in the following sentences; write the word which you think will complete the sentence correctly. Write only one in each blank.

Example:
The complement of blue is orange.

1. Large people should wear _____ colors.
2. A high-school girl needs at least _____ or _____ hours sleep each night.
3. The underlying principles of good grooming are _____ and _____.
4. You should brush and thoroughly clean your teeth _____ daily.
5. A plan for spending is called a _____.
6. Church is not the place for a style _____.
7. An ill-fitted shoe can cause _____ and _____.
8. _____ and _____ washing is the surest way to lengthen the life of hose.
9. The _____ is the foot rest at the base of the machine.
10. Fine thread should be used on _____ materials.
11. The _____ is worn on the second finger of the right or left hand.

12. The bobbin case or shuttle holds the _____.
13. It is necessary to have a _____ in some garments in order to put them on and remove them easily.
14. _____ and _____ are the most practical fastenings for undergarments.
15. A thorough pressing after a garment is completed will not take the place of careful pressing during _____.
16. The amount of clothes a child should wear is determined by the _____, the _____ of the house, and the _____ health, and _____ of the child.
17. A child should use his _____ handkerchief.
18. The most common fiber is _____.
19. Indian head is made by a _____ weave.
20. Underwear materials should be easy to _____ and fast in _____.

ENGLE–STENQUIST HOME ECONOMICS TEST

Foods and Cookery

By EDNA M. ENGLE, A.M.
Principal, Girls' Vocational School, Baltimore
and JOHN L. STENQUIST, PH.D.
Director of Research, Public Schools, Baltimore

A

TEST: FORM A

For Grades 5 to 10

Do not open this booklet, or turn it over, until you are told to do so. Fill these blanks, giving your name, age, etc. Write plainly.

Name ..... Date ..... 19 ....
(First name, initial, and last name)

Age ..... Grade ..... Home Economics teacher .....
(years)

School ..... City ..... State .....

GENERAL DIRECTIONS. In this booklet are some questions on Foods and Cookery. There are four parts. The directions are given at the beginning of each part. Read the directions. Then read the questions carefully and do what the directions tell you to do.

Work at your natural rate. Do not hurry, but do not waste time. Simply read each question; think what it means and write the answer, if you know it. If you don't know it, *go on to the next question.* Be sure to try all the items.

Ask no questions after the test is started.

Do not begin until you are told to.

PART	SCORE	
I		
II		
III		
IV		
Total		

☞ *To the Scorer:* The two columns under SCORE are to help you keep the tens and units figures in columns.

Published by World Book Company, Yonkers-on-Hudson, New York, and Chicago, Illinois

ESHET : FC : A–1

PRINTED IN U.S.A.

PART I

DIRECTIONS. Four answers are given for each of the following statements. You are to choose the best answer, draw a line under it, and write its number in the parentheses, as shown in the sample.

SAMPLE.

Every girl should use in the cookery class —

1 her own hand towel 2 her partner's towel
3 a school hand towel 4 her apron for a towel.....(*1*)

---

1. Growing boys and girls should eat *every* day —
   1 some green vegetable, milk, and fruit 2 candy and cake
   3 meat 4 fish.....( ) 1
2. A food rich in iron is —
   1 sweet potatoes 2 spinach 3 macaroni 4 peas.....( ) 2
3. To aid digestion, one should —
   1 eat rapidly 2 drink a glass of water after eating
   3 wash food down with water 4 chew food thoroughly.....( ) 3
4. Before oranges and grapefruit are used, they should be —
   1 pared 2 wiped off 3 washed 4 scalded.....( ) 4
5. Picnics are especially good in summer because —
   1 of the kind of food served 2 they save work
   3 they increase the appetite and provide exercise and fresh air
   4 children have plenty of room in which to play.....( ) 5
6. Cocoa should be made by —
   1 stirring it (mixed with cold water) into cold milk and boiling
   2 boiling milk and water, adding cocoa and sugar
   3 mixing milk, cocoa, and sugar together and boiling five minutes
   4 mixing cocoa and sugar together, adding water, and boiling five minutes; then adding milk and heating.....( ) 6
7. The side of the plate at which the fork should be placed is —
   1 the right 2 the right, four inches from the edge of the table
   3 the left with the knife 4 the left.....( ) 7
8. The best time to eat candy is —
   1 between meals 2 after meals 3 at bedtime 4 before meals ( ) 8
9. The most important use of the silence cloth is to —
   1 protect the table top 2 save the tablecloth
   3 make less noise 4 make the tablecloth look well.....( ) 9
10. While clearing the table after a meal, one should —
    1 scrape the dishes 2 separate only silver and glasses
    3 put all the dishes together for washing
    4 scrape dishes and sort them before washing .....( ) 10
11. Skim milk is milk —
    1 with the cream removed 2 that has been heated
    3 with nothing taken out of it 4 that has no bacteria.....( ) 11

 Part I is continued on page 3.

12. The best winter breakfast food for a growing boy or girl is —
1 **cold cereal with milk** 2 **hot cereal with milk**
3 **pancakes with syrup** 4 **buns and coffee** .....( ) 12

13. Bananas are ripe when they are —
1 **light yellow** 2 **yellow with brown spots and brown ends**
3 **yellow with green ends** 4 **yellow with brown spots on them**..( ) 13

14. An animal fat is —
1 **olive oil** 2 **butter** 3 **corn oil** 4 **cottonseed oil**.....( ) 14

15. The most healthful meal for a growing girl is —
1 **roast pork, sweet potatoes, corn, and lemon pie**
2 **milk, bread and butter, spinach, poached egg, and baked apple**
3 **macaroni and cheese, mashed potatoes, fish, and rice pudding**
4 **Swiss steak, mashed potatoes, peas, and tapioca pudding**.....( ) 15

16. In a family of growing children, the largest amount of money should be spent daily for —
1 **milk** 2 **meat** 3 **cereals** 4 **potatoes**.....( ) 16

17. Eggs, milk, and cheese are called —
1 **body-building foods** 2 **energy foods** 3 **fuel foods**
4 **regulating foods**.....( ) 17

18. A food which helps to keep the body warm is —
1 **tomatoes** 2 **lettuce** 3 **butter** 4 **celery**.....( ) 18

19. The fireless cooker —
1 **makes food go farther** 2 **saves food** 3 **makes food look better**
4 **saves money, time, and trouble** .....( ) 19

20. The most sanitary method of preserving food is to cook it in —
1 **an open kettle** 2 **the fireless cooker** 3 **a jar with a top**
4 **a jar without a top**.....( ) 20

21. Lettuce is a valuable food because it contains —
1 **vitamins and minerals** 2 **carbohydrates and water**
3 **muscle-building food** 4 **fat**.....( ) 21

22. Knives and spoons should be placed —
1 **together on either side of the plate** 2 **at the right of the plate**
3 **at the left of the plate** 4 **one on each side of the plate**.....( ) 22

23. Cauliflower is a —
1 **flower** 2 **bulb** 3 **stem** 4 **leaf**.....( ) 23

24. Cabbage is most valuable for —
1 **starch** 2 **protein** 3 **mineral** 4 **fat**.....( ) 24

25. At a meal, water should be poured —
1 **after guests are seated** 2 **by the hostess after guests are seated**
3 **just before the meal is served** 4 **as guests are being seated** ( ) 25

26. A muffin is baked when it —
1 **is browned on top** 2 **is split open on top**
3 **rises in a peak** 4 **springs back when touched**.....( ) 26

27. Meat bills may be reduced by —

1 **leaving trimmings with the butcher**
2 **throwing trimmings away**
3 **saving trimmings for soups and stews**
4 **buying chops and steaks**.....( ) 27

28. A soft custard should be cooked —

1 **at the boiling point directly over the fire**
2 **at the boiling point in a double boiler**
3 **above the boiling point in a double boiler**
4 **below the boiling point in a double boiler**.....( ) 28

29. An oily fish is the —

1 **perch** 2 **flounder** 3 **salmon** 4 **whitefish**.....( ) 29

30. Before jars are used for preserving food, they should be —

1 **washed and soaked in hot water** 2 **rinsed in boiling water**
3 **thoroughly washed inside and out**
4 **washed in warm, soapy water and then boiled**.....( ) 30

31. Leafy vegetables are valuable for —

1 **vitamins** 2 **water** 3 **energy** 4 **fat**.....( ) 31

32. A good cereal for a cold winter morning is —

1 **cornflakes** 2 **oatmeal** 3 **puffed wheat** 4 **shredded wheat**( ) 32

Number right.....*(Score, Part I)*

PART II

DIRECTIONS. Some of the following statements are true and some are not true. In the parentheses after each statement put the letter **T** if you think the statement is *true*, or an **N** if you think it is *not* true, as shown in the samples.

SAMPLES.

a. Coffee is the best beverage for growing children.....(*N*)

b. Hot cereal is a good breakfast food for young children.....(*T*)

---

1. Children should eat their meals at regular times each day.....( ) 1

2. The knife and fork should be kept on the plate while one is eating ..( ) 2

3. Candy bought from a pushcart is as good as candy bought in a store.( ) 3

4. Sausage and buckwheat cakes are a good breakfast for a school child.( ) 4

5. Baked apples make a good dessert for a small child.....( ) 5

6. You should keep your arms on the table while eating.....( ) 6

7. Conversation during a meal should be pleasant.....( ) 7

8. Children should have some whole-wheat bread in their diet.....( ) 8

9. Milk, fruit, and vegetables contain vitamins.....( ) 9

10. Soiled dishes should be removed from the sick room at once.....( ) 10

11. A hot lunch is better than a cold one for a school child.....( ) 11

12. Baking powder and sour milk are used together in making muffins...( ) 12

13. A tray prepared for a sick person should be made as attractive as possible.....( ) 13

14. After being baked, potatoes are opened to allow the steam to escape.( ) 14

15. The same materials are used in making ice cream and in making sherbets.....( ) 15

16. Bacon should be cooked over a very hot fire.....( ) 16

17. If a toothpick inserted in the middle of a cookie comes out clean, the cookie is done.....( ) 17

18. Gelatin is a good dessert to serve after a heavy meal .....( ) 18

19. Plain wheat muffins contain more mineral matter than do graham muffins.....( ) 19

20. It is useless to save scraps of bread .....( ) 20

21. If soup is too hot to eat, you should cool it by blowing on it.....( ) 21

22. Macaroni and cheese may take the place of a meat dish for dinner...( ) 22

23. White sauce is made by cooking flour and milk together and adding butter.....( ) 23

24. Salt added to the ice for freezing ice cream will prevent the ice from melting.....( ) 24

25. Mashed potatoes contain more mineral matter than do baked potatoes.( ) 25

26. A grown person requires more lime than does a growing boy or girl ..( ) 26

27. There are two cups of sugar to one pound.....( ) 27

28. Cranberries contain a large amount of starch.....( ) 28

Part II is continued on page 6.

29. There are two teaspoons to one tablespoon.....( ) 29
30. Cereals require long cooking to improve their flavor.....( ) 30
31. Sapolio is a good substance for cleaning silver.....( ) 31
32. Water is not a food.....( ) 32
33. Cocoa has the fat removed from it.....( ) 33
34. Cereals are seeds of grasses.....( ) 34
35. You should eat nuts, celery, olives, radishes, or bread with your fingers.( ) 35
36. Beating cocoa with an egg beater will prevent a scum from forming..( ) 36
37. Money will be saved by buying staples in large quantities.....( ) 37
38. Fresh bread is more easily digested than toast.....( ) 38
39. There should be at least one hot dish in each meal.....( ) 39
40. Meat left over from a roast can be made into an appetizing luncheon or supper dish.....( ) 40
41. One should allow hot food to cool a bit before putting it in the mouth.( ) 41
42. A meal with two foods difficult to digest is poorly planned.....( ) 42
43. Easily digested food should be served for children and old people....( ) 43
44. The best way to reduce the cost of a menu is to substitute cheaper foods of equal nutritive value.....( ) 44
45. Wilted vegetables may be freshened by soaking in cold water.....( ) 45
46. Pie is a light dessert.....( ) 46
47. Fruit in tin cans is more expensive than fruit bought in glass jars....( ) 47
48. Milk is pasteurized to make it safe to drink.....( ) 48
49. Money can be saved by buying food out of season.....( ) 49
50. Steamed suet puddings make good desserts for the summer time.....( ) 50
51. Leavening agents are used to make flour mixtures light.....( ) 51
52. Dried fruit should be cooked without soaking .....( ) 52
53. Baking soda is a leavening agent used with sweet milk.....( ) 53
54. The mineral in the potato lies next to the skin.....( ) 54
55. Yeasts are microscopic insects.....( ) 55
56. Meat substitutes are used because they are cheaper than meat and give variety to the diet.....( ) 56
57. Tender cuts of meat have more food value than tough cuts.....( ) 57
58. Fruit juice is used in making junket for the sick.....( ) 58
59. The guest at a meal should be served first.....( ) 59
60. The fuel value of proteins, carbohydrates, and fats is measured by calories.....( ) 60

Number right.....
Number wrong .....
Number omitted.....
Total should be 60

Number right **minus** *Number wrong*.....*(Score, Part II)*

PART III

DIRECTIONS. Match the items in the two columns. In the parentheses before each item in Column 1 write the number of the item in Column 2 that goes with it, as shown in the sample. After a number in Column 2 is used, draw a circle around it so that you do not waste time reading the item again. The first item is done for you as a sample.

COLUMN 1	COLUMN 2
SAMPLE.	
(3) The use of cocoa	
( ) **1.** Brown sugar	1. is delivered, it should be put in the coldest part of the refrigerator.
( ) **2.** When in doubt whether to choose a fork or a spoon, it	2. is freshly boiled.
( ) **3.** A cheese soufflé	(3) is one way of including milk in the diet.
( ) **4.** The custom of leaving lettuce on the salad plate	4. is an important vitamin and mineral.
( ) **5.** Plain silver	5. is best to avoid that brand.
( ) **6.** As soon as milk	6. is not necessary to eat bread.
( ) **7.** In brown rice there	7. is produced by the action of an acid on soda.
( ) **8.** If the label on canned goods shows artificial coloring or preservative, it	8. is not required by good etiquette.
( ) **9.** When a meal contains a starchy vegetable, it	9. is less concentrated than white sugar.
( ) **10.** The best flavor of strong-juiced vegetables	10. is retained by cooking as short a time as possible.
( ) **11.** Cheese that has been cooked too long	11. is easily scratched in washing.
( ) **12.** Fish contains a valuable mineral called iodine which	12. is a good substitute for a meat dish at luncheon.
( ) **13.** When one is buying china, it	13. is usually safer to choose the fork.
( ) **14.** One way to prevent starch from lumping	14. is not a good rule to follow.
( ) **15.** To eat meat more than once a day	15. is about twice that of flour.
( ) **16.** In refilling water glasses it	16. is difficult to destroy some kinds of bacteria.
( ) **17.** The best flavor of canned fruit	17. is permissible at a meal.
( ) **18.** Because of the formation of spores it	18. is not an invitation to spend the entire evening.
( ) **19.** Only one relish	19. is not found in meat or vegetables.
( ) **20.** Bread containing roughage, minerals, and vitamins	20. is made from the whole grain.
	21. is stringy and tough.
	22. is obtained by turning the fruit out of the can and airing it.
	23. is a dish made light by well-beaten eggs.
	24. is to mix it with a fat.
	25. is not necessary to remove them from the table.
	26. is best to buy a pattern from open stock.

 Number right.....(Score, Part III)

PART IV

DIRECTIONS. One word is left off the end of each of the following sentences. In the parentheses after each sentence write the missing word, as shown in the sample. *Write only one word.*

SAMPLE.

While eating, you should keep your elbows off the —— (*table*)

1. Fruit should be eaten every —— ..... ( ) 1
2. Fruit is served first at breakfast to give a (an) —— ( ) 2
3. The sink must be cleaned after each —— ..... ( ) 3
4. In the course of a meal, saucedishes should not be raised from the —— ..... ( ) 4
5. The most sanitary bread to buy is bread that has been —— ..... ( ) 5
6. In making cornstarch pudding, cornstarch is mixed with sugar to keep the starch from —— ..... ( ) 6
7. To keep from burning the fingers on saucepans, you should use a —— ..... ( ) 7
8. Turnips should be cooked in an uncovered saucepan because the flavor is —— ..... ( ) 8
9. Eggs should not be kept near foods of strong —— ( ) 9
10. Cooking changes the starch in bananas to —— .. ( ) 10
11. Digestion of starch starts in the —— ..... ( ) 11
12. The shell of a fresh egg is slightly dull and —— .. ( ) 12
13. If a fine-grained cake is desired, the butter and sugar must be well —— ..... ( ) 13
14. Salads may be served with the meal or as a separate —— ..... ( ) 14
15. Frying in a small quantity of fat is called —— ... ( ) 15
16. The grain most used for bread because it contains the largest amount of gluten is —— ..... ( ) 16
17. One can buy coffee from which the manufacturer has removed the stimulant called —— ..... ( ) 17
18. The leavening agents are air, gas, and —— ..... ( ) 18
19. A dairy product made from milk, that can be substituted for meat, is —— ..... ( ) 19
20. The best steak to buy for Hamburg steak is —— ( ) 20
21. The yolk of an egg will remedy mayonnaise that has —— ..... ( ) 21
22. Rice is sometimes served at dinner in place of a vegetable that contains —— ..... ( ) 22
23. How many cups of butter will 16 tablespoons make? ( ) 23
24. The number of tablespoons of gelatin to use to one quart of liquid is —— ..... ( ) 24

Objective Test
Home Economics III

Part I

Below is a series of statements each of which is completed in several different ways. Underline the one you consider correct and place the letter which corresponds to the correct answer in the parenthesis in the right hand margin.

Example:
Green is the name of a
a. month. b. color c. cloth. d. food. (b)

1. A requisite of a good toy is to ____.
a. scatter interest. b. give opportunity for thought and effort. c. develop careless habits. d. develop muscle. ( )1

2. Overloading a child with toys ____.
a. develops in him a strong appreciation for toys. b. weakens his interest and powers of appreciation. c. makes him happy. d. entertains him. ( )2

3. Little children like pictures ____.
a. that are painted by good artists. b. that have children or animals in them. c. that have very little coloring. d. that are appropriately framed. ( )3

4. One quality of a good game is that it should ____.
a. develop muscular coordination. b. develop care-free habits. c. amuse the child. d. provide strenuous exercise for the child. ( )4

5. The important feature to cultivate in a young child's musical life is ____.
a. technique. b. love for music. c. ability to play some instrument. d. appreciation of the classics. ( )5

6. It is important to acquaint little children with ____.
a. classical music. b. modern jazz. c. good types of melody, harmony, and rhythm. d. no music. ( )6

7. The death rate of infants who are breast fed for the first months of life is ____.
   a. higher than among those who are artificially fed. b. lower than the rate of those who are artificially fed. c. the same as the rate of those artificially fed. ( )7

8. Cod liver oil is given to babies because of its ____.
   a. vitamin B content. b. calcium content. c. vitamin D content. d. vitamin C content. ( )8

9. The diet of babies who are artificially fed should be ____.
   a. under the supervision of a physician. b. be prescribed by the mother. c. needs no careful preparation. d. cows' milk and lime water. ( )9

10. Zwieback or dry toast should be given once a day to a baby by the end of the sixth month because ____.
   a. he needs more food. b. he wants it. c. the muscles of his jaws need exercising. d. it keeps him quiet. ( )10

11. Egg yolk is added to the diet of a baby because ____.
   a. the baby needs more iron. b. it is high in food value. c. the baby needs more calcium. d. most babies like eggs. ( )11

12. The best way to prevent nipples from being contaminated is to ____.
   a. keep them in boiling water. b. keep them in an antiseptic solution. c. keep them in a sterile jar which is kept covered. d. keep them on the bottles when not in use. ( )12

13. The heartiest meal for a child should come at noon rather than evening because ____.
   a. the child wants it then. b. the child is hungrier then. c. he needs light food at night to induce sound sleep. d. it is less trouble for the mother. ( )13

14. The adult needs ____.
   a. less protein per pound of body weight than the child. b. more protein per pound of body weight than the child. c. the same protein per pound of body weight as the child. ( )14

15. If possible, babies should be breast fed because ____.
a. bottles are hard to prepare properly. b. good cow's milk is hard to buy. c. mother's milk is best for them. d. they like mother's milk best ( )15

16. The training of a child begins ____.
a. at birth. b. at one year of age. c. when he starts to kindergarten. d. when he starts to school. ( )16

17. Habits are things we do ____
a. because we want to do them. b. because we have done them before. c. to save time. ( )17

18. If a child has done something for which he should be punished, have the punishment ____.
a. when the father comes home. b. at bed time. c. immediately after the offense. ( )18

19. A psychiatrist is a person specially trained ____.
a. to supervise physical hygiene. b. to determine the mental age of children. c. to determine children's physical condition. d. to diagnose and treat nervous and mental diseases. ( )19

20. A normal healthy child ____.
a. eats a variety of foods. b. has special likes and dislikes for food. c. eats very fast. ( )20

21. A poorly nourished child will have ____.
a. sparkling eyes. b. clear, smooth skin. c. nervous habits. ( )21

22. A child 3 years old could be expected to ____.
a. help prepare the vegetables. b. build houses with blocks. c. put together mechanical toys. ( )22

23. A good story teller should ____.
a. have a good voice. b. have a costume suited to the story. c. be interested in the story. d. watch one or two of the children. ( )23

24. A good story for children should be ____.
a. exciting. b. have a good ending. c. long. d. partly told one day and finished the next. ( )24

Some of the following statements are true and some are false. Put a plus sign in front of those that you think are true and a zero in front of those you think are false.

1. The development of the pre-school child is very important.

2. The clothing of a small child should never hamper its movement.

3. Supporters should hang from the shoulders for both little boys and girls.

4. Tight bands of elastic may be used on the legs of small children's bloomers to hold the bloomers in place.

5. Sun-suits are worn only because it is the fashion for children to wear them.

6. The pre-school child should live on a regular schedule each day.

7. Little children should be permitted to help their older brothers or sisters and parents with any work being done.

8. The child is by nature bad.

9. A child 9 months old should sleep from 6 P.M. until 6 A.M. without waking.

10. Every child should have a separate bed.

11. Some one should wash a 3-year-old child's hands for him

12. When a child does not want to eat, he should be coaxed to eat his food.

13. A child should never be allowed to taste a food to see if he likes it.

14. A two and one-half year old child should be allowed to feed himself.

15. The most important thing in playing a game is to win the game.

16. Young children should hear only good music.

17. Children usually follow their impulses while playing.

18. Diet does not affect t he disposition and behavior of the child.

19. By two years the average child should feed himself by using a spoon and a small fork.

20. It is a fundamental right of every baby to have his birth recorded.

21. Milk is not the chief material from which teeth are made.

22. A four-year-old child is not interested in doing things for himself.

23. Rickets is a disease of malnutrition.

24. Rickets are found only among the poor class of people.

25. Starch is the largest single source of energy after the first year of life.

26. Cod liver oil is given to babies but it is not necessary for the pre-school child to use it.

27. Milk is the only food that contains enough calcium for bones and teeth.

28. All children should have a quart of milk a day.

29. If a child refuses food, stories, games and imagination will oftentimes accomplish what talking cannot do

30. Tea and coffee are only stimulants without food value.

31. The education of the child begins as soon as he is born.

32. Picture books with heavy cardboard pages are more easily handled by tiny fingers than cloth pages.

33. Children should wear fingered gloves in cold weather for they are the warmest kind.

34. When a child has a tantrum the mother should completely ignore him.

35. Scolding, nagging, and shaking the child sometimes helps the situation.

36. About three years or between three and four, many children pass through a natural stage of contrariness.

37. A child cannot have too many toys.

38. The home has a great responsibility in training the moral nature of the child.

39. A sun bath cannot be given without the sun shining thru a glass pane.

40. A child should be allowed to take his toys to bed with him.

Part III

In the following statements some of the items are correct and some are not. Underline those that you think are correct and place the letters corresponding to the items in the paranthesis in the right hand margin.

Example:
All carbohydrates ____
a. give fuel. b. give energy. c. build tissue. d. are laxative. e.contain fat. (a,b)

1. Foods which children should be given are ____.
a. pastry. b. nuts or other foods requiring careful mastication. c. 1 quart of milk daily. d. baked and mashed vegetables. e. orange juice. f. hot breads. ( )1

2. The pre-school period is an important one because ____.
a. it is the period of rapid and intense growth. b. his day will come when he is grown. c. it is the period in which the foundation of health, mental growth, and social adjustment is laid. d. many defects and handicaps occur during the first six years of a child's life. e. the child will soon be ready for school. ( )2

3. The ways to interest children in drinking milk ____.
a. serve the milk in mugs with handles large enough for him to grasp. b. By letting him use the same cup or glass each time. c. paste a colored picture of a bird or animal on the bottom of a thin glass so that it will show thru.

d. by adding more sugar. e. by adding chocolate malted milk to a glass of milk. ( )3

4. Things that should be included in the preschool child's diet are ____.
a. raw vegetables. b. desserts every day.
c. lean meats. d. hard breads. ( )4

5. If a child is afraid to go to bed in the dark the best thing to do is ____.
a. go to bed with him. b. leave the light on.
c. play games in the dark with him. d. let the child do something interesting in the dark. ( )5

6. Good music for the child is ____.
a."To a Wild Rose" by McDowell. b. "The Erl King" by Shubert. c. "The Butterfly" by Grieg.
d. "The Nut Cracker Suite" by Grieg. ( )6

7. Two and three year old children ____.
a. play alone although they play together.
b. should have constructive play tools.
c. should have many mechanical toys. d. should not have pets because they have not learned how to care for them. ( )7

8. Planning for a party includes ____.
a. inviting the guests. b. arranging the form of entertainment. c. planning refreshments. d. keeping the cost within the income. e. entertaining for the sole purpose of repaying obligations. f. involving the whole family in making preparations. ( )8

9. The kind of food to serve at a party is determined by ____.
a. the type of party. b. the guests' likes and dislikes. c. the season of the year.
d. the amount of money to be spent. e. by the number of people to be served. f. by the number of people there are to assist with the preparation and service of the food. ( )9

10. By the age of six a child should have learned ____.
a. to thank people for kindnesses. b. not to interrupt older persons. c. not to push in a crowd. d. that self reliance is not necessary. e. to weigh himself. ( )10

11. Indications of good nutrition in a child are ____.
a. standard weight. b. no desire for daytime naps. c. good color. d. good appetite. e. sound sleep. ( )11

12. The pre-school child's clothing should ____.
a. be elaborate. b. permit freedom of movement. c. be attractive. d. not require laundering. ( )12

Part IV

In each blank in the following sentences write the one word which you think is needed to complete the meaning.

Example:
Children should have <u>low</u> hooks in the closet.

1. The child finds friends in ____ and ____.
2. Music develops desirable personal ____.
3. Music is taught through ____ and ____.
4. Stories bring to the child a new ____ and ____.
5. ____ is one of the first colors recognized by children.
6. Through the ____, ____, ____ and ____ the child learns to love nature.
7. Nature teaches the child respect for ____ and ____.
8. Some characteristics which are common to child nature are ____, ____, ____, and ____.
9. The nervous system of the child is ____ and easily ____.
10. All punishment should be ____.
11. Very little punishment is necessary if the ____ is right.
12. In a family of growing children, the largest amount of money should be spent daily for ____.

1. songs
2. trees
3. world
4. red
5. birds
6. stones
7. independent
8. flowers
9. games
10. qualities
11. changeable
12. order
13. slow to understand
14. constructive
15. milk
16. people
17. overstrained
18. animals
19. brook
20. pictures
21. playfulness
22. records
23. delicate
24. environment
25. law

A B S T R A C T O F T H E S I S

- - - - - -

A STUDY OF THE RELATIONSHIPS BETWEEN THE INTELLIGENCE RATINGS OF GIRLS TAKING HOME ECONOMICS IN THE SAN MARCOS, TEXAS, HIGH SCHOOL AND THEIR ACHIEVEMENTS AS MEASURED BY OBJECTIVE, PRACTICAL AND PROBLEM MEASUREMENTS

- - - - - -

Submitted by

Bess Barnes

In Partial Fulfillment of the Requirements

for the Degree of Master of Science

Colorado Agricultural College

Fort Collins, Colorado

July 21, 1932

ABSTRACT OF THESIS

What are the relationships between the intelligence ratings of girls taking Home Economics in the San Marcos High School and their achievements as measured by objective, practical and problem measurements?

The high school in which this study was carried on is situated in San Marcos, Texas, a town of about five thousand persons. The presence in the town of a private boarding school and a demonstration high school in connection with the Southwest Texas Teachers College, limits the number of pupils in the public high school to 245. The pupils enrolled in the high school come from families representing the permanent population of the town and may, therefore, be considered average and representative of those elements ordinarily found in a town of five thousand.

This is not an exhaustive investigation nor are the quantitative results final. They are submitted as a contribution to a vital educational problem and represent the findings of a study to determine the correlations of intelligence ratings and achievements in Home Economics of those students enrolled in the San Marcos, Texas, High School.

The writer selected three classes in Home Economics, composed of 61 girls, for this investigation which was carried on in the classroom; the group of pupils, 61 in number, was composed of 57 Americans and 4 Mexicans.

The classes were entitled Home Economics I, Home Economics II, and Home Economics III; Home Economics I being a class in clothing construction and selection, Home Economics II being a class in foods, and Home Economics III being a class in family and community problems. Unit courses were the means of teaching these three phases of Home Economics. The units selected for testing were:

> Home Economics I, a unit on clothing for children (selection problem), covering 20 lessons.
>
> Home Economics II, a unit on meal planning and preparation, with special emphasis on dinners, covering 50 lessons.
>
> Home Economics III, a unit on the entertaining of children based on a preceding unit, which was guidance of children, and covering 15 lessons.

Three phases of Home Economics were represented by selecting these units, clothing, food and child care.

These tests were given at the conclusion of the respective units and during the first semester of the school year 1931-1932.

In order to determine the relationships between the intelligence ratings and achievements, the following

steps were taken and results found.

I. The intelligence ratings of the pupils were determined by applying the Otis Group Intelligence Test.

A. The intelligence ratings of the 31 pupils in Home Economics I ranged from 35 to 170, mean 113.5, median 111.

B. The intelligence ratings of the 16 pupils in Home Economics II ranged from 65 to 175, mean 106.3, median 120.

C. The intelligence ratings of the 14 pupils in Home Economics III ranged from 95 to 170, mean 129.2, median 129.

II. The second step was to select and apply achievement tests over the units studied. The measures used were tests of three types: namely, objective, practical and problem.

A. The objective test for Home Economics I was composed of the best items on construction and selection of children's clothing taken from Engle-Stenquist Home Economics Clothing Tests, Forms A and B, and from those issued by the Home Economics Division of the Texas State Department of Education.

B. The objective test for Home Economics II consisted of the standardized test by Engle-Stenquist, Food and Cookery, Form A.

C. The objective test for Home Economics III was devised by Miss Cora Lay, Head of the Home Economics Department of the Southwest Texas State Teachers College, five members of the Special Methods class in Home Economids of that college, and the writer.

These objective tests were given by the writer and scored by Miss Cora Lay and the five members of the Special Methods class in Home Economics.

The problems for the practical tests for the three units in Home Economics I, II and III were devised and scored by Miss Cora Lay and five members of the Special Methods class in Home Economics.

A. The practical test for Home Economics I consisted of three problems in selection of children's clothing.

B. The practical test in Home Economics II consisted in planning, preparing and serving a dinner for 12, 8 members of the family and 4 guests.

C. The practical test for Home Economics III was to plan and give a party for the children who had previously attended a play school held in the Home Economics Department.

The problem tests for all three classes, Home Economics I, II and III were given in a similar manner. They were devised and scored by Miss Cora Lay and the five members of the Special Methods class in Home Economics. When the tests were given the problems were written on the blackboard and the girls were asked to copy them and write out their answers to each.

III. The third and fourth steps were the scoring of the tests and computing each pupil's score, then the tabulating of the pupil's score for each group.

IV. The fifth step was to compute the relationship between the intelligence ratings of the pupils and the scores on the various achievement tests, using the p formula which is commonly referred to as the Pearson ρ formula:

$$p = 1 - \frac{6\Sigma D^2}{N(N^2 - 1)} \qquad P.E._p = .7063 \frac{(1 - \rho^2)}{\sqrt{N - 1}}$$

Since the number of cases used was small, the Spearman Rank Method was used in computing these relations.

RESULTS OF TESTS

Correlations between Intelligence Ratings and Scores in Objective, Practical and Problem Tests in Home Economics I, II and III

ρ between (I.B.) and I.R.	H.E. I		H.E. II		H.E. III	
	ρ	P.E.	ρ	P.E.	ρ	P.E.
Objective Test	+ .75	± .055	+ .37	± .151	+ .73	± .087
Practical Test	+ .42	± .104	- .05	± .175	- .06	± .187
Problem Test	+ .31	± .114	+ .17	± .175	+ .49	± .143

According to this interpretation the correlations between the intelligence ratings and Objective tests for Home Economics I and Home Economics III are high, and significant for Home Economics II. The correlations between intelligence ratings and Practical tests in Home Economics I is significant but negligible for Home Economics II and Home Economics III. The correlations between the intelligence ratings and Problem tests in Home Economics I and III are significant, but insignificant for Home Economics II.

Considering the reliability of these results, it will be noted that they are reliable for the relations between the intelligence ratings and the Objective tests in Home Economics I and Home Economics III, but low in reliability for Home Economics II. The results with the Practical

tests show good for Home Economics I but no reliability for Home Economics II and Home Economics III. With the Problem tests, the results show low reliability for Home Economics I, no reliability for Home Economics II, and fair reliability for Home Economics III.

This low reliability may be due either to the small number of cases or to a low correlation or to both. When the correlation was high and the number of cases was larger, the Probable Error was small.

The correlations were low and Probable Errors were higher in all the results for Home Economics II than for Home Economics I and Home Economics III. This may possibly be explained by the tests which were given. These may not have been as well planned and evaluated as in the other two cases. The difference between this and Home Economics I may also be partly due to the smaller number of cases used.

CONCLUSIONS

In drawing conclusions in this study, it must be remembered that the groups were small, and, therefore, the results are indicative only.

There is a fairly close relation between brightness of the pupil and ability in Home Economics as measured by Objective tests. Since these tests are largely informational in type and perhaps measure somewhat the same ability, this close relation is easily understood.

The relation between brightness of pupils and scores on Practical tests depends upon the nature of the Practical tests; for scores on judging children's clothing, it is good (Home Economics I), but for scores on planning, preparing and serving a dinner (Home Economics II) and for scores on planning and giving a children's party (Home Economics III) it is not high, as the low, unreliable coefficients are competent to show, and probably is zero.

The results indicate some relation between brightness of pupils and ability in Home Economics as measured by the Problem tests, since Home Economics I and Home Economics III each show positive correlations though low ones.

These results can only be taken to indicate a trend, which is that a relation does exist between intelligence and ability shown through Objective tests in Home Economics; lesser relation between intelligence and ability shown through Problem tests, and still less relation between intelligence and ability as shown through Practical tests.

It would seem that certain abilities are needed in order to solve problems and practical tests in Home Economics other than those abilities which are measured by the Objective test or by the Otis Group Intelligence Test. Therefore, it is advisable that, in teaching Home Economics all forms of testing - Objective, Practical and Problem - should be used in order to more nearly have a measurement of achievement which is fair to all girls.

Further study would be highly advisable with different types of problems, different methods of judging them, and with larger groups of pupils. The writer suggests that this study might to advantage be repeated in a school where a larger number of pupils will be available, and where these three forms of tests will be used over several units of work, testing various types of ability in practical work and judgment in different types of home-making situations.