T H E S I S

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MEASURING THE EFFICIENCY OF PROJECT WORK IN VOCATIONAL AGRICULTURE IN TEN COLORADO HIGH SCHOOLS

- - -

Submitted by

Elmer John Johnson

In partial fulfillment of the requirements

for the Degree of Master of Science

Colorado Agricultural College

Fort Collins, Colorado

July 1, 1930

COLORADO AGRICULTURAL COLLEGE

- - -

GRADUATE WORK

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I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY Elmer John Johnson

ENTITLED Measuring the Efficiency of Project Work in Ten Colorado High Schools

BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE DEGREE OF Master of Science

Major in Agricultural Education

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In Charge of Thesis

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COLORADO STATE BOARD OF AGRICULTURE

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FORT COLLINS, COLORADO

July 3, 1930

Professor B. F. Coen
Executive Secretary
Graduate Committee
Campus

Dear Professor Coen:-

I hand you herewith the Thesis of Mr. Elmer John Johnson.

This has been read and approved by the editorial service, by Professor Schmidt, and myself. I therefore recommend its approval by the graduate committee, with a grade of "A" and for seven credits.

Very truly yours,

[redacted]

C. G. Sargent
Professor of Rural and
Vocational Education

CGS:ah

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ACKNOWLEDGMENT

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The writer wishes to acknowledge the aid given him by the Smith-Hughes instructors of agriculture who so willingly gave of their time so that their programs might be studied and a rating obtained.

To Prof. G. A. Schmidt of the Colorado Agricultural College, is due special acknowledgment for the suggestions given in formulating the factors and subfactors in this study, also for his aid in formulating the material and data secured in this study.

Acknowledgment is also due to the other members of the Department of Rural and Vocational Education for their assistance and helpful criticism.

MEASURING THE EFFICIENCY OF PROJECT WORK IN VOCATIONAL AGRICULTURE IN TEN COLORADO HIGH SCHOOLS

I

INTRODUCTION

1. Origin. "It is a recognized fundamental principle in all effective vocational education that training in theory and in practice must go hand in hand." (1) The greater part of the practice work, that is the practical farm experience, which a boy studying vocational agriculture gets, is thru the conduction of project work. A project is nothing more than a purposeful undertaking, on the part of a boy studying vocational agriculture, which will involve the production and disposal of a farm product, such as corn, pork, milk, wheat, etc. "It is generally understood that project work should be of such a scope and nature as will enable the pupil to secure practical and first hand experience in management, marketing, financing, farm bookkeeping and manipulative skills, and that the project work should include experiences with one or more of the major enterprises in the farming occupation which the pupil expects to enter." (2)

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(1) Charles A. Prosser and Charles R. Allen, Vocational Education in a Democracy, The Century Co. 1925. p. 275.

(2) Bulletin No. 112. Federal Board for Vocational Education.

Vocational agriculture has been taught in Colorado for about 12 years. No direct study has ever been made of the efficiency of the project work that has been conducted by the boys studying vocational agriculture in Colorado. It appears to the writer that now is an opportune time to study the efficiency of the project work being done by these boys and the writer, therefore, selected 10 departments of vocational agriculture in Colorado high schools for this study.

Because of the very great importance of the project work in vocational agriculture, the writer, also, has been very much interested in this problem and he hopes the results of his study will not only strengthen his own project work but that it will also strengthen the project programs of other teachers of vocational agriculture.

2. A Statement of the Major Objective. The problem undertaken in this study is to determine the efficiency of the project work being done in 10 departments of vocational agriculture of Colorado.

3. A Statement of the Sub-objectives. The major objective of this study resolves itself into the following sub-objectives.-

A. The formulation of a set of efficiency factors and sub-factors to be used in measuring the efficiency of

the project work in the 10 departments of vocational agriculture made the basis of study.

B. The assignment of a comparative value to each sub-factor.

C. To rate the project work in each of the 10 departments of vocational agriculture according to the factors and sub-factors formulated in A.

D. To interpret the results obtained in this study, that is.-

1. To determine weak points in project instruction.
2. To determine strong points in project instruction.
3. To determine why some points are weak and others strong.

E. To make recommendations to improve project work from the data obtained in the study of these 10 departments of vocational agriculture of Colorado.

4. Procedure and Source of Data. The factors* and sub-factors** were first formulated. This was done by discussing the problems with instructors of vocational

(*) These are listed on the rating charts, pages 16 to 30, inclusive.

(**) These are listed on the rating charts of each factor, pages 16 to 30, inclusive.

agriculture, in attendance at the 1929 summer session of the Colorado Agricultural College, and with the instructors of vocational agriculture of the Northeast Sectional Division of Colorado and thru numerous personal interviews with Prof. G. A. Schmidt, also of the Colorado Agricultural College. In formulating the factors and sub-factors, it so happened that all the instructors whose project work was to be measured in this study were included in the above groups. This oriented these instructors with the problems and greatly aided in getting a clear understanding of the factors and sub-factors on which they were to be later questioned.

The next step in the procedure was to assign to each sub-factor a comparative value which was secured by group discussion in a manner similar to that in which the factors and sub-factors were selected and by the same group. These comparative values are listed on the rating charts, opposite each sub-factor on pages 16 to 30, inclusive.

The data used in making this study was obtained from the instructors of vocational agriculture of the following 10 schools.-

1. Fort Morgan
2. Rocky Ford
3. Sterling
4. Atwood
5. Merino
6. Fleming
7. Holyoke
8. Brush
9. Fowler
10. Wiley

The number given each school here has nothing to do with the numbers given in the following graphs and charts.

The datawere secured by a personal visit with each instructor. In each of these visits the writer interviewed the instructor and made such observations as were essential.

II

THE FACTORS AND SUB-FACTORS THAT WERE USED TO MEASURE THE EFFICIENCY OF THE PROJECT WORK IN THE TEN SCHOOLS STUDIED

In order to study the efficiency of project work it is necessary to select factors which will measure the project from its many and varied angles and by evaluating these factors determine where procedures and methods in project work are weak and need improvement as well as to know in what factors project work is quite satisfactory.

As was mentioned on pages 3 and 4, these factors were developed in discussion with various groups of teachers of vocational agriculture and they were then checked and approved by Prof. G. A. Schmidt of the Colorado Agricultural College.

There were 15 factors used in measuring the efficiency of project work. These factors with a brief discussion of each here follow. The sub-factors of each of these factors, as given on the rating charts (pages 16 to 30, inclusive) explain in detail each factor.

Factor 1. Evaluating the Degree to Which Each Member of the Group Is Carrying a Project.

In order to train any person for a specific occupation it is necessary for him to have practical participating experience in that occupation and this training

in agriculture is largely provided by the project which the trainee carries. It is necessary for a student in vocational agriculture to have a project in order to have something around which to build his program of study and training.

Factor 2. Determining the Degree to Which the Projects Conducted by the Boys Give a Wide Representative Experience in Farming.

This factor is based on the theory that "Effective vocational training can only be given where the training jobs are carried on in the same way, with the same operations, the same machines and the same tools as in the occupation itself." (1)

"Practical participation in real jobs under environmental conditions as much as possible like those of the occupation and under adequate supervision, are an essential part of all vocational training courses in agriculture." (2)

Factor 3. Determining the Degree to Which the Projects Are Related to School Work in Vocational Agriculture.

In order for the training to be effective the

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(1) Charles A. Prosser and Charles R. Allen, Vocational Education in a Democracy, The Century Co. 1925. p. 195.

(2) G. A. Schmidt, Projects and the Project Method in Agricultural Education, The Century Co. 1926. p. 65.

project should be in an enterprise studied in class. This is essential so that the training can be given when needed most, that is, can be applied on the projects. The class teaching, therefore, must follow a seasonal sequence, and type jobs selected that will function in many enterprises.

"Basing the classroom instruction on jobs occuring in the boys' projects gives to the teaching of vocational agriculture a real vocational and practical aspect." (1)

Factor 4. Determining the Degree to Which the Projects Meet the Vocational Needs of the Boy.

The interests of a student are best held where he secures training along the line in which he thinks he will later engage.

Factor 5. Determining the Degree to Which the Projects Are Productive Farm Enterprises.

The efficiency of a project is measured by how effective an agent it is to fit the learner for gainful employment and if it fails here the training time was largely lost.

"The training jobs are carried on in the same way as in the occupation itself." (2)

"Training is given on actual jobs and not in exercises or pseudo jobs." (2)

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(1) G. A. Schmidt, Projects and the Project Method in Agricultural Education, The Century Co. 1926. p. 96.

(2) Charles A. Prosser and Charles R. Allen, Vocational Education in a Democracy, The Century Co. 1925. p. 211.

Factor 6. Determining the Degree to Which the Projects Are Carefully Analyzed, Studied, Planned and Executed by the Boy.

Learning is acquiring a new and better way of behaving. When a boy in connection with his project, analyzes, studies, plans and executes these plans he is learning much.

"That vocational education will be effective in proportion as it trains the individual directly and specifically in thinking habits and manipulative habits required in the occupation itself." (1)

"A farm job cannot be well planned until it has been analyzed, studied and discussed." (2)

Factor 7. Determining the Degree to Which the Projects Are Carried Thru the Complete Cycle of Production and Marketing.

In order to receive full training in any enterprise it is necessary to so train the learner that he will be adept in all the phases of the work and not only in one part. This is true because a farmer has to do all the jobs in the cycle of production and marketing.

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(1) Charles A. Prosser and Charles R. Allen, Vocational Education in a Democracy, The Century Co. 1925. p. 197.

(2) G. A. Schmidt, Projects and the Project Method in Agricultural Education, The Century Co. 1926. p. 149.

One is not fitted for employment if the learner does not know all the steps of his work.

Factor 8. Determining the Degree to Which the Boys Assume Full Responsibility in Regards to Managing, Operating and Financing Their Projects.

The project is the machine on which the boy is trained to do his work. He must make his decisions as to what and how to do the various jobs occuring in his project. He must also perform the jobs and finance the enterprise as this is what he must do later in life.

"Growth in power to cope intelligently with managerial and business problems should be one of the most important outcomes of project work in vocational agriculture." (1)

Factor 9. Determining the Degree to Which the Parents of the Boys Agree to the Projects.

Harmony is necessary for the best and most efficient procedure in project work. Therefore, all concerned in the project must have a full understanding of each others' responsibilities. This requires all to be well acquainted with each other as well as know the conditions under which all must work.

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(1) G. A. Schmidt, Projects and the Project Method in Agricultural Education, The Century Co. 1926. p. 66.

"The chief value of project agreements lies in the training which the boy gets in formulating the agreement." (1)

Factor 10. Determining the Degree to Which Accurate Records and Accounts Are Kept by the Boys of Their Projects.

Sound business is built on sound records, which are incorporated in project work. Simplified records are desired such as can be easily understood by the boy and these should not be so cumbersome and lengthy as to irritate the boy's good state of mind. What is desired here are simple, uniform and accurate records so the boy can readily pick out his sound practices, mistakes and the like.

By accurate records a farmer can more readily find the strong and weak points in his system of management and thus make changes with some assurance that they will result in greater profits.

"A project without records is like a clock without hands. It is going but tells nothing." (2)

Factor 11. Determining the Completeness of the Boys' Financial Summary and Discussion of the Project.

Records must be studied to be of value and this

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(1) G. A. Schmidt, Projects and the Project Method in Agricultural Education, The Century Co. 1926. p. 127.

(2) G. A. Schmidt, Projects and the Project Method in Agricultural Education, The Century Co. 1926. p. 164.

project record study gets the student into the idea of summarizing his work after he has made an exhaustive study of his work.

Project records serve four purposes.-

1. Show profitableness of the undertaking.
2. Develop habits of farm cost accounting.
3. Form a basis of study for interpretation of the results.
4. Serve as a future guidance for that individual.

Factor 12. Determining the Degree to Which the Projects Are Carefully Supervised by the Instructor.

Guidance is the important job of the instructor in all project work. He must be well aware of the student's ability as well as to know when major jobs will be performed by the boy on his project so that help may be given when error might result if aid were not provided.

Project record book and classroom note books must be checked carefully to see that the student has no mistaken ideas which he intends to carry out on the project.

To be a good supervisor the instructor must necessarily be occupationally competent. "Vocational education will be effective in proportion as the instructor has had successful experience in the application of skills

and knowledge to the operations and processes he undertakes to teach." (1)

"The degree to which he (the instructor) knows what these responsibilities are and the degree to which he is able to carry them out successfully will indicate the effectiveness of his supervision." (2)

Factor 13. Determining the Degree to Which Projects Are Completed and Continued.

Boys should not be allowed to develop habits of failure. What is started should be completed if the economic loss involved would not be too great.

Usually one cannot learn all there is to be learned in conducting a farm enterprise only once, neither can all habits be fixed by performing them only once. The tasks must be repeated.

"Adequate repetitive training in experiences from the occupation fixes right habits of doing and thinking to the degree necessary for employment." (3)

Factor 14. Determining the Degree to Which Individual Instruction on the Projects Is Given.

Project training is specific and, therefore, the

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(1) Charles A. Prosser and Charles R. Allen, Vocational Education in a Democracy, The Century Co. 1925. p. 200.

(2) G. A. Schmidt, Projects and the Project Method in Agricultural Education, The Century Co. 1926. p. 195.

(3) Charles A. Prosser and Charles R. Allen, Vocational Education in a Democracy, The Century Co. 1925. p. 211.

training in classroom should be directly related to the project because skill in applying technical knowledge is desired.

Classroom time does not permit the teaching of all jobs in all the enterprises taken up in a year's work in which members of the class have projects. "Because of this situation the instructor's task in project analysis is to get the boys to see first those jobs which he proposes to take up in the classroom, and then those additional jobs which the project workers must perform in conducting their projects." (1)

It is very essential that the instructor is able and ready to assist the pupil in his job analysis of all jobs not taken up in class so as to avoid any mistaken ideas the pupil may propose to put into use.

Factor 15. Determining the Degree to Which Results of Projects Are Permanently Filed.

Project records if filed can be of much value to other boys in the study of their own work along the same line.

Records are the history of performance and they should act as a guide to both pupil and instructor in project work.

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(1) G. A. Schmidt, Projects and the Project Method in Agricultural Education, The Century Co. 1926. p. 141.

III

THE ASSIGNMENT OF A COMPARATIVE VALUE TO EACH SUB-FACTOR

On pages 16 to 30, inclusive, are given 15 rating charts, one for each factor used in measuring the efficiency of the project work of the 10 departments of vocational agriculture used in this study. The material recorded on these rating charts is that secured in the study of school No. 1, which was our median school.

These rating charts show all the sub-factors considered under each factor. The rating charts also show a comparative value assigned to each sub-factor. This comparative value in each case varied from 10 to 1, depending upon its relative importance. This is shown on the rating charts on pages 16 to 30, inclusive.

Having decided upon each sub-factor to be used with each factor, as described on pages 16 to 30, inclusive, the various groups of vocational instructors of agriculture, who were consulted in the formulation of the sub-factors, were asked to assign a comparative value to each sub-factor.

Full explanation of the 15 rating charts and the methods used in the rating and in computing the score for each factor for each school studied follows in part IV of this study.

RATING CHART NO. 1. SCHOOL NO. 1.

Efficiency Factor: Evaluating the Degree to Which Each Member of the Group Is Carrying a Project

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Does each boy in vocational agricultural class carry a project?	9.9	10	99
2. Does each boy have a complete formulated program of supervised practice work? (i.e. A set-up is made of work he carried for that year or for entire course.)	2	5	10
3. Does each boy in his project plans set up a financial goal for his completed project program?	2	3	6
Sum of products obtained by multiplying the ratings by the comparative values			115
Sum of comparative values			18
Score on efficiency factor			6.4

RATING CHART NO. 2. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which the Projects Conducted by the Boys Give a Wide Representative Experience in Farming.

SUB-FACTORS	Rating	Comparative value	Product of Rating by Comparative Value
1. Do the boys' programs of project work include many of the important enterprises of the community type of farming?	9	10	90
2. Are the projects large enough to make it necessary to use the same tools, machines and implements as the farmer uses?	7	9	63
3. Do the boys assume full managerial responsibility for their projects?	5	8	40
4. Do the projects involve or require financial responsibility on part of boys?	3	6	18
Sum of products obtained by multiplying the ratings by the comparative values			211
Sum of comparative values			33
Score on efficiency factor			6.4

RATING CHART NO. 3. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which the Projects Are Related to School Work in Vocational Agriculture.

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. What percentage of the projects are directly related to agricultural subject being studied?	9	10	90
2. To what degree is instruction on type jobs functioning on projects given?	8	8	64
3. To what degree does class work follow seasonal sequence?	7	5	35
Sum of products obtained by multiplying the ratings by the comparative values			189
Sum of comparative values			23
Score on efficiency factor			8.2

RATING CHART NO. 4. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which the Projects Meet the Vocational Needs of the Boy

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Are the boys' projects real farm enterprises?	8	10	80
2. To what degree does the project work coincide with the community type of farming?	9	7	63
3. Does the boy need project training in this specific enterprise?	7	8	56
4. Are the boys vitally interested in their projects and did they of their own accord choose them?	6	10	60
Sum of products obtained by multiplying the ratings by the comparative values			259
Sum of comparative values			35
Score on efficiency factor			7.4

RATING CHART NO. 5. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which the Projects Are Productive Farm Enterprises

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Is the nature of the projects such as yield a substantial financial return?	6	8	48
2. Where are the projects conducted?	9	7	63
3. Do projects resemble important farm enterprises?	7	7	49
4. Do methods used by the boy on the project resemble those used by local successful farmers?	8	10	80
Sum of products obtained by multiplying the ratings by the comparative values			240
Sum of comparative values			32
Score on efficiency factor			7.5

RATING CHART NO. 6. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which the Projects Are Carefully Analyzed, Studied, Planned and Executed by the Boy

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Do the boys make written preliminary plans for their projects?	9	6	54
2. Do boys analyze their projects into all of its jobs?	8	10	80
3. Where do the boys get the facts upon which to base their project plans?	8	7	56
4. Do boys write job plans for execution of each job occuring in their projects?	8	10	80
5. Do boys execute each job plan as formulated?	5	9	45
Sum of products obtained by multiplying the ratings by the comparative values			315
Sum of comparative values			42
Score on efficiency factor			7.5

RATING CHART NO. 7. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which the Projects Are Carried Thru the Complete Cycle of Production and Marketing

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Do projects meet State and Federal requirements? (Are at least six months in duration.)	9	3	27
2. Do crop projects run the length of a natural growing season?	10	10	100
3. Are livestock projects carried thru the complete cycle of production and marketing?	6	10	60
Sum of products obtained by multiplying the ratings by the comparative values			187
Sum of comparative values			23
Score on efficiency factor			8.1

RATING CHART NO. 8 SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which the Boys Assume Full Responsibility in Regards to Managing, Operating and Financing Their Projects

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Do boys make their own decisions and execute their own project job plans?	5	10	50
2. Do boys perform all operative work on their projects?	5	7	35
3. Do boys finance their own projects?	5	5	25
Sum of products obtained by multiplying the ratings by the comparative values			110
Sum of comparative values			22
Score on efficiency factor			5.0

RATING CHART NO. 9. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which the Parents of the Boys Agree to the Projects

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Are the parents informed about the boys' project responsibilities?	8	10	80
2. Do parents sign written project agreement?	7	4	28
3. Do parents cooperate with instructor and boys in getting best possible project work done?	5	7	35
Sum of products obtained by multiplying the ratings by the comparative values			143
Sum of comparative values			21
Score on efficiency factor			6.8

RATING CHART NO. 10. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which Accurate Records and Accounts Are Kept by the Boys of Their Projects

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. How do the boys keep a financial record of their projects?	5	5	25
2. Do the boys record all financial transactions accurately and promptly?	5	10	50
3. Is one day a month set aside for the posting of all records?	0	6	0
4. Are records so kept that they can be accurately transferred to instructor's yearly report?	3	7	21
Sum of products obtained by multiplying the ratings by the comparative values			96
Sum of comparative values			28
Score on efficiency factor			3.4

RATING CHART NO. 11. SCHOOL NO. 1.

Efficiency Factor: Determining the Completeness of the Boys' Financial Summary and Discussion of the Project

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Do the boys make their own financial summary?	3	6	18
2. Does the instructor check the financial summary made by each boy?	9	7	63
3. Do the boys analyze results of their projects and write a project story of their achievements?	8	10	80
4. Do the boys turn in a concise discussion of the project to the instructor?	2	5	10
5. Do the boys list mistakes and make plans for their correction?	3	10	30
6. Do the boys check unit cost, returns and labor of production against State averages?	1	5	5
Sum of products obtained by multiplying the ratings by the comparative values			206
Sum of comparative values			43
Score on efficiency factor			4.8

RATING CHART NO. 12. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which the Projects Are Carefully Supervised by the Instructor

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. How often does the instructor visit each project?	8	10	80
2. How often does the instructor check the project record book?	5	7	35
3. Does the instructor check the boys' farm practices on each visit?	8	10	80
4. Does the instructor discuss students' project problems with parents?	8	9	72
Sum of products obtained by multiplying the ratings by the comparative values			267
Sum of comparative values			36
Score on efficiency factor			7.4

RATING CHART NO. 13. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which Projects Are Completed and Continued

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. What percentage of the boys complete a project each year?	9.9	10	99
2. What percentage of the projects are continued?	3	8	24
Sum of products obtained by multiplying the ratings by the comparative values			123
Sum of comparative values			18
Score on efficiency factor			6.8

RATING CHART NO. 14. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which Individual Instruction on the Projects Is Given

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Do boys solve their own problems arising in their project work?	8	10	80
2. Is a conference held by the boy and instructor before projects are started?	7	10	70
3. How much individual instruction is given on the projects?	3	9	27
4. Does the instructor assist with technical advice when emergencies arise with project jobs?	9	10	90
Sum of products obtained by multiplying the ratings by the comparative values			267
Sum of comparative values			39
Score on efficiency factor			6.8

RATING CHART NO. 15. SCHOOL NO. 1.

Efficiency Factor: Determining the Degree to Which Results of Projects Are Permanently Filed

SUB-FACTORS	Rating	Comparative Value	Product of Rating by Comparative Value
1. Are records of completed projects kept? How?	8	10	80
2. Is a follow up record kept on each boy?	2	4	8
3. Do boys consult these permanent record cards in deciding upon the selection of a project?	1	9	9
4. What other use is made of the project records?	5	7	35
Sum of products obtained by multiplying the ratings by the comparative values			132
Sum of comparative values			30
Score on efficiency factor			4.4

IV

RATING THE PROJECT WORK IN EACH OF THE TEN DEPARTMENTS OF VOCATIONAL AGRICULTURE ACCORDING TO THE FACTORS AND SUB-FACTORS DESCRIBED IN PART III

Each of the 10 departments of vocational agriculture included in this study was supplied with a copy of the 15 different rating charts, each showing the sub-factors and comparative value of each sub-factor as given in part III of this study.

Each instructor rated his own project work, assigning to each sub-factor a rating which could vary from 10 to 0. In addition each instructor noted on the rating charts, after each sub-factor, certain pertinent facts on which he based his rating. These are omitted in the 15 rating charts on pages 16 to 30, inclusive, because of lack of space.

The writer carefully checked all ratings on the facts submitted and also made in each case a personal visit to all but three of the departments of vocational agriculture studied, to make such observations as would enable him to see, first hand, if the facts submitted for each rating were reasonable.

To secure the score on each factor the rating for each sub-factor of that factor was multiplied by its comparative value. The resulting products for that factor were then added and the sum divided by the sum of

the comparative values. The result gave the score. To further illustrate this method of scoring, two cases are here used for illustration. Case I. Let us assume a factor has three sub-factors with a comparative value of 10 each, and a rating of 10 each. The sum of the products obtained by multiplying each rating and its comparative value would be 300, and the sum of the comparative values would be 30. Dividing 300 by 30, gives 10 or a perfect score.

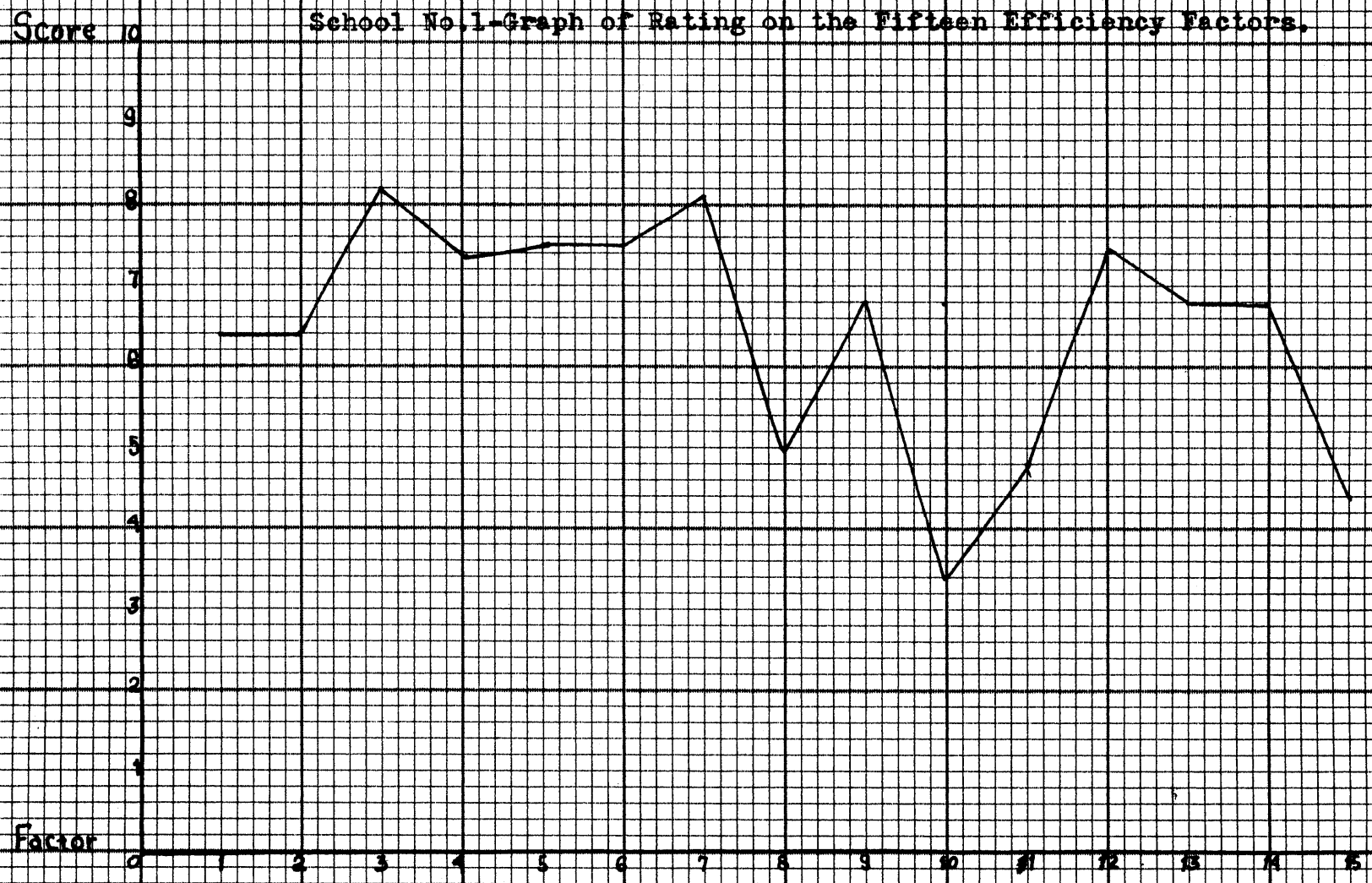
Case II. Assuming a factor has three sub-factors with a comparative value of 10 each, and a rating of 5 each. The sum of the products obtained by multiplying each rating and its comparative value would be 150, and the sum of the comparative values would be 30. Dividing 150 by 30 gives 5 or a 50 percent score.

V

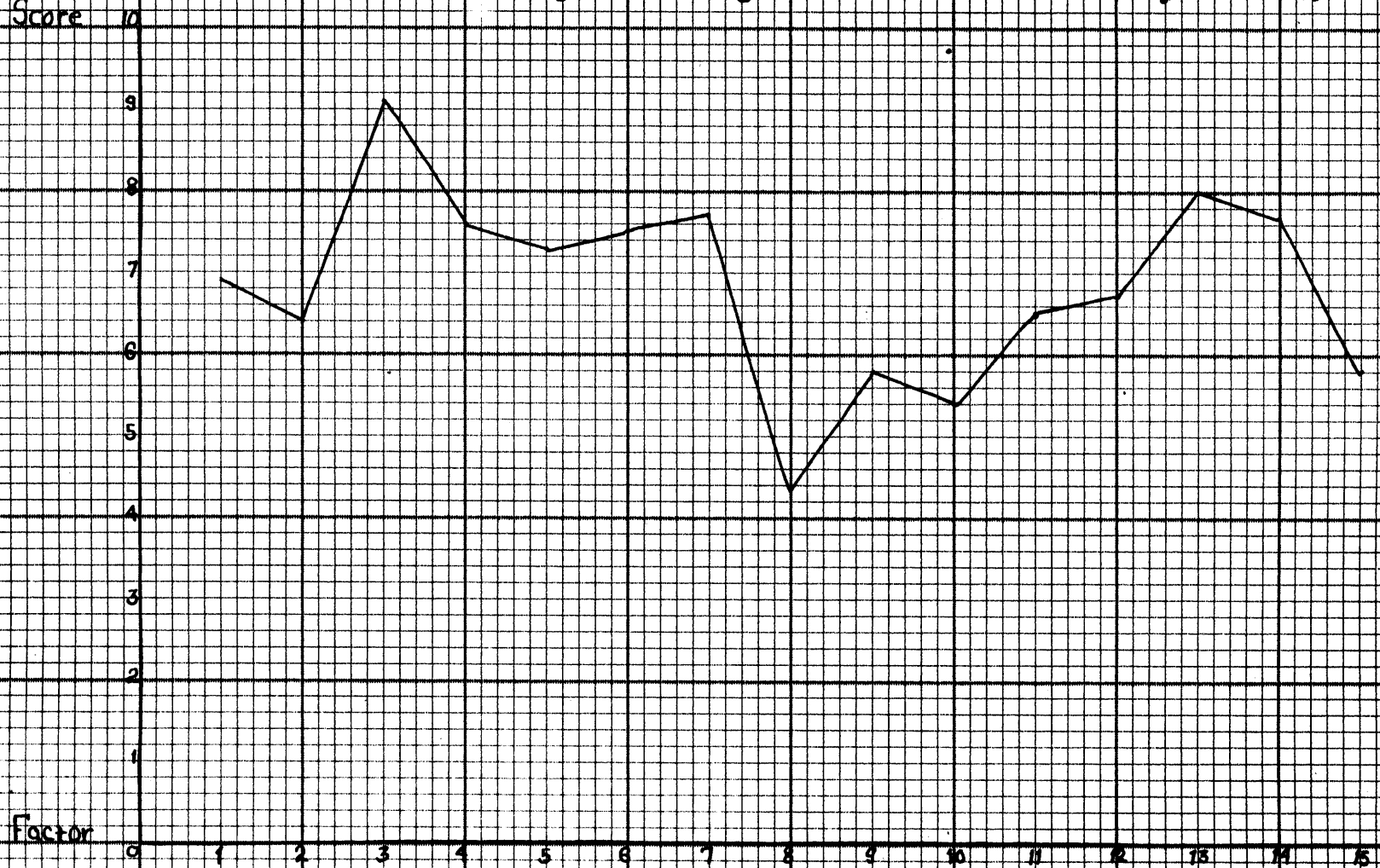
INTERPRETATION OF RESULTS

Pages 34 to 45, inclusive, show 10 graphs, 1 for each department of vocational agriculture made the basis of this study. These graphs show the score made by each department of agriculture studied on each factor.

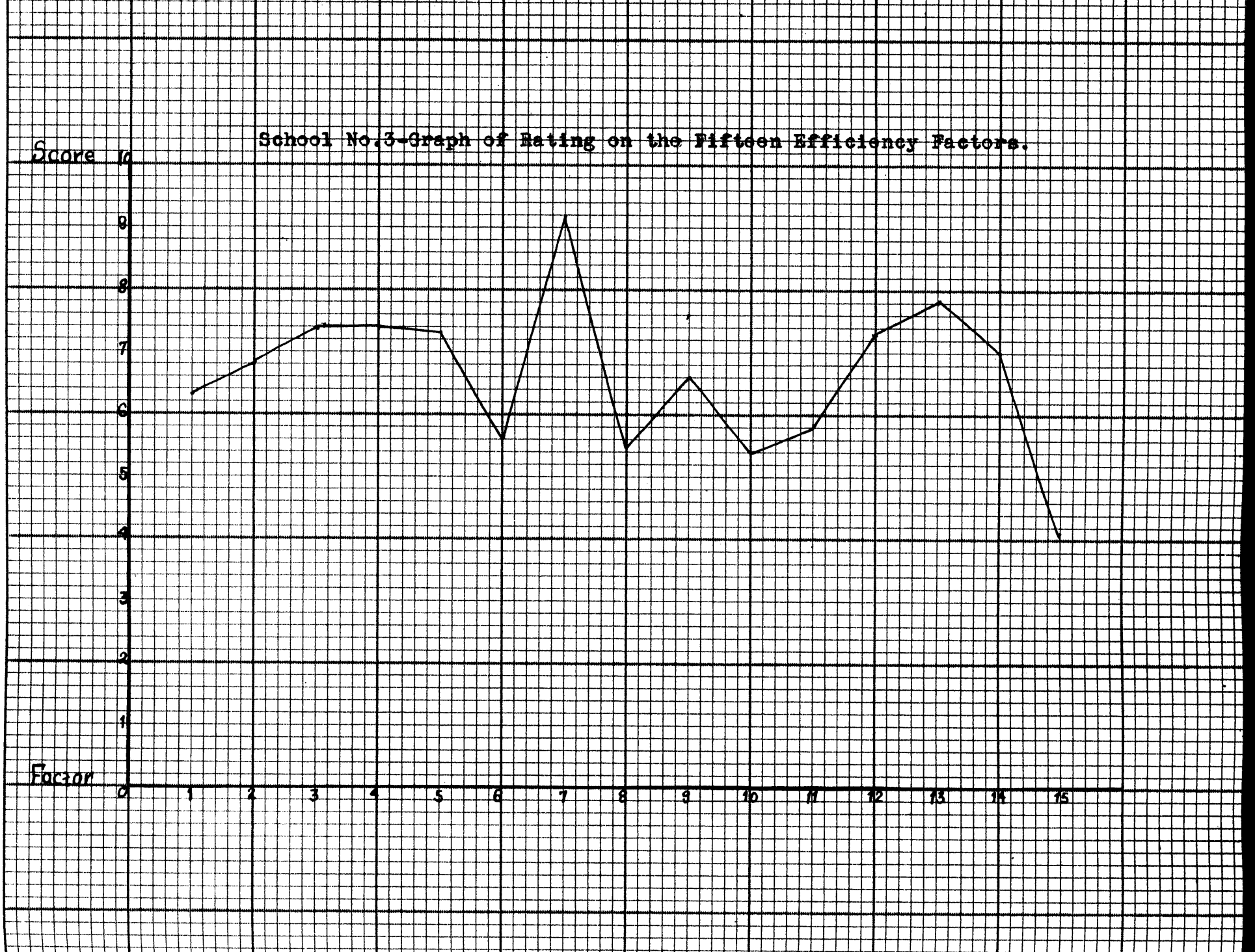
School No.1-Graph of Rating on the Fifteen Efficiency Factors.



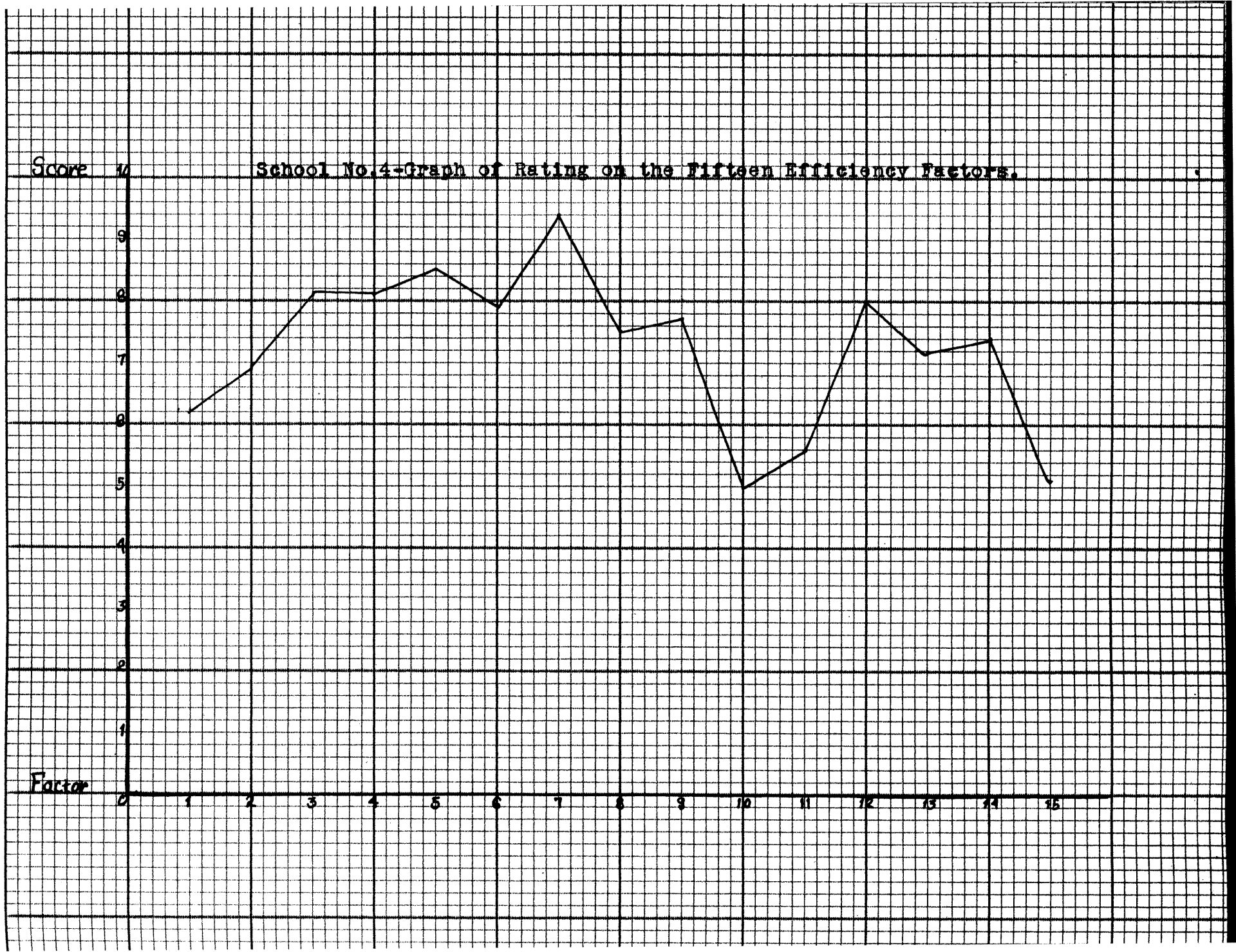
School No. 2 -Graph of Rating on the Fifteen Efficiency Factors.

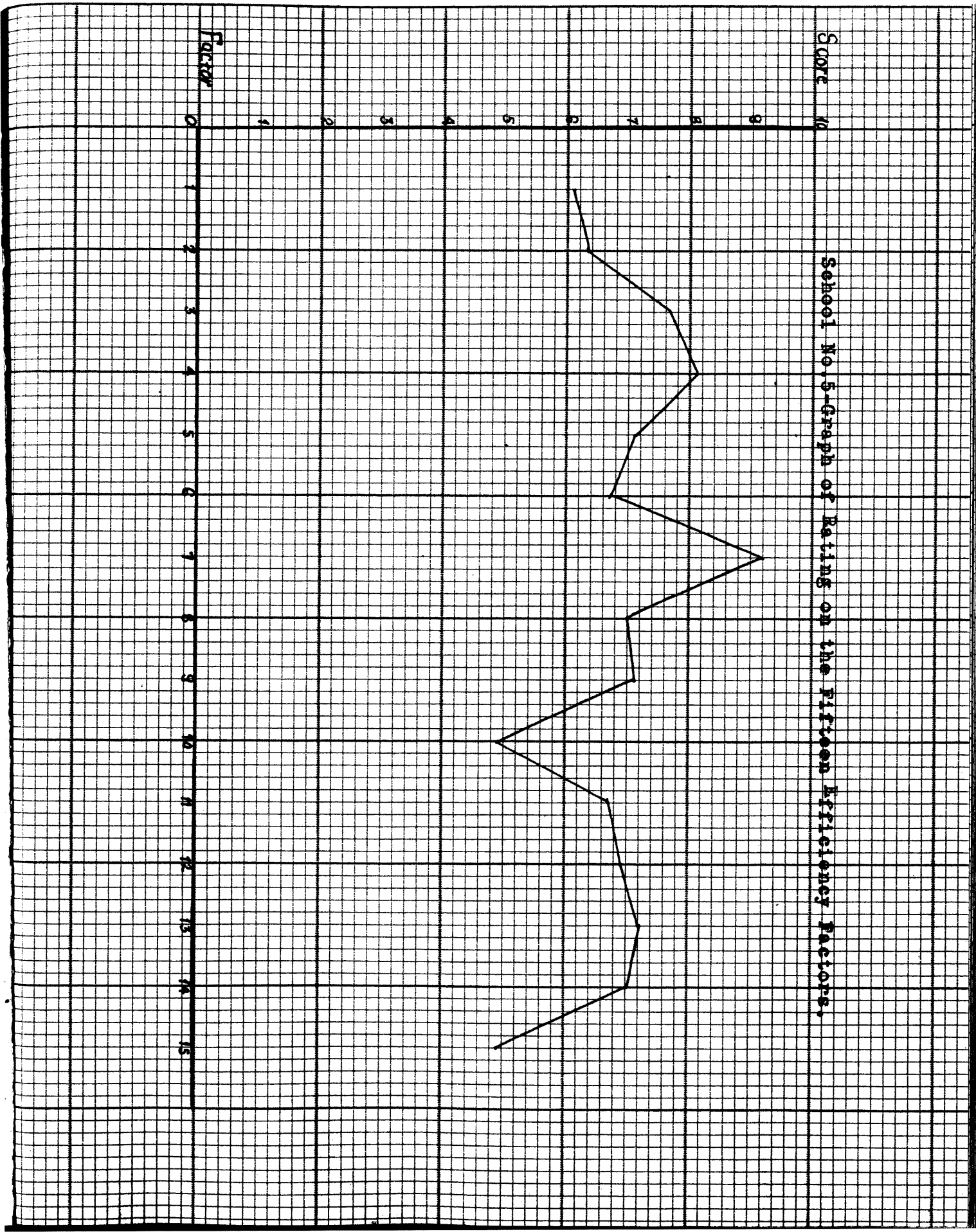


School No.3-Graph of Rating on the Fifteen Efficiency Factors.

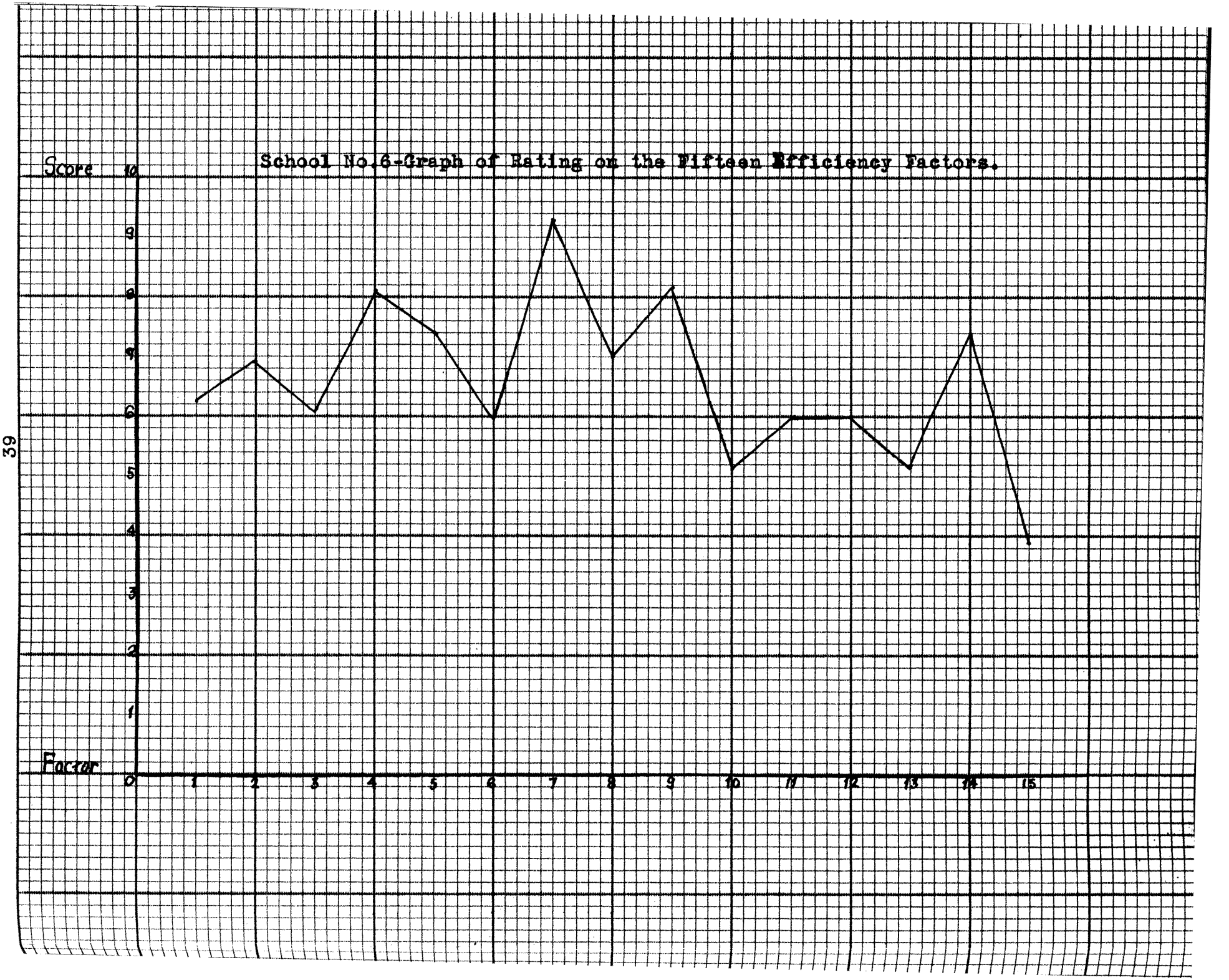


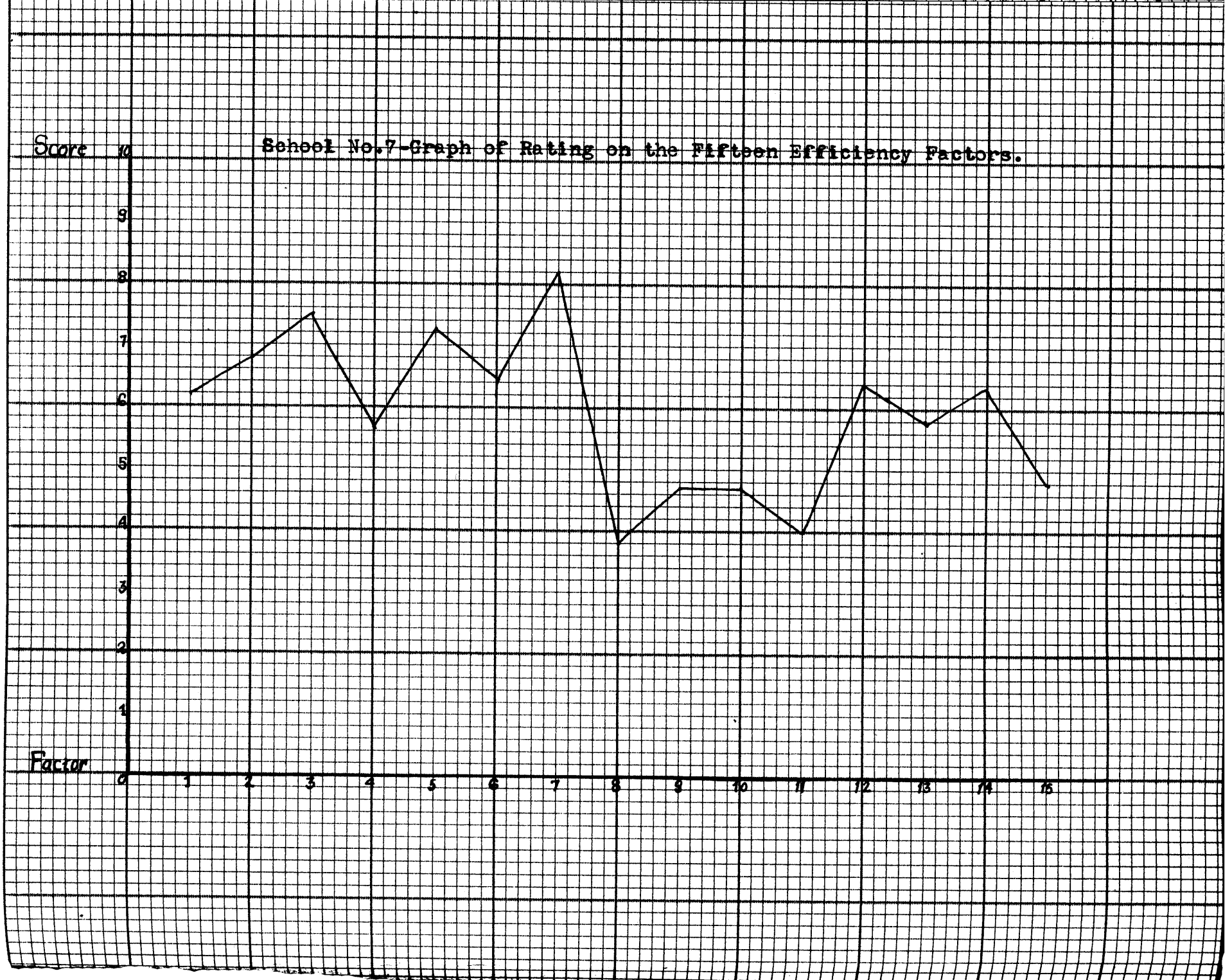
School No.4-Graph of Rating on the Fifteen Efficiency Factors.



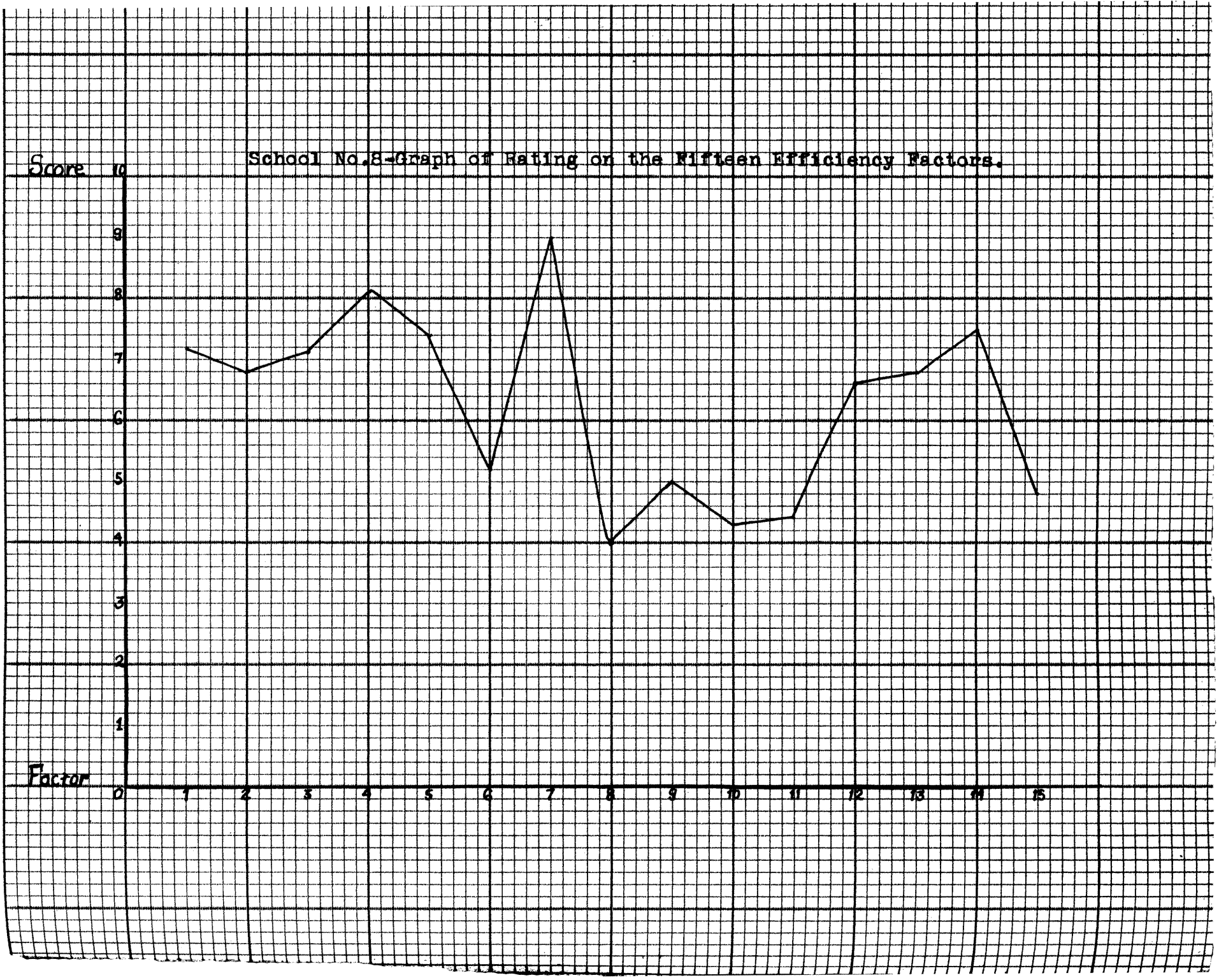


School No.5-Graph of Returns on the Fifteen Efficiency Factors.

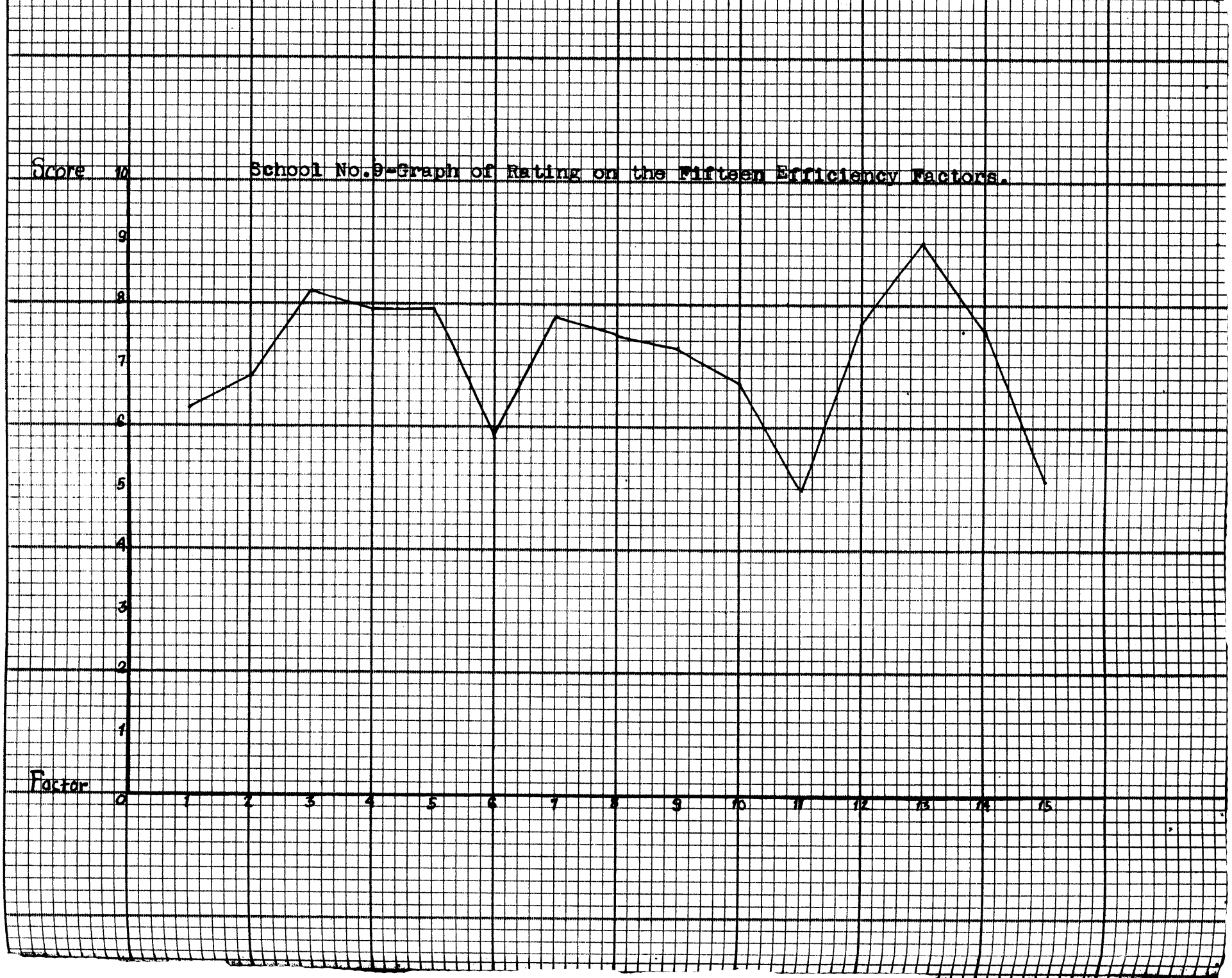

School No. 6-Graph of Rating on the Fifteen Efficiency Factors.
Score
10
9
8
7
6
5
4
3
2
1
0
Factor
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15


School No.7-Graph of Rating on the Fifteen Efficiency Factors.
Score
10
9
8
7
6
5
4
3
2
1
0
Factor
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

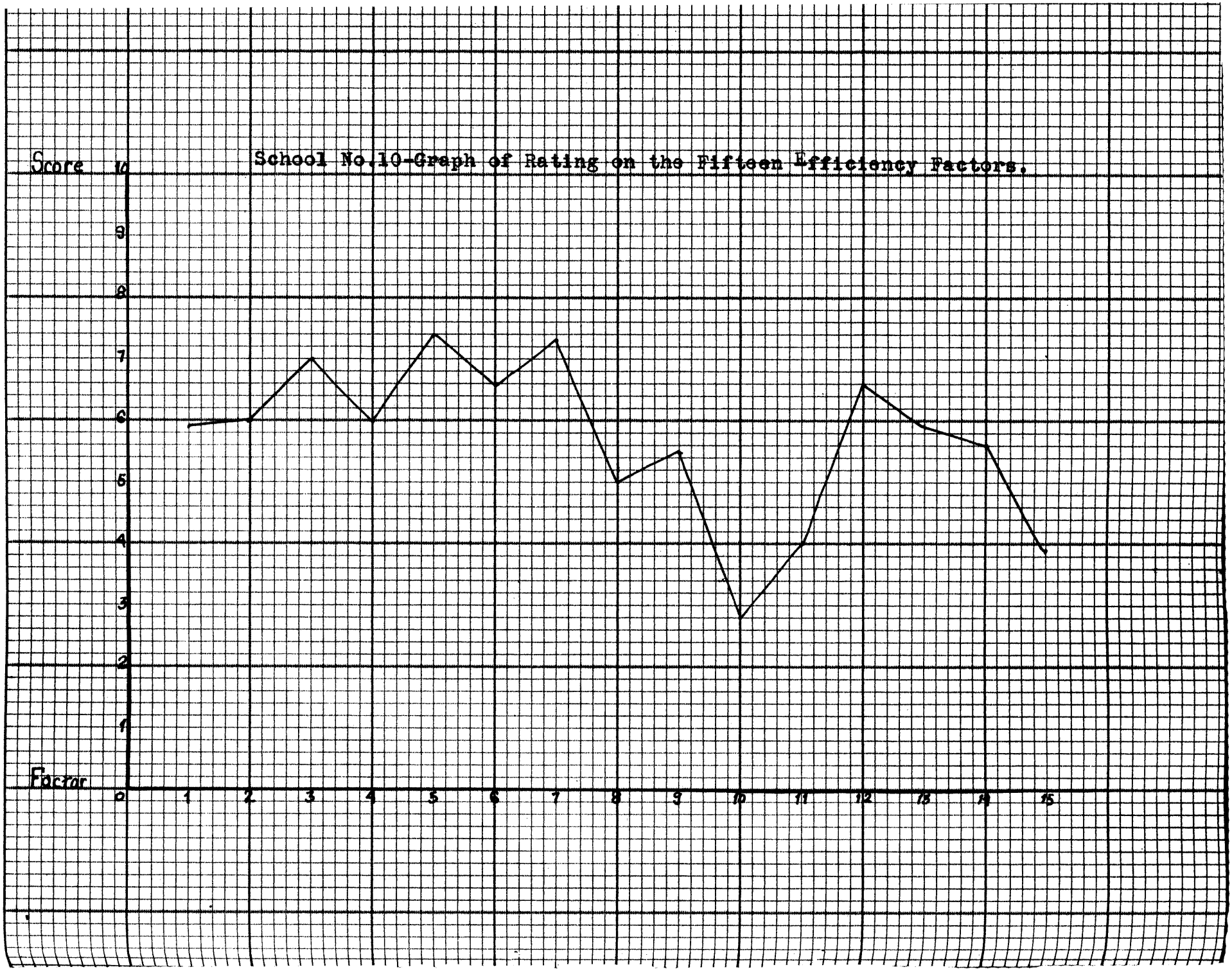
School No.8-Graph of Rating on the Fifteen Efficiency Factors.

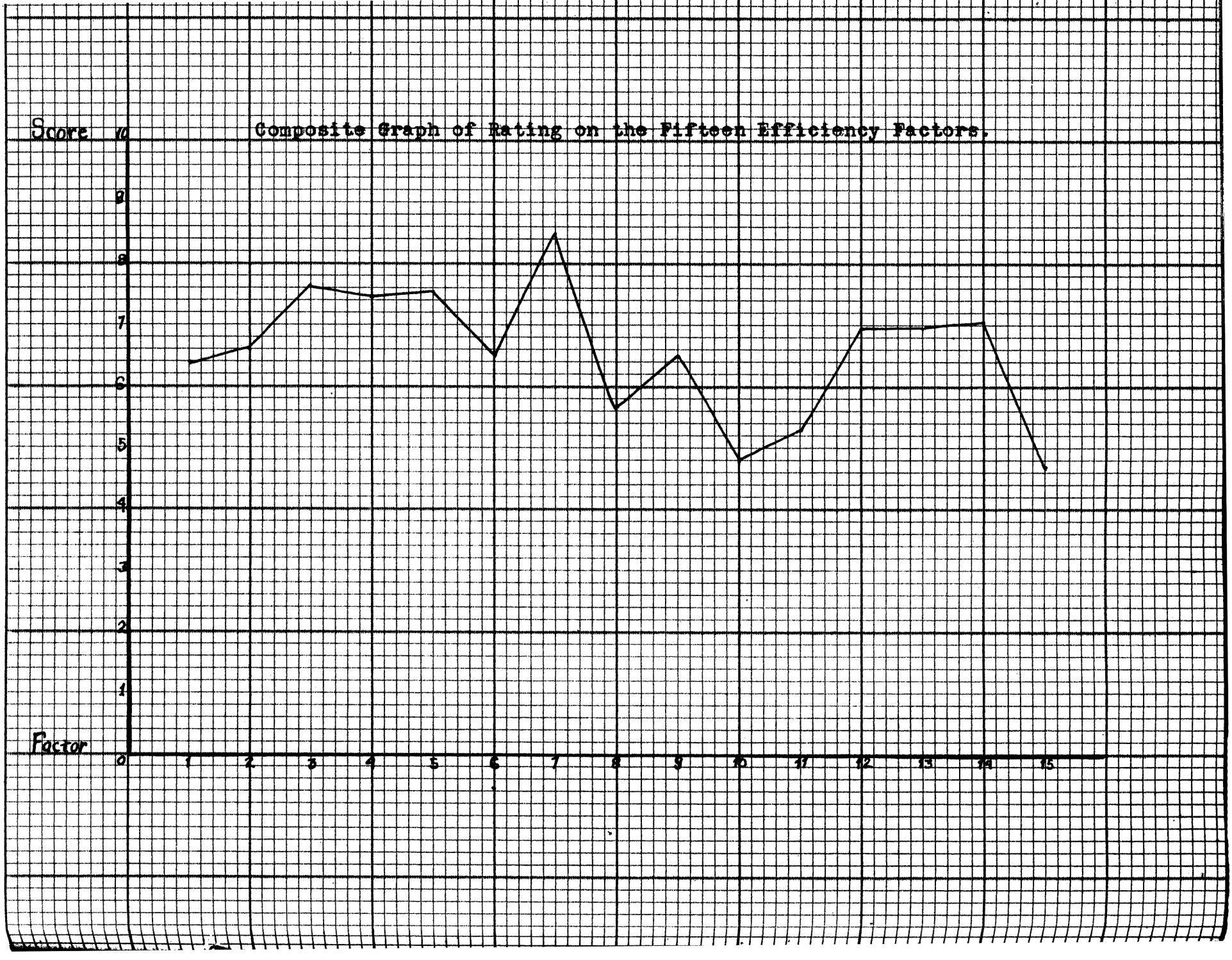


School No. 9-Graph of Rating on the Fifteen Efficiency Factors.



School No.10-Graph of Rating on the Fifteen Efficiency Factors.




Composite Graph of Rating on the Fifteen Efficiency Factors.
Score
10
9
8
7
6
5
4
3
2
1
0
Factor
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Numerical Chart Showing the Rating and Average Score of each School in each of the Fifteen Efficiency Factors.

Factor → / School ↓	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total ↓	Ave. Score on all factors by each School
1	6.4	6.4	8.2	7.4	7.5	7.5	8.1	5.0	6.8	3.4	4.8	7.4	6.8	6.8	4.4	96.9	6.46
2	6.9	6.4	9.1	7.6	7.3	7.5	7.7	4.4	5.8	5.4	6.5	6.7	8.0	7.7	5.8	102.8	6.85
3	6.3	6.8	7.4	7.4	7.3	5.6	9.2	5.5	6.6	5.4	5.8	7.3	7.8	7.0	4.1	99.5	6.63
4	6.3	6.9	8.1	8.1	8.5	7.9	9.4	7.5	7.7	5.0	5.6	8.0	7.2	7.4	5.1	108.6	7.24
5	6.1	6.3	7.7	8.1	7.1	6.7	9.2	7.0	7.1	4.9	6.7	6.9	7.2	7.0	4.9	102.9	6.86
6	6.3	6.9	6.1	8.1	7.4	6.0	9.3	7.0	8.2	5.1	6.0	6.0	5.2	7.4	3.9	98.8	6.59
7	6.2	6.8	7.5	5.7	7.3	6.4	8.2	3.8	4.7	4.7	4.0	6.4	5.8	6.3	4.8	88.5	5.90
8	7.2	6.8	7.1	8.1	7.4	5.2	9.0	4.0	5.0	4.3	4.4	6.6	6.8	7.5	4.8	94.2	6.28
9	6.3	6.8	8.2	7.9	7.9	5.8	7.8	7.5	7.3	6.7	5.0	7.7	9.0	7.6	5.1	106.6	7.11
10	5.9	6.0	7.0	6.0	7.4	6.6	7.3	5.0	5.5	2.8	4.0	6.6	5.9	5.6	3.9	85.5	5.70
Total →	63.8	66.1	76.4	74.4	75.1	65.2	85.2	56.7	64.7	47.7	52.8	69.6	69.7	70.3	46.8		
Ave. Score on each of the factors →	6.38	6.61	7.64	7.44	7.51	6.52	8.52	5.67	6.47	4.77	5.28	6.96	6.97	7.03	4.68	Ave.→	6.57 Ave.

V Con't.

GRAPHS

In order to quickly visualize the comparative efficiency of each department of vocational agriculture studied in each of the 15 factors, it was thought advisable to graph the score of each department of vocational agriculture.

Pages 34 to 45, inclusive, show these 10 graphs, representing a department of vocational agriculture. Page 44 shows a composite graph of the 10 departments of vocational agriculture which represents the average of the score of the 10 departments for each of the 15 factors.

Peculiar as it may seem it was found that an instructor who scored down hard, did so on all factors, but resulting curve was but little altered in its shape. The graph for each school fairly closely followed the curve of the composite graph.

The average score made by each school on the 15 efficiency factors as noted on the numerical chart given on page 45 is 6.57, but varies from 5.70 (school No. 10) to 7.24 (school No. 4). The variance on the 15 efficiency factors is slightly greater being from 4.68 on efficiency factor 15 to 8.52 on efficiency factor 7.

The average score of the 10 departments of vocational agriculture studied on the 15 efficiency

factors is as follows when listed from low to high in score.-

	SCORE		SCORE
Factor 15 -	4.68	Factor 2 -	6.61
" 10 -	4.77	" 12 -	6.96
" 11 -	5.28	" 13 -	6.97
" 8 -	5.67	" 14 -	7.03
" 1 -	6.38	" 4 -	7.44
" 9 -	6.47	" 5 -	7.51
" 6 -	6.52	" 3 -	7.64
		" 7 -	8.52

The following is the rank of the 15 efficiency factors, starting with the highest.-

First.- Factor 7. Determining the Degree to Which the Projects Are Carried Thru the Complete Cycle of Production and Marketing. Average score 8.52.

Remarks.- It appears as if most all projects are carried long enough to provide training in most all jobs in connection with the enterprise studied.

Second.- Factor 3. Determining the Degree to Which the Projects Are Related to School Work in Vocational Agriculture. Average score 7.64.

Remarks.- The score here indicates that jobs taught are nearly always closely related to the project work. This shows a very desirable tie-up, as little of the boy's time is used on non-functioning jobs or subject matter.

Third.- Factor 5. Determining the Degree to Which the Projects Are Productive Farm Enterprises. Average score 7.51.

Remarks.- It appears as if most all of the projects do yield a fairly good return, and generally are large enough for the boys to employ methods used by successful farmers.

Fourth.- Factor 4. Determining the Degree to Which the Projects Meet the Vocational Needs of the Boy. Average score 7.44.

Remarks.- The vocational needs of the boys, as regards kind of project, local need and boys interest, seem to be well met.

Fifth.- Factor 14. Determining the Degree to Which Individual Instruction on the Projects Is Given. Average score 7.03.

Remarks.- While this seems to rate fairly high, it was found that in most schools that most all jobs taught were required to be completed by all the boys. Over one-half of the departments of vocational agriculture provided time for the boy to work out extra jobs, in the enterprise in which he had a project, on the individual basis.

Sixth.- Factor 13. Determining the Degree to Which Projects Are Completed and Continued. Average score 6.97.

Remarks.- About 80 percent of the projects carried by the boys in these 10 schools were completed. Moving out of the school district caused many projects to be sold prematurely, or dropped.

Only 50 percent of the boys carried their projects any appreciable extent of time beyond the time the final report was submitted. The other 50 percent either sold the projects or returned them to their parents or original owners. These latter were always conducted on the share basis. Twenty percent of the projects were carried over a period of several years and so could be classified as a permanent participating enterprise for the boys.

Seventh.- Factor 12. Determining the Degree to Which the Projects Are Carefully Supervised by the Instructor. Average score 6.96.

Remarks.- It seems as if many projects were poorly supervised during the summer months. Some of the outstanding causes of poor summer supervision are.- Instructor changed position; school officials did not know of the necessity for the instructor to do summer supervision; extended absences of instructor to take trips or do summer school work.

Eighth.- Factor 2. Determining the Degree to Which the Projects Conducted by the Boys Give a Wide

Representative Experience in Farming. Average score 6.61.

Remarks.- Very few boys assumed much of a financial responsibility, mostly because of the parents' objection. Parents too often provided too much of the project management. Most projects were of moderate size and included among the more important community enterprises.

Ninth.- Factor 6. Determining the Degree to Which the Projects Are Carefully Analyzed, Studied, Planned and Executed by the Boy. Average score 6.52.

Remarks.- Most all of the project jobs were analyzed, studied, planned and executed to a moderate degree of efficiency, which required much effort and time. However, many boys did not execute job plans as analysis showed because new ideas did not always coincide with their views. It was in the execution of the plans where most boys failed, especially in the smaller projects. These small projects did not seem to interest the boys enough for them to put forth much effort.

Many parents interfered and prevented the boys from carrying out their plans because it involved using new ideas to which the parents were not accustomed and often it was the expenditure of funds to which they objected. This appears as if the project idea were not thoroly sold to the parents.

Tenth.- Factor 9. Determining the Degree to Which the Parents of the Boys Agree to the Projects. Average score 6.47.

Remarks.- In most communities that were prosperous, the parents cooperated with the boys and the instructors for the best project results, except in such communities where the parents were largely made up of foreigners. Parents in most cases were informed of the boys' project responsibilities.

Very few written project agreements were used either because of past bad results or seemingly reluctance of parents to sign such a contract.

Eleventh.- Factor 1. Evaluating the Degree to Which Each Member of the Group Is Carrying a Project. Average score 6.38.

Remarks.- Most all of the boys carried projects but very few of the boys set up a financial goal to be attained in their project work.

Very few have a completed program of supervised practice work formulated. Many instructors seemed to think the average student was too immature to work out such a program with any degree of efficiency.

Twelfth.- Factor 8. Determining the Degree to Which the Boys Assume Full Responsibility in Regards to Managing, Operating and Financing Their Projects. Average score 5.67.

Remarks.- Most all of the boys performed the operative work on their projects, but the parents interfered greatly in permitting the boys to execute their job plans.

Many parents objected to the boys assuming any financial responsibility, and in some cases were too free to provide finances, free of charge, to the boys.

Thirteenth.- Factor 11. Determining the Completeness of the Boys' Financial Summary and Discussion of the Project. Average score 5.28.

Remarks.- Seventy-five percent of the boys required much help in working out the financial summary of their projects, but most boys wrote a project story. Very few of these stories were worthy of filing.

Very few boys listed the mistakes they made in conducting their projects or ways and means of correction.

Only 20 percent of the boys checked their production costs against the County or State average. This showed an outstanding weakness in this part of the work.

Fourteenth.- Factor 10. Determining the Degree to Which Accurate Records and Accounts Are Kept by the Boys of Their Projects. Average score 4.77.

Remarks.- Very few boys had any definite time to record things pertinent to the project, even tho the instructors stressed this greatly.

Most all boys said that the records they were asked to keep on their projects were too intricate and that when working hard they did not feel like doing such work during leisure periods.

Feeding records were in most instances the result of an estimate, often because the amounts of feed used were small and again because no scales were at hand.

Fifteenth.- Factor 15. Determining the Degree to Which Results of Projects Are Permanently Filed. Average score 4.68.

Remarks.- Boys did not use permanent project records of completed projects where these were kept in the school. Permanent records in most cases were of the yellow card system provided by the State office and usually these are not up to date or not kept at all.

The factors pertaining to project records (factors 15, 11 and 10) seemed all to rate poor because some instructors and boys thought them too intricate; again some instructors thought that the accuracy of boys' project records were too poor to file for future use by other students.

The older students usually kept the best records.

VI

RECOMMENDATIONS FOR THE IMPROVEMENT OF PROJECT WORK

The greatest stress has been, in this discussion, put on the improvement of those factors that rated low. The suggestions given here are not complete but are aimed at the more vital parts that could be carried out by the average instructor.

The order in which the efficiency factors will be taken up, is to start with the one rating the highest score and continuing on in that order as was done in part V.

First.- Factor 7. Determining the Degree to Which the Projects Are Carried Thru the Complete Cycle of Production and Marketing.

Recommendations.- No. 1. It is recommended that animal projects be carried for more than one season in order that the boys might receive all the training needed.

No. 2. It is recommended that animal husbandry projects be carried until a crop project has been completed and in this manner endeavor to get a tie-up between the two sources.

Second.- Factor 3. Determining the Degree to Which the Projects Are Related to School Work in Vocational Agriculture.

Recommendation.- No. 1. That type jobs functioning on projects be stressed in class teaching.

Third.- Factor 5. Determining the Degree to Which the Projects Are Productive Farm Enterprises.

Recommendations.- No. 1. Instructor should discourage city or back-lot projects as much as possible under existing conditions.

No. 2. Instructor should be conscious of the fact that student learns as he practices.

No. 3. Instructor should sell the boy on the idea of securing large enough projects so that regular practices can be used.

Fourth.- Factor 4. Determining the Degree to Which the Projects Meet the Vocational Needs of the Boy.

Recommendation.- No. 1. Instructor should stress during the first week of school, when projects are being discussed, the necessity of the boys selecting projects meeting future vocational needs.

Fifth.- Factor 14. Determining the Degree to Which Individual Instruction on the Projects Is Given.

Recommendation.- No. 1. That one day per week be set aside for project study and made compulsory for entire class.

Sixth.- Factor 13. Determining the Degree to Which Projects Are Completed and Continued.

Recommendations.- No. 1. Instructor discusses the projects with the boys showing them the value of continuing them.

No. 2. That parents be consulted by the instructor and sold on the idea of their boys continuing projects.

No. 3. Where boys move from district that instructor keep in touch with them and aid by correspondence as much as possible until project is completed.

Seventh.- Factor 12. Determining the Degree to Which the Projects Are Carefully Supervised by the Instructor.

Recommendations.- No. 1. Instructor should not supervise so closely that he is considered a "Snoopervisor."

No. 2. Instructor should not be so lax in his supervision that he is a total stranger to the boys' work and working conditions.

No. 3. That instructor should be a congenial and a frequent visitor of the whole family and not merely confine his calls to see the boy.

Eighth.- Factor 2. Determining the Degree to Which the Projects Conducted by the Boys Give a Wide Representative Experience in Farming.

Recommendations.- No. 1. The instructor

discusses the projects with the boys as to what they ought to get out of a project to really handle an enterprise.

No. 2. That instructor inform boys as to the necessity of meeting business responsibilities.

No. 3. That instructor inform parent by letter or personal interview of the fallacy of providing free aid as well as the fallacy of not letting the boy assume responsibilities.

No. 4. That instructor should not let the boy choose such small projects that his efforts are not challenged enough for him to be interested.

No. 5. That instructor should strive to get boys to select developing projects, and not start with a project so large that should a failure result (Sheep feeding 1929-1930) the boy would not have such a large loss as to be permanently discouraged with farming.

Ninth.- Factor 6. Determining the Degree to Which the Projects Are Carefully Analyzed, Studied, Planned and Executed by the Boy.

Recommendations.- No. 1. That one day be set aside each week for this work.

No. 2. That instructor carefully check project plans of the boys.

No. 3. That instructor grade the project analysis, planning and study of the boys.

Tenth.- Factor 9. Determining the Degree to Which the Parents of the Boys Agree to the Projects.

Recommendations.- No. 1. That instructor - parent- boy have a written project agreement.

No. 2. That instructor personally visit the parent and sell them on the project idea.

No. 3. That instructor put out circular letters and write newspaper articles to sell the community on the project idea.

Eleventh.- Factor 1. Evaluating the Degree to Which Each Member of the Group Is Carrying a Project.

Recommendations.- No. 1. That first week of school be set aside for project selection.

No. 2. That instructor establish the rule of.- No project, no agricultural credit.

No. 3. That on the day set aside each week for project study, the instructor assist the boys in formulating their future program of vocational agriculture.

Twelfth.- Factor 8. Determining the Degree to Which the Boys Assume Full Responsibility in Regards to Managing, Operating and Financing Their Projects.

Recommendations - No. 1. That instructor have a father-son meeting where he explains the desirability of allowing boys to have an opportunity to develop themselves in managing, operating and financing their projects

as a business.

No. 2. That instructor center his efforts on securing older students as they will be entering the farming profession for themselves at an earlier date and are more nearly decided on their life's vocation.

No. 3. That instructor use circular letter and personal calls in explaining the value of boy assuming responsibility.

Thirteenth.- Factor 11. Determining the Completeness of the Boys' Financial Summary and Discussion of the Project.

Recommendations.- No. 1. That instructor give out figures on case projects which boys are to use in making a financial summary so as to assist them in making out a financial summary of their own projects.

No. 2. That instructor require boys to keep a diary of projects as an aid in writing final project story.

Fourteenth.- Factor 10. Determining the Degree to Which Accurate Records and Accounts Are Kept by the Boys of Their Projects.

Recommendations.- No. 1. That instructor check project records on each visit during the summer.

No. 2. That records be kept in classroom study notebook during school year where they may be checked at will by the instructor.

No. 3. That in no instance should instructor allow credit in vocational agricultural work until complete and accurate records are submitted by boys.

No. 4. That simple, standardized record system be used by all instructors of the State.

"Farm records must be of the very simplest sort, because that is the only kind a farmer will keep. It is better to have simple, but slightly incomplete records, than ask for more complex records and get nothing." (1)

Fifteenth.- Factor 15. Determining the Degree to Which Results of Projects Are Permanently Filed.

Recommendations.- No. 1. That all instructors of the State use a simple, standardized record system.

No. 2. That more school time be devoted to record keeping as very few boys have had training in bookkeeping.

No. 3. That instructors of vocational agriculture be given a two or three year contract so that he can see some future use of records for himself.

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VII

CONCLUSION AND SUMMARY

The reader is referred to the remarks under each factor in part V, and recommendations under each factor in part VI, for the conclusions and summary. To repeat the remarks and recommendations here would only take up space and be of no value in simplifying the results of this study.

VIII

BIBLIOGRAPHY

Where quotations or statements are used in this thesis, specific sources are indicated in footnotes. The following list of references deals to some extent with the problems in hand.

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