UNIT COSTS OF INSTRUCTION

IN NINE OF THE SMALLER RURAL HIGH SCHOOLS OF KANSAS

FOR THE FIRST SEMESTER OF 1931-1932

by

Gordon Davis

Bachelor of Science, Kansas State Teachers College

of Pittsburg

May, 1929

Submitted to the Department of
Education and the Faculty of
the Graduate School of the
University of Kansas in partial
fulfillment of the requirements
for the degree of Master of
Science

Approved by:

_____
Instructor in charge

_____
Head or Chairman of Department

May 1932

## ACKNOWLEDGMENTS

The writer herewith desires to express his sincere
appreciation to John W. Twente, Professor of Education,
for his constructive criticism and helpful suggestions
in connection with the development of this study.  He
also wishes to express to Carl B. Althaus, Assistant Pro-
fessor of Education, his appreciation for suggestions and
encouragement.  The writer also wishes to acknowledge his
gratitude to that group of rural high school principals
whose willing cooperation has made this survey possible.

# TABLE OF CONTENTS

\*\*\*

## LIST OF TABLES

| Table | Title | Page |
|---|---|---|

CHAPTER I

INTRODUCTION

The people of Kansas, ever since its inception as a
state, have evinced a deep interest in education, both ele-
mentary and higher. They builded this interest into their
constitution, adopted in 1859, when they placed upon the
legislature the solemn duty of encouraging "the promotion
of intellectual, moral, scientific, and agricultural im-
provement, by establishing a uniform system of common
schools, and schools of a higher grade...."[1] Since that
time they have enacted a number of major laws designed to
extend the advantages of education of a secondary nature to
a larger percentage of the youth of the state. The acts
granting high school privileges are the following:

1.  The general high school law of 1876.

2.  The county high school law of 1886.

3.  The Barnes high school law of 1905.

4.  The township high school law of 1911.

5.  The law of 1915 providing free high school tuition
where such had not been otherwise provided.

6.  The rural high school law of 1915.

The township high school law and the rural high school
law were intended to make the advantages of high school edu-
cation more easily accessible to rural boys and girls. The
township high school law authorized the legal electors of
any towhsnip in which there was no town or city to establish,
locate, and maintain a high school. Carl B. Althaus,[2]

commenting on the towhship high school law, says, "..the law
had certain outstanding limitations. The application was re-
stricted to rural townships or to townships having a town
whose population did not exceed three hundred inhabitants.
Furthermore, the boundaries of the district were determined
by township lines and not by the limits of a community cen-
ter." To remedy these defects the rural high school law of
1915.was enacted.

The rural high school law made it possible for the le-
gal voters of a territory of not less than sixteen square
miles in area to organize a rural high school. The enact-
ment of this law was followed by the organization and es-
tablishment of a large number of rural high schools. In
1916 there were 25; by 1918 the number had increased to 121;
in 1920, 204; by 1928 there had been established 297 rural
high schools;[3] and there were listed in the Kansas Educa-
tional Directory[4] for 1930-31 316 such schools. Their organ-
ization has made secondary education possible for many thou-
sands of farm boys and girls who otherwise would have been
deprived of such opportunity. In the wave of enthusiasm
which followed the opening of such opportunity many schools
were established in areas where the expected growth in farm
values and farm population did not materialize, and this at
a time when building costs were extremely high. It has been
apparent for several years that the rural high school is a
costly institution for the taxpayers to maintain. It is the
purpose of this study to determine what has been the unit

cost of high school instruction in nine of the smaller rural high schools of the state for the first semester of the school year 1931-32.

Such a study is particularly pertinent at the present time, when every phase of expenditure of public money should be carefully scrutinized. For many years business concerns have made unit cost studies of production, and through the use of the information gained by these studies have materially reduced the costs of production. Education is our biggest business, and in its administration only business methods should be employed.

At the present time the burden of taxes is falling heavily on the rural population. They feel that the costs of the schools are excessive, and are attempting to carry out a plan for retrenchment. The usual method of keeping school accounts and of reporting them to the public does not provide sufficiently accurate and detailed information upon which to base a thorough program of retrenchment. No provision is made for analyzing the unit costs of a school system, in order to determine just where the excessive cost lies--if it does exist--or how to remedy the situation. The rather blind remedy commonly used is to discharge some teacher, and to eliminate some school enterprise, usually the one most recently added. The retrenchment program should be put upon a businesslike basis, and this cannot be done without an intelligent consideration of the cost of the schools. The unit cost study is designed to fill this need.

The United States Office of Education,[5] after making a

recent survey of the rural high schools of the country, rec-
ommends that each state make a careful survey of its rural
school situation.  The study of unit costs of secondary edu-
cation may well be a part of such a survey.

---

1.  Constitution of the State of Kansas, Article VI, Sec. 2.

2.  Althaus, Carl B. "The Organization and Financing of
Special High School Provisions in Kansas", p. 25.

3.  Ibid., p. 43.

4.  Allen, George A., Jr., State Superintendent of Public
Instruction, "Kansas Educational Directory 1930-1931",
Kansas State Printing Plant, Topeka, Kansas.

5.  Gaumnitz, Walter H. "The Smallness of America's Rural
High Schools", Office of Education Bulletin, 1930, No. 13,
Government Printing Office, Washington, D. C.

# CHAPTER II

## RELATED LITERATURE

Stevens and Elliott,[1] in a report compiled for the Educational Finance Inquiry Commission, give to President R. M. Hughes, of Miami University, the distinction of originating a method of determining unit costs as applied to education and its product. His address on this subject, delivered before the Ohio College Association in 1914, was a pioneer treatment of the subject of unit costs. He employed as a unit the student clock hour, a measure whose usefulness is still recognized. Stevens and Elliott trace the development of measurement of the cost of teaching only, in institutions of higher learning.

One of the earliest unit cost studies was carried on by Walter S. Monroe,[2] in order to determine what the cities of Kansas were paying for a unit of instruction. Monroe sent out questionnaires in October of 1914 to all the four-year high schools of Kansas. Using the data abtained, he computed the cost of classroom teaching, using for his unit of instruction the student period, which is the amount of instruction given one student who attends class for one period of 40 or 45 minutes.

He found much variation in the cost of subjects in different cities. Latin, for instance, ranged in cost from $0.02 to $0.20 per unit of instruction. The average cost per unit for all subjects in 149 third-class cities ranged from $0.03 to $0.176. For schools with an enrollment below 40 the

following median costs per unit were found: English, 6.3¢;
manual training, 6.0¢; history, 7.6¢; agriculture, 6.3¢;
household arts, 5.5¢; science, 7.8¢; Latin, 8.4¢; mathematics,
9.1¢; modern languages, 11.3¢; commercial subjects, 11.6¢;
normal training 13.0¢; average of all subjects, 7.6¢.

The factors causing the variations in costs are (a) sal-
ary of the teacher, (b) number of pupils in each class.

F. L. Whitney [3] stated in 1917 that "a recognition of the
value of unit costs is slowly transferring from business to
education."

He studied school costs in three fairly comparable cities
of South Dakota for the year 1916-17. He worked out the cost
of instruction per pupil, in grades IX to XII inclusive, by
(a) subjects, (b) operation, (c) general administration, and
(d) books, supplies, and incidentals. He found the total cost
of instruction per pupil for the year to be $54.07. Consider-
able variation in the cost of instruction per pupil in various
subjects was found. Chemistry cost $21.84 per pupil; agricul-
ture, $21.67; mathematics, $9.86; history and economics, $7.89;
Latin, $9.93; English, $9.06; and music, $0.87.

Whitney proposes that comparable cities keep accurate rec-
ords of unit costs and exchange findings for their mutual bene-
fit.

Wheat [4] studied unit costs in the 75 high schools of the
first class in West Virginia, obtaining his data through a
questionnaire sent out in September of 1916.

He computed the cost of instruction, using as his unit
1000 student hours of instruction. No attempt was made to con-

sider such activities as study hall or conference periods.
He found variations most striking in the cost of the same
subjects in different schools. English, for instance, cost
twice as much in one city as in another. Commercial subjects
and agriculture cost in one school eight times the sum per
unit they cost in another school.

The factors determining the differences in cost are,
(a) time given to the subject, (b) salary of the teacher and
the number of classes per teacher, (c) number of students tak-
ing the subject.

Wheat states, "In the eight high schools whose enrollment
is from 50 to 75 (the lowest enrollment in his study) the me-
dian costs per 1000 student hours is $74; with an enrollment
of 76 to 91, $61; an enrollment of 93 to 118, $52; 120 to 147,
$50; 152 to 256, $48; 275-690, $44."

He concludes "The average size of the class is the most
important factor which enters into a determination of the
cost of instruction.....It is clearly evident that the salary
of the teacher is a factor of minor importance in determining
the cost of instruction.... The cost per class is a more reli-
able index of the cost of instruction than is the salary of
the teacher....As the size of classes increased the cost of in-
struction tends to decrease....The total enrollment of the
school when it is less than 90 or 100 is an important factor
in determining the average size of classes and the cost of in-
struction."

Wheat recommended that cost standards be set up, but not
made rigid and unvarying. "If the community's needs warrant

the introduction of a new subject and the demand for the sub-
ject is lacking, then a sufficient demand should be created
before the subject is introduced."

Paul Scholz, [5] Business Manager of the San Antonio, Tex-
as, schools, in his report to the Board of Education, May,
1919, analyzed each character of expense of the schools for
the five years previous. Using the following divisions of
school expenditure--administration, auxiliary, instruction,
operation, maintenance, and fixed charges--he found that 84
per cent of the current expenditure went to classroom instruc-
tion, supervision, texts, supplies, and other items of direct
instructional service.

Robert J. White [6] undertook to show that instruction can
be measured, its costs computed, analyzed, and compared. He
used the student period unit, which was the amount of instruc-
tion one student received during a standard period of 40 to 45
minutes.

In a study of 151 schools giving secondary instruction in
Washington he found a range of cost per student period of from
$0.02 to $2.00, with a median for all subjects in all schools
of $0.086. English was one of the least costly subjects, its
median cost being $0.061, while physics and manual training
ran the highest, $0.132, for all schools. The causes of the
variation, White concludes, are, (a) salary of the teachers,
(b) the number of units of instruction given.

Computing the cost per student period for schools of dif-
ferent enrollments, he found the median for schools enrolling

up to 20 pupils to be $0.156; for schools enrolling from 20
to 50 pupils the unit cost was $0.103. The most economical
schools were those rnrolling from 200 to 300 pupils.

He found the cause of the small classes to be the offer-
ing of too many subjects. He recommended combining classes,
and alternation of classes. He calls attention to the unwise
practice of requiring teachers to instruct in so many differ-
ent subjects that they cannot adequately prepare for them all.

A. K. Loomis,[7] in a study of the financial aspects of
school administration in Kansas, published January 15, 1923,
stated that facts tend to establish the conclusion that in
many of the small and medium-sized high schools of Kansas the
cost per pupil is too high. In the small schools the classes
are necessarily so small that the unit costs of teaching are
excessive. He states that "The habit of measuring school
costs in terms of mills rather than in terms of per capita
cost is a second cause of extravagance."

Nelson B. Henry,[8] in a study of public school costs in
Illinois cities, found the median per pupil cost of all de-
partments in eight city high schools, for the year 1921-22.
He found much variation in the costs of different subjects.
In one school English cost $18.47 per pupil; manual arts
$62.39. Some departments cost twice as much as others. Man-
ual arts and home economics ranked highest; English, Latin,
mathematics, and social science the lowest.

Henry presents figures showing how, by restricting pupils
to a meager curriculum of four departments, as English, math-

ematics, social science, and physical science, the cost of
education, in 12 cities studied, could be reduced to an ex-
tent varying from 18.79 per cent in one school to .42 per
cent in another.

Russell, Holy, and Stone,[9] of the Iowa staff of the Ed-
ucational Finance Inquiry Commission, investigated instruc-
tional costs only, in the schools of Iowa, for certain years.
They found "certain extraordinary variations in high school
costs; that the cost of the high school decreases as the size
of the community increases," with certain exceptions.

For the school year 1920-21 manual training cost 4 1/2
times as much per unit as English I; Latin IV cost four
times as much as English I.  In general, the vocational sub-
jects were found to be the most expensive, and English the
least expensive.

Hunt[10] studied the per pupil cost of secondary educa-
tion in the state of New York.  He computed the costs for
classroom teaching, and for current expense other than teach-
ing.  This other current expense included general control,
general instruction, special costs, operation, maintenance,
auxiliary cost, and fixed charges, but did not include capi-
tal outlay or debt service.

He found the median per pupil costs for total current
expenditure for the high schools of the state of New York.
For the four-year union high schools, most nearly similar to
the Kansas rural high schools, the median per pupil cost for
the school year 1920-21 amounted to $143.

He found the classroom teaching cost for high school

subjects showing great variations where the schools are grouped according to the number of students taking the subject. The most striking feature observed here was the relatively high per pupil cost of small classes.

Hunt also computed the relation of percentages of high school teachers' salaries to total current expenditures, for the four-year union high schools, and found the median relation to be 70 per cent. $Q_1$ was found to be 66 per cent; $Q_3$ was 76 per cent.

Pool[11] made a comparison of the unit costs of instruction in the high schools of Pawnee County, Kansas, over a three-year period, 1922 to 1925. He used for his unit of cost the student hour of instruction, and allocated the cost of the schools to supervision by the superintendent, supervision by the principal, classroom teaching, special costs, study hall and vacant periods combined, transportation, and net current expenses for other costs than those mentioned above. He also found how much it cost each school, in current expenses other than classroom teaching, to get one dollar's worth of teaching done. Also, he computed the cost of the subjects per unit of credit given.

The mean cost of teaching the various subjects was found to range from $0.149 to $0.415 per student hour of instruction, with a general average cost of $0.222. In cost per unit of credit the range was from $7.01 for a unit of credit in American history to $73.02 for a unit of credit in economics. The chief reason for the variation was the extreme differences in class enrollment.

He found that "the smaller schools cost more per unit of credit.....than the larger schools.....It is evident from this data that the largest school can teach the same subjects at a lower cost per unit than the smaller schools......It is particularly interesting to note that in four out of the five schools, the highest subject per unit per hour is a form of foreign language."

He draws the conclusion that from the standpoint of the cost per pupil clock hour the larger school is more economical than the smaller school.

Wedel [12] made a unit cost study of the five high schools in Harvey County, Kansas, for the years 1924-5, 1925-6, and 1926-7, using as his data the annual reports of city superintendent, high school principals, and county superintendent.

He computed the cost of instruction, using as his unit the student hour of instruction, allocating the costs to administration and supervision by the superintendent, administration and supervision by the principal, classroom teaching, study hall, vacant periods, and current expense, which includes expenditures for other than salaries. He found considerable variation in the cost of such factors as administration and supervision, classroom teaching, study hall, vacant periods, and current expenditure. The cost per student hour of instruction ranged from a maximum of $0.8990 for domestic science I at Halstead, to a minimum of $0.0397 for chorus at Newton. Roughly, the subject cost per student hour decreased as the size of the school increased.

Wedel also computed the annual per pupil cost for each subject, finding a range of from $79.64 to $130.95. He also found the ratio existing between the costs for classroom teaching and the total current expenditures. The mean ratio ranged from 69.4 per cent in one school to 85.8 per cent in another.

Carbaugh,[13] using the annual reports of the county superintendents of schools as the sources of his data, found the median costs per pupil in average daily attendance for the functions of general control, instructional service, operation, maintenance, new outlay, debt service, transportation, and miscellaneous or auxiliary costs, in approximately half of the rural high schools of Kansas for the school year 1929-30. The reports of the county superintendents are of necessity compiled from the reports of the rural high school principals, and such reports have been found to lack uniformity of procedure with regard to allocation of school costs.

Carbaugh's findings for the different allocations of costs are shown in the following table:

|  | Minimum | Maximum | Median |
|---|---|---|---|
| General control | $0.09 | $16.30 | $1.10 |
| Instructional service | 59.73 | 915.67 | 146.92 |
| Operation | 1.77 | 270.00 | 25.53 |
| Maintenance | .17 | 96.40 | 10.26 |
| New outlays | .04 | 57.33 | 9.81 |
| Debt service | .08 | 915.52 | 16.43 |
| Transportation | 1.53 | 57.60 | 19.00 |

| | | | |
|---|---|---|---|
| Miscellaneous | $0.24 | $232.24 | $9.42 |
| Total current expenditure not including capital outlay and debt service | 69.93 | 1155.73 | 205.43 |
| Total current expenditure including capital outlay and debt service | | | 238.47 |

In the first two of the items listed above the cost of the smaller schools ranked the highest. The maximum figure of $915.67 for instructional service was reached in a school conducted for two pupils.

Carbaugh found that the smaller rural high schools in average daily attendance have the larger cost of instructional service. The same is true for operation costs, and for current expenses in their entirety. He did not find that the rule obtained for the functions of maintenance, transportation, miscellaneous costs, new outlay, or debt service. "In every instance," says Carbaugh, "the schools with an average daily attendance of less than forty pupils have high median costs."

He proposes, as a preventive of excessive costs, that before any contemplated rural high school is established a survey be conducted by a staff of competent authorities. If interpretation of the survey data indicates that the proposed school means excessive costs, its establishment should be indefinitely postponed.

Through all these studies there runs the idea that a way exists to measure, analyze, and compare the costs of the schools in a concrete manner. Starting with the first analyses back in 1914, the processes have been refined and per-

fected until it is now quite possible to analyze school costs into their component elements, determine with a reasonable degree of certainty just what they are, and to point out wherein they are excessive as compared with others.

The present study is an attempt to analyze the costs of the most expensive type of secondary education in Kansas, the rural high school. It bases its claim to superiority on its use of original data, collected at the source, from schools where the records of expenditures were preserved, and to its exhaustive analysis of the costs into their elements.

1. Stevens, Edwin B., and Elliott, Edward C. "Unit Costs of Higher Education", Educational Finance Inquiry, Vol. 13, 1925, The Macmillan Co., New York.

2. Monroe, Walter S. "The Cost of Instruction in Kansas High Schools", Studies by the Bureau of Educational Measurements and Standards, Kansas State Normal School, Emporia, No. 2, 1915, Kansas State Printing Office, Topeka, Kansas.

3. Whitney, F. L. "Exchange of Pupil Unit Costs among Small School Systems", American School Board Journal, Vol. 56, No. 5, pp. 23-24, May, 1918.

4. Wheat, Harry G. "Costs of Instruction in the High Schools of West Virginia", School Review, Vol. XXVI, June, 1918, pp. 438-450.

5. Scholz, Paul. "A Study of School Finances and Unit Costs", American School Board Journal, Vol. 58, No. 5, May, 1919.

6. White, Robert J. "Cost of High School Instruction in the State of Washington", American School Board Journal, Vol. 58, January, 1919, pp. 25-26.

7. Loomis, A. K. "The Financial Aspects of School Administration in Small and Medium High Schools of Kansas", Bulletin of the University of Kansas, Vol. 24, No. 2, Jan. 15, 1923.

8.   Henry, Nelson B. "A Study of Public School Costs in Illinois Cities", Educational Finance Inquiry, Vol. 12, Part III, pp. 66-73, 1924, The Macmillan Co.

9.   Russell, William F., Holy, Thomas C., Stone, Raleigh W., and Others.  "The Financing of Education in Iowa", Educational Finance Inquiry, Vol. 8, pp. 66-71, The Macmillan Co.

10. Hunt, Charles W. "The Cost and Support of Secondary Schools in the State of New York", Educational Finance Inquiry, Vol. 3, 1924, The Macmillan Co.

11. Pool, Robert H. "A Study of the Costs of Secondary Education in Pawnee County, Kansas", Master's Thesis, University of Kansas, 1926.

12. Wedel, Edward B. "A Study of the Costs of Public Secondary Education in Harvey County, Kansas", Master's Thesis, University of Kansas, 1928.

13. Carbaugh, Gaile A. "Median Costs of 150 Rural High Schools, 1929-1930", Master's Thesis, University of Kansas, 1931.

# CHAPTER III

## THE PROBLEM DEFINED

This study is a survey of nine rural high schools of Kansas, each with an enrollment not exceeding 49 pupils. It is proposed to answer the following questions regarding the nine schools studied.

1. What was the cost of a student hour of instruction in each school of each subject for which credit was given? The total cost is to be distributed to the various functions, teaching, special costs, administration and supervision, study hall, vacant periods, auxiliary costs, operation, maintenence, fixed charges, general instruction, and general control.

   a. Was there a significant difference in the cost in the different schools?

   b. Were there any subjects consistently high in cost?

2. What was the cost of a unit of credit, in each school, in each subject for which credit was given? Computation of the cost is to be based on the total expenditure for the class, the number of pupils making passing grades, and the amount of credit given.

   a. Was there a significant difference in the cost of different schools?

   b. Were there any subjects that were consistently high in cost?

3. What did it cost each school to get one dollar's worth of teaching done?

a. What per cent of the total expenditure in each school went directly to classroom teaching?

The current expenditure was divided up under the following headings:

1. Administration and supervision cost includes that part of the principal's salary allocated to administration and supervision.

2. Study hall cost includes that part of the principal's and teachers' salaries allocated to study hall.

3. Vacant period cost includes that part of the teachers' salaries allocated to vacant periods.

4. Auxiliary cost includes that part of the principal's and teachers' salaries allocated to extra-curricular activities. It also includes expenditures for the supplies used in extra-curricular activities, health service, and library expenditures other than that for new books.

5. Operation cost includes all expenditures for fuel, light, water, janitorial service and supplies.

6. Maintenance cost includes all repairs and replacements of the building and equipment.

7. Fixed charges include insurance and rent.

8. General instructional cost includes all instructional supplies such as chalk, paper, tests, etc., that cannot be charged to a particular subject.

9. General control includes those expenditures related

to the business of the district and to office supplies.

10.  Special costs are for instructional supplies that can be charged to a certain subject.

11.  Teaching cost includes that part of the principal's and teachers' salaries allocated to classroom teaching.

A unit of credit is the amount of credit given for a subject that requires the class to meet five periods a week for 36 weeks, for at least forty minutes each day.

Current expenditures include all of the expenses of the district except those for new outlay and for debt service.

Extra-curricular activities are those activities carried on in the school by the students under the supervision of the teachers and for which no credit is given.  These activities include clubs, athletics in some schools, and music in some schools.

A student clock hour of instruction is defined as that amount of instruction given to one student attending a class for sixty minutes.

The number on the roll is the total number of students that have been enrolled in the subject.

The average enrollment is the mean of the number on the roll and the number enrolled at the end of the semester.

CHAPTER IV

THE METHOD OF PROCEDURE

This study makes use of the survey type of investigation. The rural high schools selected for this study were chosen on the basis of their enrollment and of their cost per pupil for the school year 1930-31. The 316 rural high schools listed in the "Kansas Educational Directory 1930-31"[1] were classified into three groups on the basis of their enrollment as reported by the principal. The 105 schools with an enrollment of forty-nine or less constituted the group from which to select schools for this study. Similar studies of the medium-sized and of the larger rural high schools of the state are being made by Claude B. Harris [2] and J. J. Hendrix. [3]

The group of 105 smaller schools was divided into three classes on the basis of the yearly cost per pupil enrolled. For finding the annual cost per pupil enrolled the following formula was used:

$$\frac{\text{Assessed valuation X mill levy}}{\text{Enrollment}} = \text{annual cost per pupil}$$

The information concerning the assessed valuation of the rural high school district and the mill levy was obtained from the Directory for 1930-31. Those schools with an annual cost per pupil of less than $150.00 were placed in one group, those with an annual cost of $150.00 and less than $200.00 in another group, and those with an annual cost of $200.00 or over in a third group. There were 28 schools in the low-cost group, 14 in the medium-cost, and 63 in the

high-cost group.

Near the middle of December, 1931, questionnaires were sent to the principals of the 105 schools, asking whether or not the information needed for the study would be available, and whether the principal would cooperate by allowing an impersonal examination of the records. Thirty-nine of the principals addressed replied to the questionnaire. Only one principal expressed an unwillingness to cooperate in the study. Twenty-five of the replies received were from the high-cost group, seven from the medium-cost, and seven from the low-cost.

From the thirty-eight schools that indicated a willingness to cooperate nine were selected for study, three from each of the three groups classified according to the amount of money levied to conduct the school. The nine schools selected are rather widely distributed over the state except in the extreme western and northwestern parts. They are apparently representative of the smaller rural high schools of Kansas.

Shortly after the close of the first semester a visit was made to each of these schools for the purpose of securing the data for the study. An itemized list of all expenditures for the first semester was secured. Where there was any question as to the purpose of the expenditure the principal was asked to explain, in order that the proper classification of the payment might be made. The first semester expenditures were supposed to have begun July 1, 1931, and

to have continued to the close of the semester. Whenever the
entire supply of fuel for the year had been purchased one-
half of this was recorded as a first semester expense. If
the yearly supply had not all been purchased the principal
and the janitor were asked to estimate the additional amount
needed and one-half the total amount was charged to the first
semester. One-half of all salaries of principals, teachers,
and janitors was charged to the first semester.

Janitorial and instructional supplies purchased during
the first semester were charged to the first semester. This
perhaps makes these items a little higher than they should be,
but in general these schools did not practice the policy of
buying supplies for the entire year at the first of the year.
The study could have been made more accurate in this respect
had it been possible to take an inventory of janitorial, in-
structional, and office supplies at the beginning and at the
end of the semester. Maintenance costs paid for during the
first semester were charged to the first semester.

Information was also secured as to the schedule of
classes. The number of periods per day, the length of each
period, and what activity each principal and each teacher en-
gaged in during each period, were learned. The total number
on each class roll, the number enrolled in each class at the
end of the semester, and the number of pupils making passing
grades in each subject was secured.

The next step was to allocate the costs to the various
functions of expenditure. The same process was used in deal-

ing with the expenditures of each school, and it is believed
by the author that the results are comparable. Each teach-
er's semester salary was allocated to the teaching of dif-
ferent subjects, to study hall costs, to vacant period costs,
and to auxiliary costs on the basis of the number of minutes
devoted to each activity during the week. The week is chosen
as a unit of computation because it is one of similar units
of a semester; also because some classes meet five times,
others seven times, and others one or two times a week.

An example showing how salaries were allocated to the
different activities follows. In School No. V the day was
divided into one sixty-minute period and seven forty-minute
periods. One teacher devoted forty minutes to instruction in
each of the following subjects: English I, English II, early
European history, English III, normal training grammar, and
United States history. She had one sixty-minute period for
a class in constitution, and one forty-minute period for
study hall. She gave 1700 minutes of service each week. Her
salary was $1350 for the year. To find the teaching cost of
the class in constitution for the semester the following for-
mula was used:

$$\frac{\frac{\text{Teacher's yearly salary}}{2} \times \frac{\text{Min. per wk. class meets}}{\text{Minutes of service per wk. by teacher}}}{} = \frac{\text{Teaching cost}}{\text{of subject}}$$

The semester teaching cost of constitution found by substi-
tuting the proper values in the formula above was $119.12.
In the same manner the amount of this teacher's salary allo-

cated to English I, English II, early European history, English III, normal training grammar, United States history, and study hall was found to be $79.41 for each. This teacher had no vacant period during the day. Had she had a vacant period the amount of her salary allocated to that activity would have been found in the same way.

Another example from a different school may aid in explaining the procedure of allocating salaries. In School No. IV one of the teachers, who was also coach of boys' athletics, received a yearly salary of $1305. The school day was divided into eight forty-minute periods. This instructor taught one class in world history, meeting 200 minutes a week; and one class in biology and one in physics with two laboratory periods each a week in addition to the five regular periods, making a total of 280 minutes a week for each of these classes. He had two study hall periods per day taking 400 minutes a week. He had one period each week for chapel, taking 40 minutes a week. This was called an extra-curricular activity, and the cost charged to auxiliary costs. The remaining 400 minutes per week of his time was vacant. In this school athletics was given one period three days a week, after the close of the school day. As credit was given for this activity, the time per week devoted to athletics, 120 minutes, was subtracted from the 400 minutes vacant time mentioned above, leaving 280 minutes to be charged to vacant periods. The total amount of service per week given was 1600 minutes. To find the part of this teacher's salary chargeable to biology substitute proper values in the formula previously given:

$$\frac{\frac{\$1305}{2} \times 280}{1600} = \$114.19, \text{ teaching cost of biology}$$

In a similar manner the amount of this instructor's salary
allocated to world history was found to be $81.56; to phys-
ics, $114.19; to study hall, $163.12; to auxiliary, for
chapel, $16.31; to boys' athletics, $48.94; to vacant per-
iods, $114.19. An identical method for the allocation of
the salaries of all teachers was followed for all schools.

The salary of the principal was allocated in a manner
similar to that of the teachers. What part of the princi-
pal's salary should properly be charged to teaching is a
problem in a study of this type. The fact that he was the
highest paid individual in all the schools has led the au-
thor of this study to assume that he had certain definite
administrative duties. He received additional pay for this
administrative work. It was decided that for teaching the
principal should be paid at the same rate as that of the
highest paid teacher in his school. This arbitrary alloca-
tion of teaching costs for the principal is followed in
each instance.

An explanation of the process used in computing the al-
location of the principal's salary in School No. IV will
make the method clear. The highest paid teacher was the
coach previously mentioned, who was paid $1305 for his
year's work. It was found that a subject taught a full per-
iod for five days a week by this coach cost $81.56 for the
semester. The principal taught two such subjects, there-
fore two times $81.56, or $163.12 of his semester's salary

was charged to teaching. He also taught another subject that occupied two full periods each day, therefore another $163.12 was charged to teaching. He had one period for four days of the week in which he was in charge of the study hall, therefore 4/5 of $81.56, or $65.25, of his salary was charged to study hall. One period of the week he attended chapel, therefore 1/5 of $81.56, or $16.31, was charged to auxiliary costs. The schedule showed that he had three vacant periods. However, it was assumed that the principal used whatever vacant periods he had in attending to the work of his office, or in supervision of instruction. For this reason no part of any principal's salary was allocated to vacant periods. Instead, his salary for that part of his time was considered to be the cost of administraion and supervision. In School No. IV the remainder of the principal's semester salary of $877.50, or $469.70, was allocated to administration and supervision.

All of the expenditures of the first semester other than the salaries of the teachers and principal were classified under the headings of operation, maintenance, fixed charges, general control, general instruction, and transportation. The total sum expended for each of these functions was found. These totals were next used to find the cost per student hour of operation, maintenance, etc.

In order to find the cost of a student hour of instruction in each subject it was necessary to make use of the average enrollment in the class, the number of minutes per

week the class met, and the teaching cost of the subject.
The following formula was used:

$$\frac{\text{Tchg. cost of subject} \times \text{min. in an hr.}}{\text{Length of semes-} \times \text{aver. en-} \times \text{min. class}} = \text{cost of a student hour of teaching in the subject.}$$

(ter in weeks, rollment, meets ea. wk.)

To facilitate ease of solution this formula may be expressed in another manner, as follows:

$$\frac{\frac{\text{Tchg. cost of subject}}{\text{Length of semester in weeks}}}{\text{Aver. enrollment in class} \times \frac{\text{No. min. class meets in a week}}{\text{No. min. in 1 hr.}}} = \text{cost of a student hour of teaching in the subject.}$$

In School No. VI the teaching cost of world history was
$80.36. The average enrollment of the class was ten, and
the class met 225 minutes each week. Substituting the values in the formula above the teaching cost of a student hour
of world history was found to be $0.1191. A similar process
was followed for each subject in every school studied, the
calculations being carried to the fourth decimal place, or
the hundredth part of a cent.

Wherever special cost of a subject entered the same
process was used that was used in finding the teaching cost,
the only difference being that the special cost of the subject was used in the above formula instead of the teaching
cost of the subject.

The student hour costs of administration and supervision, study hall, vacant periods, auxiliary costs, operation,
maintenance, fixed charges, general instruction, general control, and transportation were all found in the same manner.
To find the student hour cost of administration and supervision the total semester cost of administration and super-

vision was divided by the total number of student hours of instruction given during the semester. In School No. III the semester cost of administration and supervision was $568.12. There were 12,888 student hours of instruction given during the semester. The cost per student hour of instruction is found by division to be $0.0441.

In order to find the cost of a unit of credit in a particular subject it was necessary to find the total cost of the class. This total cost of the class was found by multiplying the number of student hours of instruction given in the class for the semester by the cost per student hour of all current expenses other than teaching cost and special cost. To this product was added the teaching cost for the subject, and the special cost where there was such a cost. The total cost of the class was then divided by the number of units of credit given in the class. In School No. I the average enrollment in manual training was nine. The class met 300 minutes, or five hours, a week, therefore 18 times 45 student hours of instruction, or 810 hours, were given in that class during the semester. The student hour cost of current expense other than teaching and special costs was $0.0902. Multiplying $0.0902 by 810 gave $73.06. To this was added a special cost for the subject of $7.26, and a teaching cost of $120.00, which gave a total cost for the subject of $200.32. One unit of credit was given for a year's work in manual training. Each of the nine students enrolled made passing grades, therefore 4.5 units of credit

were given. By dividing $200.32 by 4.5 the cost of a unit of credit in manual training in School No. I was found to be $44.52. Calculations were carried to the nearest cent. The same process was used in finding the cost of each unit of credit in each of the schools.

In making comparisons between schools use was made of the average cost of a unit of credit, and of the average cost of a student hour of instruction. The median cost of a unit of credit, and of a student hour of instruction, was also found. To find the average cost of a unit of credit in each school the total current expenditure of the school was divided by the total number of units of credit given. In School No. V the total current expense was $3717.42, and 105.5 units of credit were given. $3717.42 divided by 105.5 gives $35.24 as the average cost of a unit of credit. In the same school 15,255 student hours of instruction were given. The total current expense of $3717.42 divided by 14,255 gives $0.2437, the average cost of a student hour of instruction in this school.

The median costs were taken from the tables. The median costs of a student hour of instruction in School No. V was found to be $0.25855 (Table Va). In the same manner the median cost of a unit of credit in School No. V was found to be $38.815 (Table Vb).

In order to make comparisons between subjects the median cost of the subject in the different schools was found. The median cost of a student hour of instruction in algebra I was found to be $0.2770 (Table XI). The median cost of a

unit of credit in algebra I was found to be $41.18 (Table XII).

The cost of a dollar's worth of teaching was found by dividing the total current expenditure of each school by the total teaching cost of all subjects taught in the school. In School No. III the total current expenditure was $4232.89, and the total teaching cost was $2626.88. The $4232.89 was divided by $2626.88, with a resulting answer of $1.60, the cost of one dollar's worth of teaching. To find the per cent of expenditure going for teaching, the teaching cost, $2626.88, was divided by the total current expenditure, $4232.89. This gives 63 per cent as the part of the total expenditure expended for classroom teaching.

---

1.   Allen, George A., Jr., State Superintendent of Public Instruction. "Kansas Educational Directory 1930-1931", Kansas State Printing Plant, Topeka, Kansas.

2.   Harris, Claude B. "Unit Costs of Instruction in Nine of the Medium Sized Rural High Schools of Kansas for the First Semester of 1931-1932", Master's Thesis, University of Kansas, 1932.

3.   Hendrix, J. J. "Unit Costs of Instruction in Nine of the Larger Rural High Schools of Kansas for the First Semester of 1931-1932", Master's Thesis, University of Kansas, 1932.

# CHAPTER V

## PRESENTATION OF RESULTS

The following tables present the findings of the investigation in statistical form. Statistical data for each of the nine schools are presented in groups of three tables for each school. Those tables bearing data for School No. I are labeled I, Ia, and Ib. Those for School No. II are labeled II, IIa, and IIb.

Tables I, II, III, etc., give the distribution of instructional costs for other than classroom teaching and the cost of special supplies, for each of the nine schools. Tables Ia, IIa, IIIa, etc., give the cost of classroom teaching and of the special supplies. Tables Ib, IIb, IIIb, etc., give the cost of the class in each subject taught in each of the nine schools, and include the cost of each unit of dredit granted in those subjects.

Comparisons of the cost of the various functions of expenditure, of the costs of the various classes, and of each unit of credit in those subjects, may easily be made from the summary in Tables XI, XII, and XIII. Table XIV affords another comparison of the various schools by showing the cost of a dollar's worth of teaching in each school. It also shows the percentages of total current expenditure devoted to classroom teaching in each of the nine schools.

TABLE I

DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT
HOUR FOR VARIOUS PURPOSES IN SCHOOL NUMBER I
(TEACHING AND SPECIAL COSTS NOT INCLUDED)

| Object of expenditure | Cost per student hour |
|---|---|
| Administration and supervision | $0.0190 |
| Study hall | .0181 |
| Vacant periods | .0091 |
| Auxiliary | .0008 |
| Operation | .0341 |
| Maintenance | .0056 |
| Fixed charges | .0024 |
| General instruction | .0006 |
| General control | .0005 |
| Total | $0.0902 |

TABLE Ia

COST OF INSTRUCTION PER STUDENT HOUR BY
SUBJECT IN SCHOOL NUMBER I

| Subject | Teaching cost | Special cost | Other current expense | Total |
|---|---|---|---|---|
| World History | $0.2667 | | $0.0902 | $0.3569 |
| Foods I | .2167 | $0.0445 | .0902 | .3514 |
| Foods II | .1548 | .0445 | .0902 | .2895 |
| Psychology | .1905 | | .0902 | .2807 |
| Clothing I | .1806 | | .0902 | .2708 |
| Manual Training I | .1481 | .0090 | .0902 | .2473 |
| Algebra I | .1481 | | .0902 | .2383 |
| English III | .1347 | | .0902 | .2256 |
| Geometry | .1212 | | .0902 | .2114 |
| Boys' Glee Club | .1111 | | .0902 | .2013 |
| English I | .1083 | | .0902 | .1985 |
| English II | .0985 | | .0902 | .1887 |
| Vocations | .0889 | | .0902 | .1791 |
| English IV | .0774 | | .0902 | .1676 |
| Biology | .0657 | .0053 | .0902 | .1612 |
| Typing I | .0705 | | .0902 | .1601 |
| Boys' Physical Education | .0606 | | .0902 | .1508 |
| Girls' Glee Club | .0602 | | .0902 | .1504 |
| Constitution | .0555 | | .0902 | .1458 |
| Girls' Physical Education | .0492 | | .0902 | .1394 |
| Mixed Chorus | .0417 | | .0902 | .1319 |

## TABLE Ib

### THE COST OF A UNIT OF CREDIT IN THE DIFFERENT SUBJECTS IN SCHOOL NUMBER I

| Subject | Cost of the class | No. of units of credit given | Cost of a unit of credit |
|---|---|---|---|
| World History | $160.59 | 2.5 | $64.24 |
| Foods I | 158.13 | 2.5 | 63.25 |
| Boys' Glee Club | ,86.97 | 1.5 | 57.98 |
| Foods II | 182.39 | 3.5 | 52.11 |
| Psychology | 176.83 | 3.5 | 50.52 |
| Clothing I | 146.21 | 3. | 48.74 |
| Algebra I | 193.06 | 4 | 48.26 |
| Manual Training I | 200.32 | 4.5 | 44.52 |
| Boys' Physical Educa. | 119.34 | 2.75 | 43.39 |
| Girls' Glee Club | 97.45 | 2.25 | 43.31 |
| Geometry | 209.30 | 5 | 41.86 |
| English III | 162.44 | 4 | 40.61 |
| Girls' Physical Educa. | 110.34 | 2.75 | 40.12 |
| Mixed Chorus | 151.91 | 4 | 37.98 |
| English I | 178.68 | 5 | 35.74 |
| English II | 186.80 | 5.5 | 33.96 |
| Vocations | 241.77 | 7.5 | 32.24 |
| English IV | 211.15 | 7 | 30.16 |
| Biology | 239.31 | 8 | 29.91 |
| Typing I | 223.33 | 7.5 | 29.78 |
| Constitution | 314.83 | 12 | 26.24 |
| | | 98.25 | |

## TABLE II

DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT
HOUR FOR VARIOUS PURPOSES IN SCHOOL NUMBER II
(TEACHING AND SPECIAL COSTS NOT INCLUDED)

| Object of expenditure | Cost per student hour |
|---|---|
| Administration and supervision | $0.0379 |
| Study hall | .0341 |
| Vacant periods | .0255 |
| Auxiliary | .0058 |
| Operation | .0467 |
| Maintenance | .0054 |
| General instruction | .0006 |
| General control | .0018 |
| Total | $0.1578 |

## TABLE IIa

### COST OF INSTRUCTION PER STUDENT HOUR BY
### SUBJECT IN SCHOOL NUMBER II

| Subject | Teaching cost | Special cost | Other current expense | Total |
|---|---|---|---|---|
| Foods I | $0.2604 | $0.0098 | $0.1578 | $0.4280 |
| Sociology | .2604 | | .1578 | .4182 |
| English I | .2083 | | .1578 | .3661 |
| Algebra I | .2083 | | .1578 | .3661 |
| Physics | .1736 | .0050 | .1578 | .3364 |
| Latin I | .1648 | | .1578 | .3226 |
| Latin II | .1648 | | .1578 | .3226 |
| Clothing I | .1488 | .0016 | .1578 | .3082 |
| Geometry | .1488 | | .1578 | .3066 |
| Agriculture | .1302 | | .1578 | .2880 |
| Typing I | .1157 | .0021 | .1578 | .2756 |
| English II | .1177 | | .1578 | .2755 |
| Physiology | .1157 | | .1578 | .2735 |
| English III | .0916 | | .1578 | .2494 |
| World History | .0801 | | .1578 | .2379 |
| Boys' Physical Education | .0801 | | .1578 | .2379 |
| Constitution | .0651 | | .1578 | .2229 |

## TABLE IIb

### THE COST OF A UNIT OF CREDIT IN THE DIFFERENT SUBJECTS IN SCHOOL NUMBER II

| Subject | Cost of the class | No. of units of credit given | Cost of a unit of credit |
|---|---|---|---|
| Boys' Physical Educa. | $370.16 | 1.625 | $227.78 |
| Foods I | 205.44 | 2 | 102.72 |
| Clothing I | 258.90 | 3.5 | 73.97 |
| Typing I | 297.66 | 4.5 | 66.15 |
| Physics | 169.56 | 3 | 56.52 |
| Sociology | 100.37 | 2 | 50.18 |
| Agriculture | 193.54 | 4 | 48.39 |
| Algebra I | 109.84 | 2.5 | 43.94 |
| English I | 109.84 | 2.5 | 43.94 |
| Latin I | 96.78 | 2.5 | 38.71 |
| Latin II | 96.78 | 2.5 | 38.71 |
| Geometry | 128.78 | 3.5 | 36.79 |
| English II | 115.72 | 3.5 | 33.06 |
| Physiology | 147.70 | 4.5 | 32.82 |
| World History | 185.08 | 6 | 30.85 |
| English III | 134.65 | 4.5 | 29.92 |
| Constitution | 213.39 | 8 | 26.67 |
| | | 60.625 | |

37

## TABLE III

### DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT HOUR FOR VARIOUS PURPOSES IN SCHOOL NUMBER III (TEACHING AND SPECIAL COSTS NOT INCLUDED)

| Object of expenditure | Cost per student hour |
|---|---|
| Administration and supervision | $0.0441 |
| Study hall | .0576 |
| Vacant periods | .0163 |
| Auxiliary | .0171 |
| Operation | .0588 |
| Maintenance | .0049 |
| General instruction | .0002 |
| General control | .0070 |
| Total | $0.2060 |

## TABLE IIIa

### COST OF INSTRUCTION PER STUDENT HOUR BY SUBJECT IN SCHOOL NUMBER III

| Subject | Teaching cost | Special cost | Other current expense | Total |
|---|---|---|---|---|
| Manual Training | $0.2210 | $0.0197 | $0.2060 | $0.4467 |
| Foods I | .1741 | .0663 | .2060 | .4464 |
| Clothing I | .1741 | .0114 | .2060 | .3915 |
| Algebra I | .1547 | | .2060 | .3607 |
| English II | .1406 | | .2060 | .3466 |
| Geometry | .1406 | | .2060 | .3466 |
| General Science | .1289 | .0006 | .2060 | .3355 |
| English I | .1219 | | .2060 | .3279 |
| American History | .1105 | | .2060 | .3165 |
| English III | .1031 | | .2060 | .3091 |
| Civics | .0703 | | .2060 | .2763 |
| International Relations | .0703 | | .2060 | .2763 |
| Physiology | .0703 | | .2060 | .2763 |
| Biology | .0512 | | .2060 | .2572 |

## TABLE IIIb

### THE COST OF A UNIT OF CREDIT IN THE DIFFERENT SUBJECTS IN SCHOOL NUMBER III

| Subject | Cost of the class | No. of units of credit given | Cost of a unit of credit |
|---|---|---|---|
| Foods I | $380.50 | 3.5 | $108.71 |
| Manual Training | 375.38 | 3.5 | 107.25 |
| Clothing I | 328.87 | 3.5 | 93.96 |
| Biology | 396.54 | 8.5 | 46.65 |
| Algebra I | 216.41 | 5 | 43.28 |
| Geometry | 228.77 | 5.5 | 41.59 |
| English II | 228.77 | 5.5 | 41.59 |
| General Science | 241.53 | 6 | 40.26 |
| English III | 278.21 | 7 | 39.74 |
| English I | 196.73 | 5 | 39.35 |
| American History | 265.85 | 7 | 37.98 |
| Physiology | 364.73 | 10.5 | 34.74 |
| Civics | 364.73 | 11 | 33.16 |
| International Relations | 364.73 | 11 | 33.16 |
| | | 92.5 | |

TABLE IV

DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT
HOUR FOR VARIOUS PURPOSES IN SCHOOL NUMBER IV
(TEACHING AND SPECIAL COSTS NOT INCLUDED)

| Object of expenditure | Cost per student hour |
|---|---|
| Administration and supervision | $0.0336 |
| Study hall | .0383 |
| Vacant periods | .0233 |
| Auxiliary | .0066 |
| Operation | .0398 |
| Maintenance | .0046 |
| Fixed charges | .0137 |
| General instruction | .0010 |
| General control | .0011 |
| Transportation | .0277 |
| Total | $0.1897 |

## TABLE IVa

### COST OF INSTRUCTION PER STUDENT HOUR BY SUBJECT IN SCHOOL NUMBER IV

| Subject | Teaching cost | Special cost | Other current expense | Total |
|---|---|---|---|---|
| Manual Training | $0.2719 | | $0.1897 | $0.4616 |
| Typing II | .2438 | $0.0050 | .1897 | .4385 |
| Physics | .2266 | | .1897 | .4163 |
| Geometry | .2109 | | .1897 | .4006 |
| Biology | .1942 | | .1897 | .3839 |
| World History | .1699 | | .1897 | .3596 |
| Constitution | .1699 | | .1897 | .3596 |
| General Science | .1582 | | .1897 | .3479 |
| American History | .1510 | | .1897 | .3407 |
| English II | .1458 | | .1897 | .3355 |
| Algebra I | .1406 | | .1897 | .3303 |
| Stenography | .1354 | | .1897 | .3251 |
| English III | .1313 | | .1897 | .3210 |
| Domestic Art I | .1266 | | .1897 | .3163 |
| English I | .1183 | | .1897 | .3080 |
| Typing I | .1094 | .0037 | .1897 | .3028 |
| Latin I | .1108 | | .1897 | .3005 |
| Bookkeeping | .1094 | | .1897 | .2991 |
| Orchestra | .1010 | .0048 | .1897 | .2955 |
| Public Speaking | .1010 | | .1897 | .2907 |
| Girls' Physical Educa. | .0973 | | .1897 | .2870 |
| Girls' Glee Club | .0875 | | .1897 | .2814 |
| Boys' Glee Club | .0729 | .0035 | .1897 | .2661 |
| Boys' Physical Educa. | .0715 | | .1897 | .2612 |

## TABLE IVb

### THE COST OF A UNIT OF CREDIT IN THE DIFFERENT
### SUBJECTS IN SCHOOL NUMBER IV

| Subject | Cost of the class | No. of units of credit given | Cost of a unit of credit |
|---|---|---|---|
| Manual Training | $276.96 | 2.5 | $110.78 |
| Girls' Physical Educa. | 134.31 | 1.625 | 82.65 |
| Domestic Art I | 379.56 | 5 | 75.91 |
| Boys' Physical Educa. | 178.67 | 2.375 | 75.23 |
| Physics | 209.81 | 3 | 69.94 |
| Biology | 225.73 | 3.5 | 64.49 |
| Orchestra | 92.20 | 1.625 | 56.74 |
| Girls' Glee Club | 101.30 | 1.875 | 54.03 |
| Typing II | 131.55 | 2.5 | 52.62 |
| Boys' Glee Club | 114.96 | 2.25 | 51.09 |
| Geometry | 144.21 | 3 | 48.07 |
| Typing I | 283.42 | 6 | 47.24 |
| Constitution | 172.61 | 4 | 43.15 |
| World History | 172.61 | 4 | 43.15 |
| Bookkeeping | 280.06 | 6.5 | 43.09 |
| General Science | 166.99 | 4 | 41.75 |
| American History | 183.98 | 4.5 | 40.88 |
| English II | 181.17 | 4.5 | 40.68 |
| Algebra I | 178.37 | 4.5 | 39.64 |
| Stenography | 175.48 | 4.5 | 39.00 |
| English III | 192.60 | 5 | 38.52 |
| English I | 203.28 | 5.5 | 36.96 |
| Latin I | 198.33 | 5.5 | 36.06 |
| Public Speaking | 226.74 | 6.5 | 34.88 |
| | | 94.25 | |

## TABLE V

DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT
HOUR FOR VARIOUS PURPOSES IN SCHOOL NUMBER V
(TEACHING AND SPECIAL COSTS NOT INCLUDED)

| Object of expenditure | Cost per student hour |
|---|---|
| Administration and supervision | $0.0074 |
| Study hall | .0381 |
| Auxiliary | .0059 |
| Operation | .0331 |
| Total | $0.0845 |

## TABLE Va

## COST OF INSTRUCTION PER STUDENT HOUR BY
## SUBJECT IN SCHOOL NUMBER V

| Subject | Teaching cost | Special cost | Other current expense | Total |
|---|---|---|---|---|
| Domestic Art II | $0.5647 | | $0.0845 | $0.6492 |
| Foods I | .4034 | $0.0939 | .0845 | .5818 |
| Physiology | .4706 | | .0845 | .5551 |
| Economics | .3088 | | .0845 | .3933 |
| Business Arithmetic | .3088 | | .0845 | .3933 |
| | | | | |
| Normal Training Arith. | .2574 | | .0845 | .3419 |
| Mechanical Drawing | .2574 | | .0845 | .3419 |
| English III | .2406 | | .0845 | .3251 |
| Normal Tr'ng Grammar | .2206 | | .0845 | .3051 |
| Manual Training | .2206 | | .0845 | .3051 |
| | | | | |
| Constitution | .1765 | | .0845 | .2610 |
| Physics | .1716 | | .0845 | .2561 |
| Psychology | .1716 | | .0845 | .2561 |
| English II | .1393 | | .0845 | .2238 |
| U. S. History | .1203 | | .0845 | .2048 |
| | | | | |
| Geometry | .1188 | | .0845 | .2033 |
| Domestic Art I | .1177 | | .0845 | .2022 |
| Agriculture | .1029 | | .0845 | .1874 |
| Latin I | .1029 | | .0845 | .1874 |
| Early European History | .0735 | | .0845 | .1580 |
| | | | | |
| Algebra I | .0671 | | .0845 | .1516 |
| English I | .0529 | | .0845 | .1374 |

TABLE Vb

THE COST OF A UNIT OF CREDIT IN THE DIFFERENT
SUBJECTS IN SCHOOL NUMBER V

| Subject | Cost of the class | No. of units of credit given | Cost of a unit of credit |
|---|---|---|---|
| Domestic Art II | $194.76 | 1 | $194.76 |
| Foods I | 244.32 | 1.5 | 162.88 |
| Manual Training | 256.27 | 3.5 | 73.22 |
| Physiology | 99.92 | 1.5 | 66.61 |
| Mechanical Drawing | 184.60 | 3 | 61.53 |
| | | | |
| Domestic Art I | 363.87 | 6 | 60.65 |
| Constitution | 176.16 | 3.5 | 50.33 |
| Economics | 118.00 | 2.5 | 47.20 |
| Business Arithmetic | 118.00 | 2.5 | 47.20 |
| English III | 107.30 | 2.5 | 42.92 |
| | | | |
| Normal Training Arith. | 123.07 | 3 | 41.02 |
| Normal Tr'ng. Grammar | 109.83 | 3 | 36.61 |
| Physics | 138.28 | 4 | 34.57 |
| Psychology | 138.28 | 4.5 | 30.72 |
| English II | 127.58 | 4.5 | 28.35 |
| | | | |
| U. S. History | 135.18 | 5.5 | 24.57 |
| Geometry | 158.56 | 6.5 | 24.39 |
| Agriculture | 168.70 | 7 | 24.10 |
| Latin I | 168.70 | 7.5 | 22.49 |
| Algebra I | 209.26 | 11 | 19.02 |
| | | | |
| Early European History | 170.67 | 9 | 18.96 |
| English I | 206.16 | 12.5 | 16.49 |
| | | 105.5 | |

## TABLE VI

### DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT HOUR FOR VARIOUS PURPOSES IN SCHOOL NUMBER VI (TEACHING AND SPCEIAL COSTS NOT INCLUDED)

| Object of expenditure | Cost per student hour |
|---|---|
| Administration and supervision | $0.0230 |
| Study hall | .0545 |
| Auxiliary | .0107 |
| Operation | .0191 |
| Maintenance | .0049 |
| Fixed charges | .0024 |
| General instruction | .0007 |
| General control | .0009 |
| Transportation | .0230 |
| Total | $0.1392 |

## TABLE VIa

### COST OF INSTRUCTION PER STUDENT HOUR BY SUBJECT IN SCHOOL NUMBER VI

| Subject | Teaching cost | Special cost | Other current expense | Total |
|---|---|---|---|---|
| Geometry | $0.3968 | | $0.1392 | $0.5360 |
| English III | .1984 | | .1392 | .3376 |
| Agriculture | .1832 | | .1392 | .3224 |
| Business Arithmetic | .1701 | | .1392 | .3093 |
| Physics | .1488 | | .1392 | .2880 |
| English II | .1253 | | .1392 | .2645 |
| World History | .1191 | | .1392 | .2583 |
| Algebra I | .1035 | | .1392 | .2427 |
| General Science | .1035 | | .1392 | .2427 |
| English I | .0992 | | .1392 | .2384 |
| Psychology | .0850 | | .1392 | .2242 |
| Sociology | .0794 | | .1392 | .2186 |
| Constitution | .0627 | | .1392 | .2019 |
| Spanish | .0595 | | .1392 | .1987 |

## TABLE VIb

### THE COST OF A UNIT OF CREDIT IN THE DIFFERENT SUBJECTS IN SCHOOL NUMBER VI

| Subject | Cost of the class | No. of units of credit given | Cost of a unit of credit |
|---|---|---|---|
| Geometry | $108.54 | 1.5 | $72.36 |
| Agriculture | 141.45 | 3 | 47.15 |
| English III | 136.73 | 3 | 45.57 |
| Physics | 155.52 | 4 | 38.88 |
| English II | 169.61 | 4.5 | 37.69 |
| Business Arithmetic | 146.15 | 4 | 36.54 |
| World History | 174.36 | 5 | 34.87 |
| English I | 193.10 | 6 | 32.18 |
| Algebra I | 188.40 | 6 | 31.40 |
| General Science | 188.40 | 6 | 31.40 |
| Psychology | 211.86 | 7 | 30.26 |
| Sociology | 221.33 | 7.5 | 29.51 |
| Spanish | 268.25 | 9.5 | 28.23 |
| Constitution | 258.94 | 9.5 | 27.25 |
| | | 76.5 | |

## TABLE VII

### DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT HOUR FOR VARIOUS PURPOSES IN SCHOOL NUMBER VII (TEACHING AND SPECIAL COSTS NOT INCLUDED)

| Object of expenditure | Cost per student hour |
|---|---|
| Administration and supervision | $0.0429 |
| Study hall | .0474 |
| Auxiliary | .0169 |
| Operation | .0476 |
| General instruction | .0003 |
| General control | .0007 |
| Total | $0.1558 |

## TABLE VIIa

### COST OF INSTRUCTION PER STUDENT HOUR BY SUBJECT IN SCHOOL NUMBER VII

| Subject | Teaching cost | Special cost | Other current expense | Total |
|---|---|---|---|---|
| Manual Training | $0.2344 | $0.0076 | $0.1558 | $0.3978 |
| Geometry | .2344 | | .1558 | .3902 |
| English II | .2009 | | .1558 | .3567 |
| Biology | .1664 | | .1558 | .3222 |
| Latin I | .1563 | | .1558 | ..3121 |
| Orchestra | .0888 | .0556 | .1558 | .3002 |
| Girls' Glee Club | .0832 | .0584 | .1558 | .2974 |
| English I | .1406 | | .1558 | .2964 |
| Business Arithmetic | .1278 | | .1558 | .2836 |
| English III | .1172 | | .1558 | .2730 |
| Domestic Art I | .1109 | .0006 | .1558 | .2673 |
| Algebra I | .1082 | | .1558 | .2640 |
| American History | .1004 | | .1558 | .2562 |
| World History | .0740 | | .1558 | .2298 |

## TABLE VIIb

### THE COST OF A UNIT OF CREDIT IN THE DIFFERENT
### SUBJECTS IN SCHOOL NUMBER VII

| Subject | Cost of the class | No. of units of credit given | Cost of a unit of credit |
|---|---|---|---|
| Girls' Glee Club | $230.00 | 2 | $115.00 |
| Manual Training | 286.43 | 3 | 95.47 |
| Domestic Art I | 385.00 | 5 | 77.00 |
| Orchestra | 225.70 | 3.75 | 60.20 |
| English III | 196.55 | 4 | 49.14 |
| Geometry | 140.96 | 3 | 46.99 |
| English II | 149.81 | 3.5 | 42.80 |
| Latin I | 168.51 | 4 | 42.13 |
| Algebra I | 205.90 | 5 | 41.18 |
| Biology | 154.66 | 4 | 38.67 |
| English I | 177.86 | 5 | 35.57 |
| Business Arithmetic | 187.20 | 5.5 | 34.03 |
| World History | 248.14 | 8 | 31.02 |
| American History | 215.25 | 7 | 30.75 |
| | | 62.75 | |

## TABLE VIII

DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT
HOUR FOR VARIOUS PURPOSES IN SCHOOL NUMBER VIII
(TEACHING AND SPECIAL COSTS NOT INCLUDED)

| Object of expenditure | Cost per student hour |
|---|---|
| Administration and supervision | $0.0245 |
| Study hall | .0273 |
| Vacant periods | .0093 |
| Auxiliary | .0034 |
| Operation | .0500 |
| Maintenance | .0009 |
| General instruction | .0003 |
| General control | .0007 |
| Total | $0.1164 |

## TABLE VIIIa

### COST OF INSTRUCTION PER STUDENT HOUR BY
### SUBJECT IN SCHOOL NUMBER VIII

| Subject | Teaching cost | Special cost | Other current expense | Total |
|---|---|---|---|---|
| Voice | $1.2273 | $0.0132 | $0.1164 | $1.3569 |
| Piano | 1.2273 | .0096 | .1164 | 1.3533 |
| Quartette | .3069 | .0069 | .1164 | .4302 |
| Algebra II | .2455 | | .1164 | .3619 |
| Typing II | .2045 | .0025 | .1164 | .3234 |
| | | | | |
| Typing I | .2045 | .0024 | .1164 | .3233 |
| Algebra I | .2045 | | .1164 | .3209 |
| Biology | .1753 | .0220 | .1164 | .3137 |
| Foods I | .1623 | .0280 | .1164 | .3067 |
| English I | .1894 | | .1164 | .3058 |
| | | | | |
| Dramatics | .1763 | | .1164 | .2917 |
| Manual Training | .1364 | .0030 | .1164 | .2558 |
| Girls' Glee Club | .1023 | .0309 | .1164 | .2496 |
| English III | .1263 | | .1164 | .2427 |
| Latin I | .1263 | | .1164 | .2427 |
| | | | | |
| English II | .1116 | | .1164 | .2280 |
| Geometry | .1116 | | .1164 | .2280 |
| Early European History | .1116 | | .1164 | .2280 |
| American History | .0877 | | .1164 | .2041 |

## TABLE VIIIb

### THE COST OF A UNIT OF CREDIT IN THE DIFFERENT SUBJECTS IN SCHOOL NUMBER VIII

| Subject | Cost of the class | No. of units of credit given | Cost of a unit of credit |
|---|---|---|---|
| Piano | $ 70.64 | .6 | $117.73 |
| Typing II | 116.44 | 1 | 116.44 |
| Typing I | 232.78 | 2 | 116.39 |
| Quartette | 30.79 | .4 | 77.43 |
| Manual Training | 310.82 | 4.5 | 69.07 |
| Algebra II | 162.86 | 2.5 | 65.14 |
| Algebra I | 173.31 | 3 | 57.77 |
| Voice | 51.29 | .9 | 56.99 |
| Biology | 197.68 | 3.5 | 56.48 |
| Foods I | 193.21 | 3.5 | 55.20 |
| English I | 165.13 | 3 | 55.04 |
| Dramatics | 183.79 | 3.5 | 52.51 |
| English III | 196.56 | 4.5 | 43.68 |
| Latin I | 196.56 | 4.5 | 43.68 |
| Geometry | 225.72 | 5.5 | 41.04 |
| English II | 225.69 | 5.5 | 41.04 |
| Early European History | 225.69 | 5.5 | 41.04 |
| American History | 257.12 | 7 | 36.73 |
| Girls' Glee Club | 26.96 | 1.2 | 22.47 |
| | | 62.1 | |

## TABLE IX

DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT
HOUR FOR VARIOUS PURPOSES IN SCHOOL NUMBER IX
(TEACHING AND SPECIAL COSTS NOT INCLUDED)

| Object of expenditure | Cost per student hour |
|---|---|
| Administration and supervision | $0.0195 |
| Study hall | .0386 |
| Vacant periods | .0057 |
| Auxiliary | .0061 |
| Operation | .0416 |
| Maintenance | .0106 |
| General control | .0001 |
| Total | $0.1222 |

## TABLE IXa

### COST OF INSTRUCTION PER STUDENT HOUR BY SUBJECT IN SCHOOL NUMBER IX

| Subject | Teaching cost | Special cost | Other current expense | Total |
|---|---|---|---|---|
| Voice | $0.2917 | $0.0074 | $0.1222 | $0.4213 |
| English I | .1667 | | .1222 | .2889 |
| Algebra I | .1548 | | .1222 | .2770 |
| Trigonometry | .1354 | | .1222 | .2576 |
| French II | .1296 | | .1222 | .2518 |
| | | | | |
| Manual Training | .1204 | .0009 | .1222 | .2435 |
| Geometry | .0985 | | .1222 | .2207 |
| English II | .0972 | | .1222 | .2194 |
| Modern European History | .0833 | | .1222 | .2055 |
| Sociology | .0686 | | .1222 | .1908 |
| | | | | |
| Typing I | .0537 | | .1222 | .1759 |
| General Science | .0507 | .0007 | .1222 | .1736 |
| Biology | .0507 | .0007 | .1222 | .1736 |
| English III | .0507 | | .1222 | .1729 |
| Constitution | .0433 | | .1222 | .1665 |

TABLE IXb

THE COST OF A UNIT OF CREDIT IN THE DIFFERENT
SUBJECTS IN SCHOOL NUMBER IX

| Subject | Cost of the class | No. of units of credit given | Cost of a unit of credit |
|---|---|---|---|
| Voice | $113.75 | 1.25 | $91.02 |
| Manual Training | 295.85 | 4.5 | 65.74 |
| Typing I | 166.23 | 3.5 | 47.49 |
| English I | 136.50 | 3.5 | 39.00 |
| Algebra I | 130.88 | 3.5 | 37.39 |
| Trigonometry | 139.11 | 4 | 34.79 |
| French II | 152.97 | 4.5 | 33.99 |
| Geometry | 163.87 | 5.5 | 29.79 |
| English II | 177.72 | 6 | 29.62 |
| Modern European History | 194.20 | 7 | 27.74 |
| Sociology | 167.42 | 6.5 | 25.76 |
| Biology | 246.08 | 10.5 | 23.44 |
| General Science | 222.64 | 9.5 | 23.44 |
| English III | 268.42 | 11.5 | 23.34 |
| Constitution | 279.28 | 12.5 | 22.34 |
| | | 93.75 | |

## TABLE X

### MEAN AND MEDIAN COSTS IN THE NINE SCHOOLS

| School | Cost of student hour of instruction | | Cost of unit of credit | |
|---|---|---|---|---|
| | Mean | Median | Mean | Median |
| No. I | $0.1934 | $0.1985 | $38.17 | $41.86 |
| No. II | .2867 | .3066 | 48.41 | 43.94 |
| No. III | .3284 | .3317 | 45.76 | 40.925 |
| No. IV | .3294 | .32305 | 48.85 | 45.195 |
| No. V | .2437 | .25855 | 35.24 | 38.815 |
| No. VI | .2481 | .2505 | 33.48 | 33.525 |
| No. VII | .28335 | .2969 | 47.41 | 42.465 |
| No. VIII | .2738 | .3058 | 52.17 | 55.20 |
| No. IX | .2063 | .2194 | 30.45 | 29.79 |

## TABLE XI

COST OF INSTRUCTION PER STUDENT HOUR BY SUBJECT IN THE
NINE SCHOOLS AND THE MEDIAN COST OF EACH SUBJECT

| Subject | School No. I | School No. II | School No.III | School No. IV | School No. V | School No. VI | School No.VII | School No.VIII | School No. IX | Median cost of subject |
|---|---|---|---|---|---|---|---|---|---|---|
| Piano | | | | | | | | 1.3533 | | $1.3533 |
| Voice | | | | | | | | 1.3569 | $.4213 | .8891 |
| Domestic Art II | | | | | $.6492 | | | | | .6492 |
| Quartette | | | | | | | | .4302 | | .4302 |
| Foods I | $.3514 | $.4280 | $.4464 | | .5818 | | | .3067 | | .4280 |
| Economics | | | | | .3933 | | | | | .3933 |
| Typing II | | | | $.4385 | | | | .3234 | | .3800 |
| Algebra II | | | | | | | | .3619 | | .3619 |
| Mechanical Draw | | | | | .3419 | | | | | .3419 |
| Normal Training Arith. | | | | | .3419 | | | | | .3419 |
| Stenography | | | | .3251 | | | | | | .3251 |
| Latin II | | .3226 | | | | | | | | .3226 |
| Physics | | .3364 | | .4163 | .2561 | $.2880 | | | | .3122 |
| Business Arith. | | | | | .3933 | .3093 | $.2836 | | | .3093 |
| Clothing I | .2708 | .3082 | .3915 | | | | | | | .3082 |
| Geometry | .2114 | .3066 | .3466 | .4006 | .2033 | .5360 | .3902 | .2280 | .2207 | .3066 |
| Normal Training Grammar | | | | | .3051 | | | | | .3051 |
| Manual Training I | .2473 | | .4467 | .4616 | .3051 | | .3978 | .2558 | .2435 | .3051 |
| Latin I | | .3226 | | .3005 | .1874 | | .3121 | .2427 | | .3005 |
| Bookkeeping | | | | .2991 | | | | | | .2991 |
| Orchestra | | | | .2955 | | | .3002 | | | .2979 |
| English I | .1985 | .3661 | .5279 | .3C80 | .1374 | .2384 | .2964 | .3058 | .2889 | .2964 |
| Dramatics | | | | | | | | .2917 | | .2917 |
| Public Speaking | | | | .2907 | | | | | | .2907 |
| Foods II | .2895 | | | | | | | | | .2895 |
| General Science | | | .3355 | .3479 | | .2427 | | | .1736 | .2891 |
| Agriculture | | .2880 | | | .1874 | .3224 | | | | .2880 |
| Biology | .1612 | | .2572 | .3839 | | | .3222 | .3137 | .1736 | .2855 |
| Algebra I | .2383 | .3661 | .3607 | .3303 | .1516 | .2427 | .2640 | .3209 | .2770 | .2770 |
| Civics | | | .2763 | | | | | | | .2763 |
| International Relations | | | .2763 | | | | | | | .2763 |
| Physiology | | .2735 | .2763 | | .5551 | | | | | .2763 |
| Typing I | .1601 | .2756 | | .3028 | | | | .3233 | .1759 | .2756 |
| English III | .2256 | .2494 | .3091 | .3210 | .3251 | .3376 | .2730 | .2427 | .1729 | .2730 |
| Domestic Art I | | | | .3163 | .2022 | | .2673 | | | .2673 |

## TABLE XI Continued

| Subject | School No. I | School No. II | School No. III | School No. IV | School No. V | School No. VI | School No. VII | School No. VIII | School No. IX | Median cost of subject |
|---|---|---|---|---|---|---|---|---|---|---|
| Girls Glee Club | $.1504 | | | $.2814 | | | $.2974 | $.2496 | | $.2655 |
| English II | .1887 | $.2755 | $.3466 | .3355 | $.2238 | $.2645 | .3567 | .2280 | $.2194 | .2645 |
| World History | .3569 | .2379 | | .3596 | | .2583 | .2298 | | | .2583 |
| Trigonometry | | | | | | | | | .2576 | .2576 |
| American History | | | .3165 | .3407 | .2048 | | .2562 | .2041 | | .2562 |
| | | | | | | | | | | |
| Psychology | .2807 | | | | .2561 | .2242 | | | | .2561 |
| French II | | | | | | | | | .2518 | .2518 |
| Boys Physical Ed. | .1508 | .2379 | | .2612 | | | | | | .2379 |
| Girls Glee Club | .2013 | | | .2661 | | | | | | .2337 |
| Sociology | | .4182 | | | | .2186 | | | .1908 | .2186 |
| | | | | | | | | | | |
| Girls Physical Ed. | .1394 | | | .2870 | | | | | | .2132 |
| Constitution | .1458 | .2229 | | .3596 | .2610 | .2019 | | | .1665 | .2124 |
| Modern European History | | | | | | | | | .2055 | .2055 |
| Spanish | | | | | | .1987 | | | | .1987 |
| Early European History | | | | | .1580 | | | .2280 | | .1930 |
| | | | | | | | | | | |
| Vocations | .1791 | | | | | | | | | .1791 |
| English IV | .1676 | | | | | | | | | .1676 |
| Mixed Chorus | .1319 | | | | | | | | | .1319 |

## TABLE XII

THE COST OF A UNIT OF CREDIT BY SUBJECT IN THE NINE
SCHOOLS AND THE MEDIAN COST OF EACH SUBJECT

| Subject | School No. I | School No. II | School No.III | School No. IV | School No. V | School No. VI | School No.VII | School No.VIII | School No. IX | Median cost of subject |
|---|---|---|---|---|---|---|---|---|---|---|
| Domestic Art II | | | | | $194.76 | | | | | $194.76 |
| Piano | | | | | | | | $117.73 | | 117.73 |
| Foods I | $63.25 | $102.72 | $108.71 | | 162.88 | | | 55.20 | | 102.72 |
| Typing II | | | | $52.62 | | | | 116.44 | | 84.53 |
| Quartette | | | | | | | | 77.43 | | 77.43 |
| Domestic Art I | | | | 75.91 | 60.65 | | $77.00 | | | 75.91 |
| Boys Physical Ed. | 43.39 | 227.78 | | 75.23 | | | | | | 75.23 |
| Voice | | | | | | | | 56.99 | $91.02 | 74.01 |
| Clothing I | 48.74 | 73.97 | 93.96 | | | | | | | 73.97 |
| Manual Training I | 44.52 | | 107.25 | 110.78 | 73.22 | | 95.47 | 69.07 | 65.74 | 73.22 |
| Algebra II | | | | | | | | 65.14 | | 65.14 |
| Mechanical Drawing | | | | | 61.53 | | | | | 61.53 |
| Girls Physical Ed. | 40.12 | | | 82.65 | | | | | | 61.39 |
| Orchestra | | | | 56.74 | | | 60.20 | | | 58.47 |
| Boys Glee Club | 57.98 | | | 51.09 | | | | | | 54.54 |
| Dramatics | | | | | | | | 52.51 | | 52.51 |
| Foods II | 52.11 | | | | | | | | | 52.11 |
| Girls Glee Club | 43.31 | | | 54.03 | | | 115.00 | 22.47 | | 48.67 |
| Physics | | 56.52 | | 69.94 | 34.57 | $38.88 | | | | 47.70 |
| Typing I | 29.78 | 66.15 | | 47.24 | | | | 116.39 | 47.49 | 47.49 |
| Economics | | | | | 47.20 | | | | | 47.20 |
| Agriculture | | 48.39 | | | 24.10 | 47.15 | | | | 47.15 |
| Bookkeeping | | | | 43.09 | | | | | | 43.09 |
| Biology | 29.91 | | 46.65 | 64.49 | | | 38.67 | 56.48 | 23.44 | 42.66 |
| Geometry | 41.86 | 36.79 | 41.59 | 48.07 | 24.39 | 72.36 | 46.99 | 41.04 | 29.79 | 41.59 |
| Algebra I | 48.26 | 43.94 | 43.28 | 39.64 | 19.02 | 31.40 | 41.18 | 57.77 | 37.39 | 41.18 |
| Normal Training Arith. | | | | | 41.02 | | | | | 41.02 |
| English III | 40.61 | 29.92 | 39.74 | 38.52 | 42.92 | 45.57 | 49.14 | 43.68 | 23.34 | 40.61 |
| Stenography | | | | 39.00 | | | | | | 39.00 |
| Latin I | | 38.71 | | 36.06 | 22.49 | | 42.13 | 43.68 | | 38.71 |
| Latin II | | 38.71 | | | | | | | | 38.71 |
| Mixed Chorus | 37.98 | | | | | | | | | 37.98 |
| English II | 33.96 | 33.06 | 41.59 | 40.88 | 28.35 | 37.69 | 42.80 | 41.04 | 29.62 | 37.69 |
| English I | 35.74 | 43.94 | 39.35 | 36.96 | 16.49 | 32.18 | 35.57 | 55.04 | 39.00 | 36.96 |
| American History | | | 37.98 | 40.88 | 24.57 | | 30.75 | 36.73 | | 36.73 |

## TABLE XII Continued

| Subject | School No. I | School No. II | School No.III | School No. IV | School No. V | School No. VI | School No.VII | School No.VIII | School No. IX | Median cost of subject |
|---|---|---|---|---|---|---|---|---|---|---|
| Normal Training Grammar | | | | | $36.61 | | | | | $36.61 |
| Business Arith. | | | | | 47.20 | $36.54 | $34.03 | | | 36.54 |
| General Science | | | $40.26 | $41.75 | | 31.40 | | $23.44 | | 35.83 |
| Public Speaking | | | | 34.88 | | | | | | 34.88 |
| World History | $64.24 | $30.85 | | 43.15 | | 34.87 | 31.02 | | | 34.87 |
| Trigonometry | | | | | | | | | 34.79 | 34.79 |
| Physiology | | 32.82 | 34.74 | | 66.61 | | | | | 34.74 |
| French II | | | | | | | | | 33.99 | 33.99 |
| Civics | | | 33.16 | | | | | | | 33.16 |
| International Relations | | | 33.16 | | | | | | | 33.16 |
| Vocations | 32.24 | | | | | | | | | 32.24 |
| Psychology | 50.52 | | | | 30.72 | 30.26 | | | | 30.72 |
| English IV | 30.16 | | | | | | | | | 30.16 |
| Early European History | | | | | 18.96 | | | $41.04 | | 30.00 |
| Sociology | | 50.18 | | | | 29.51 | | | 25.76 | 29.51 |
| Spanish | | | | | | 28.23 | | | | 28.23 |
| Modern European History | | | | | | | | | 27.74 | 27.74 |
| Constitution | 26.24 | 26.67 | | 43.15 | 50.33 | 27.25 | | | 22.34 | 26.96 |

## TABLE XIII

DISTRIBUTION OF INSTRUCTIONAL COSTS PER STUDENT HOUR
FOR VARIOUS PURPOSES IN THE NINE SCHOOLS( TEACHING COSTS
AND SPECIAL COSTS NOT INCLUDED)

| Object of expenditure | School No. I | School No. II | School No.III | School No. IV | School No. V | School No. VI | School No.VII | School No.VIII | School No. IX | Mean | Median |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Administration and supervision | $.0190 | $.0379 | $.0441 | $.0336 | $.0074 | $.0230 | $.0429 | $.0245 | $.0195 | $.0280 | $.0280 |
| Study Hall | .0181 | .0341 | .0576 | .0383 | .0381 | .0545 | .0474 | .0273 | .0386 | .0390 | .0386 |
| Vacant Periods | .0091 | .0255 | .0163 | .0233 | | | | .0093 | .0057 | .0149 | .0128 |
| Auxiliary | .0008 | .0058 | .0171 | .0066 | .0059 | .0107 | .0169 | .0034 | .0061 | .0081 | .0061 |
| Operation | .0341 | .0467 | .0588 | .0398 | .0331 | .0191 | .0476 | .0500 | .0416 | .0412 | .0416 |
| Maintenance | .0056 | .0054 | .0049 | .0046 | | .0049 | | .0009 | .0106 | .0053 | .0049 |
| Fixed Charges | .0024 | | | .0137 | | .0024 | | | | .0024 | .0062 |
| General Instruction | .0006 | .0006 | .0002 | .0010 | | .0007 | .0003 | .0003 | | .0005 | .0006 |
| General Control | .0005 | .0018 | .0070 | .0011 | | .0009 | .0007 | .0007 | .0001 | .0016 | .0008 |
| Transportation | | | | .0277 | | .0230 | | | | .0254 | .0254 |
| | .0902 | .1578 | .2060 | .1897 | .0845 | .1392 | .1558 | .1164 | .1222 | .1402 | .1392 |

## TABLE XIV

### COMPARISONS BETWEEN TEACHING COSTS AND TOTAL CURRENT EXPENDITURES IN EACH OF THE NINE SCHOOLS

| School | Total current expenditure | Total teaching cost | Cost of a dollar's worth of teaching | Per cent of expenditure for teaching |
|--------|---------------------------|---------------------|--------------------------------------|--------------------------------------|
| No. I | $3749.96 | $2466.00 | $1.52 | 66 |
| No. II | 2935.03 | 1970.00 | 1.49 | 67 |
| No. III | 4232.89 | 2626.88 | 1.61 | 62 |
| No. IV | 4604.51 | 2882.80 | 1.60 | 63 |
| No. V | 3717.42 | 2970.00 | 1.25 | 80 |
| No. VI | 2561.35 | 1687.50 | 1.52 | 66 |
| No. VII | 2975.17 | 1989.00 | 1.50 | 67 |
| No. VIII | 3239.95 | 2274.55 | 1.42 | 70 |
| No. IX | 2855.08 | 1845.00 | 1.55 | 65 |
| Total | $30871.36 | $20711.73 | Mean 1.49 | Mean 67 |
| Mean | $3430.15 | $2301.30 | | |

CHAPTER VI

INTERPRETATION AND SUMMARY

The first problem in this study was to find the cost of a student hour of instruction for each subject in each school, with the total cost distributed to the various functions of expenditure: teaching, special costs, administration and supervision, study hall, vacant periods, auxiliary costs, operation, maintenance, fixed charges, general instruction, general control, and transportation. Table I gives the student hour costs for all the functions mentioned above, except teaching cost and the cost of special supplies, for School No. I. The student hour cost of administration and supervision in that school was found to be $0.0190, the study hall cost $0.0181, vacant period cost $0.0091, auxiliary cost $0.0008, operation $0.0341, maintenance $0.0056, fixed charges $0.0024, general instruction $0.0006, general control $0.0005, total $0.0902. Table II gives the same information concerning School No. II, Table III for School No. III, etc. In case a function is omitted from any table it is because there was, in the corresponding school, no expenditure for that function. A summary of Tables I to IX will be found in Table XIII, and will be discussed later in the chapter.

The cost of instruction for each subject taught, and the special cost of each subject if there was any, in School No. I is given in Table Ia. The most expensive subject taught in School No. I was World History with a teaching cost of $0.2667 per student hour. There was no special cost for this subject. The student hour cost of all other expense was

$0.0902 (Table I), which gave a total cost for this subject of $0.3569 per student hour.  All other subjects taught in this school for which credit was given are listed in Table Ia.  In the same manner the cost of each subject in School No. II may be found in Table IIa, for School No. III in Table IIIa, etc.

The answer to the question "Was there a significant difference in the cost in the different schools?" can be found by referring to Tables X, XI, and XIII.  Table X gives the mean and the median costs of a student hour of instruction, and of a unit of credit, for each school.  The mean cost of a student hour of instruction is found to range from $0.1934 in School No. I to $0.3294 in School No. IV. This shows the mean cost of a unit of instruction to be 70 per cent greater in one school than in another.  The mean cost per unit is almost as great in School No. III as in School No. IV.  The median costs per unit are also given as another mode of comparison.  They range from $0.1985 in School No. I to $0.3317 in School No. III.  The median cost per unit of instruction is 67 per cent higher in School No. III than in School No. I.

Table XIII shows a considerable difference in the current expenditures per student hour of instruction for some functions.  The costs of administration and supervision range from $0.0074 in School No. V to $0.0441 in School No. III.  The mean cost per unit of administration and supervision is $0.0280, and the median cost per unit the same.

Administration and supervision cost approximately six times as much in School No. III as in School No. V.

Study hall costs show less variation. They range from $0.0181 in School No. I, to $0.0576 in School No. III, per student hour of instruction. The mean cost per unit of study hall is $0.0390, and the median cost per unit is $0.0386. Study hall costs in School No. III are approximately three times as much as in School No. I.

Vacant period costs show a great variation. They range from nothing, in three of the nine schools, $0.0057 per student hour in a fourth, to $0.0255 in School No. II. The mean unit cost for the six schools having vacant periods is $0.0149, and the median cost $0.0128.

Auxiliary costs show considerable variation. The range is from $0.0008 in School No. I to $0.0171 in School No. III. The mean unit cost is $0.0081, the median cost $0.0061. School No. III spent 21 times as much per unit for auxiliary costs as School No. I.

The cost for operation is much more uniform. It ranges from $0.0191 for School No. VI to $0.0588 for School No. III. It may be remarked in passing that the low operation cost in School No. VI was due in large measure to the fact that there natural gas was used as the fuel, with a cost for the semester of only $35.60. The mean cost per unit in the nine schools was $0.0412, the median cost $0.0416.

Two of the nine schools had no expenditure for maintenance. The cost per unit for the seven schools ranged from $0.0009 to $0.0106. The mean cost per unit was $0.0053, the

median cost $0.0049.

Three of the schools had expenditures for fixed charges, and two for transportation. Two schools had no expenditure for general instructional supplies, and one had no costs of general control.

It is evident from a study of these tables that there is a significant difference in the cost in the different schools.

The question "Were there any subjects that were consistently high?" may be answered by referring to the tables for each school, which give the cost of a student hour of instruction (Tables Ia, IIa, etc.). Foods I, taught in five of the nine schools, is the most expensive subject in three of the five, ranks next to the highest subject in a fourth, but falls to near the median in the fifth. The subject can therefore be said to be consistently high. The subject with the highest unit costs in any school is Voice, as taught in School No. VIII; closely followed by Piano, in the same school. It may be well to state here that this school gives individual instruction in these subjects, which accounts for the extremely high costs. Domestic Art II, taught in one school, has very high unit costs. Economics, taught in one school, has a high unit cost, due to the small enrollment in the class. Typing II, given in two schools, is next to the highest subject in one and in the upper quartile in the other. Algebra II, mechanical drawing, normal training arithmetic, and Latin II, taught in one school each, are in or near the upper quartile. Manual training I, taught in seven of the schools, is the most costly subject in three, is in the

second quartile in two, almost down to the median in one, and slightly below the median in the last. It may thus be said to be consistently high in cost per student hour. Clothing I, taught in three schools, falls in the upper quartile in two and in the second quartile in the third, having a tendency to rank high in cost.

Geometry, taught in all the schools, is the most costly subject in one, next to the most costly in another, in the first quartile in another, second quartile in another, at the median in three, in the third quartile in one, and in the fourth in the last. It can hardly be said to be consistently high. Among other subjects not consistently high are: All years of English, algebra I, typing I, biology, physics, general science, and business arithmetic. World history, taught in five schools, has the highest cost per unit on one, the lowest in another, median in a third, second quartile in another, and fourth quartile in another. Its high cost in the one school is due to the small enrollment in that class--the smallest in the school. The exact reverse is true in the case of the school wherein this subject has the lowest unit cost.

Other subjects consistently low in cost per student hour of instruction include domestic art I, American history, glee clubs, physical education, Latin I, French II, and Spanish I. Each of the two latter is taught in but one school.

In Tables Ib, IIb, IIIb, etc., may be found the cost of

a unit of credit in each subject for each school studied.
A great range is shown between the lowest cost and the high-
est. In School No. V a unit of credit in English I costs
$16.49, while in School No. II a unit of credit in boys'
physical education costs $227.78. Next to the lowest in
cost comes a unit of early European history in School No. V
at a cost of $18.96, while next to the highest comes a unit
of domestic art II in the same school at $194.76. Consider-
able variation is found in the cost of a unit of credit in
a certain subject in the different schools. For instance,
manual training, taught in seven of the schools, has a range
from $44.52 in School No. I to $110.78 in School No. IV.
The cost of a unit of geometry ranges from $24.39 in School
No. V to $72.36 in School No. VI. The cost per unit of
English I ranges from $16.49 in School No. V to $55.04 in
School No. VIII. Table XII gives the cost per unit of cred-
it for each subject in all nine schools, and the median cost
of the different subjects.

The question "Was there a significant difference in the
cost in different schools?" may be answered from Table X.
The mean cost of a unit of credit, comparing schools, ranges
from $30.45 in School No. IX to $52.17 in School No. VIII.
The cost per unit in the latter school represents an increase
over School No. IX of 71 per cent. "Graduates from these
two schools", says J. J. Hendrix,[1] "are admitted to the state
institutions of higher learning on an equal basis. When
measured by this standard the value of a unit of credit from
one is equal to that from the other; yet the mean cost of a

unit of credit was nearly twice as much in one as the other."

The cost of a unit of credit seems consistently high for some subjects. Manual training has the highest cost per unit in one school, has next to the highest in three others, is still in the first quartile in two more, and falls as low as the second quartile in only one school. Foods I, taught in five of the schools, is the highest subject per unit in one school, is next to the highest in three others, and falls to the median in one school. Domestic art I, taught in three schools, and clothing I, also taught in three, each have a cost per unit that falls in the first quartile in two of the schools, and in the second quartile in the third. Physics falls in the first quartile three times, and in the third quartile one time. Typing I falls in the first quartile three times, is median one time, and has next to the lowest cost in another school.

Several subjects, each taught in only a few schools, tend to be high. Boys' physical education has the highest cost per unit in one school, is in the first quartile in another, and in the second quartile in a third. Domestic art II and piano, each offered in one school, have the highest unit cost for their respective schools. Typing II, voice, algebra II, orchestra, foods II, and boys' glee club all have a cost above the median. In general, such subjects as manual training, foods, clothing, domestic art, typing, physics, boys' physical education, and all music except girls' glee club and mixed chorus, tend to have a high cost

per unit of credit. Reference to page 69 will reveal that there physical education is listed with the subjects consistently low in cost, while on page 71 boys' physical education is listed as tending to have high unit costs. This apparent discrepancy disappears upon observing that in the former instance the low cost is based upon student hours of instruction, while in the latter the high cost is for units of credit. For such activities as athletics and music, slowly making their way into the regular curriculum, it appears that the tendency is to give a smaller amount of credit, for the amount of time devoted to the subject, than is given for the so-called "solid" subjects.

Reference to Table XIV shows that with the exception of a single school the cost of a dollar's worth of teaching is quite uniform. For the eight schools the range is from $1.42 to $1.61. For School No. V the cost of a dollar's worth of teaching is $1.25. If actual classroom teaching is the principal objective for which school money is expended, it would appear that School No. V is the most efficient.

Expressing the same fact in another manner, the percentage of the total expenditure which goes for classroom teaching ranges, with the exception of School No. V, from 62 per cent to 70 per cent. School No. V expends 80 per cent of its total current cost for teaching.

It is pertinent at this time to inquire why some schools have higher costs than others, why some subjects cost more per student hour of instruction, and why the cost of a unit

of credit should vary as it does. Examination of the class schedules of the different schools reveals a few facts that throw some light upon this question. The high cost per student hour of instruction for world history in School No. I, and its extremely low cost in School No. VII, have already been explained. Foods I and foods II, in School No. I, rank next to world history in student hour cost. The class enrollment in foods I is five, in foods II, seven. The average class enrollment in this school is 13.3. The effect of a large class enrollment may be found by observation of the size of the class in constitution, which in this school is 24. Reference to Table Ib shows that this subject has the lowest student hour cost of any subject in that school.

Correlation of the class enrollments in each subject in School No. I, by the rank-difference method, with the costs per student hour of instruction, gives $r = .9818$, with a $P. E._r$ of .0061. It may be assumed from this that there is a direct relation between the class enrollment and the cost per unit of instruction. As the number of units of credit given must necessarily depend on class enrollment, there will exist a like relationship between class enrollment and the cost per unit of credit given.

Other significant facts discernible are:

1. School No. IV, a high cost school (Table X), employing five teachers, could teach all subjects offered with four teachers by eliminating all their vacant periods, as other schools studied have done.

2. The schools with no vacant period costs are not among the high cost schools.

3. The school having the greatest vacant period costs is a high cost school.

4. The school giving the greatest number of units of credit is a low cost school.

TABLE XV

PARTIAL SUMMARY OF DATA

| School | No. of tchrs. | No. of subj. | Subj. per tchr. | Av. enr. per sub-ject | No. of units cred. | Units per tchr. | Cost adm. | Cost stu-hall | Cost vac-per. |
|--------|--------------|--------------|-----------------|------------------------|---------------------|------------------|-----------|----------------|----------------|
| I | 4 | 21 | 5.25 | 13.3 | 98.25 | 24.56 | $369 | $351 | $176 |
| II | 4 | 17 | 4.25 | 7.7 | 60.62 | 15.15 | 388 | 349 | 261 |
| III | 4 | 14 | 3.50 | 13.4 | 92.5 | 23.12 | 568 | 742 | 210 |
| IV | 5 | 24 | 4.8 | 10.3 | 94.25 | 18.85 | 470 | 535 | 326 |
| V | 4 | 22 | 5.5 | 9.8 | 105.5 | 26.38 | 113 | 481 | 0 |
| VI | 3 | 14 | 4.67 | 10.9 | 76.5 | 25.5 | 238 | 563 | 0 |
| VII | 3 | 14 | 4.67 | 11.2 | 62.75 | 20.92 | 450 | 497 | 0 |
| VIII | 4 | 19 | 4.75 | 7.2 | 62.1 | 15.52 | 290 | 323 | 110 |
| IX | 3 | 15 | 5 | 15.7 | 93.75 | 31.25 | 270 | 534 | 79 |

Table XV gives a summary of data dealing with the number of teachers in each school, the number of subjects offered, the average number of subjects per teacher, the average enrollment per subject, the number of units of credit given, the number of units of credit given per teacher employed, the cost of administration and supervision, the cost of study hall, and the cost of vacant periods.

Correlations between the mean cost of a student hour of instruction (Table X) and these various factors which enter into costs have been made. The method of rank-differences is the form of correlation used, as it is regarded as the most suitable for use where the number of cases is small. A correlation of $r = .5176$ is found between the mean cost of a student hour of instruction and the number of teachers employed, showing that a marked tendency toward relationship exists.

There is no relation between the mean cost of a student hour of instruction and the number of subjects offered.

A correlation of $r = .6883$ exists between the mean cost of a student hour of instruction and the average number of subjects per teacher, showing that a strong relationship exists. The lower the average number of subjects per teacher the higher the costs.

The relationship between the average enrollment per subject and the mean cost of a student hour of instruction is not marked.

Between mean costs of a student hour of instruction and the number of units given by the school there exists a marked tendency toward relationship, $r = .4158$.

Between mean costs of a student hour of instruction and the average number of units of credit per teacher there exists a strong tendency toward relationship, $r = .70$. The higher the cost the lower the number of units granted per teacher employed.

There is a strong correlation between the cost of administration and supervision and the mean cost of a student hour of instruction, $r = .7654$. The higher the cost of instruction the higher the cost of administration and supervision.

Practically no relationship exists between the cost of study hall and the mean cost of a student hour of instruction.

Between the cost of vacant periods and the mean cost of a student hour of instruction there exists a strong relationship, $r = .5861$. The greater the cost of vacant periods the higher the cost of instruction.

It seems evident from these correlations that the small rural high school with the following characteristics will tend to be a low cost school:

1. It will offer a large number of subjects per teacher employed.

2. It will give a large number of units of credit.

3. It will give more units of credit per teacher employed.

4. It will limit the cost of administration and supervision by requiring the principal to teach full time.

5. It will eliminate vacant period costs by requiring teachers to teach classes or keep study hall during every period of the day.

If, in addition to these distinguishing features, it reduces its teaching staff to a minimum for the number of sub-

jects offered; expends the minimum amount possible for the maintenance of its buildings and equipment; and does not elect to furnish transportation for its students, the district supporting such school may expect the costs to be not excessive, when compared with other schools of the same type.

In general, this study seems to show that there is a wide range in the mean and the median costs of a student hour of instruction and of a unit of credit in the nine schools. There appears to be a considerable difference in the cost of a student hour of instruction and of a unit of credit in different subjects, with a tendency for some subjects to be consistently high. If efficiency is measured by the per cent of the current expenditure paid for classroom teaching, the efficiency of this group of schools seems rather uniform.

This study also reveals that equality of educational opportunity is not being realized for the boys and girls who are attending the rural high schools of Kansas, if these are representative schools. It would seem that, as education is a recognized function of the state, the state should erect and maintain standards by which expenditures for education would be more nearly equalized.

---

1. Hendrix, J. J. "Unit Costs of Instruction in Nine of the Larger Rural High Schools of Kansas for the First Semester of 1931-1932", Master's Thesis, University of Kansas, 1932.

# BIBLIOGRAPHY

1.  Allen, George A., Jr., State Superintendent of Public Instruction. "Kansas Educational Directory 1930-1931", Kansas State Printing Plant, Topeka, Kansas.

2.  Allen, George A., Jr., State Superintendent of Public Instruction. "School Laws of Kansas, Revised 1931", Kansas State Printing Plant, Topeka, Kansas.

3.  Althaus, Carl B. "The Organization and Financing of Special High School Provisions in Kansas".

4.  Andrews, William E. "A Study of High School Costs of Production", American School Board Journal, Vol. 53, No. 3, September, 1916.

5.  Carbaugh, Gaile A. "Median Costs of 150 Rural High Schools, 1929-1930", Master's Thesis, University of Kansas, 1931.

6.  Constitution of the State of Kansas, Article VI, Sec. 2.

7.  Culbertson, James H. "Rural High Schools in Kansas", Master's Thesis, University of Kansas, 1927.

8.  Ferriss, Emery N. "Rural School Survey of New York State: The Rural High School", Wm. F. Fell, Printers, Philadelphia, 1922.

9.  Gaumnitz, Walter H. "The Smallness of America's Rural High Schools", Office of Education Bulletin, 1930, No. 13, Government Printing Office, Washington, D. C.

10. Harris, Claude B. "Unit Costs of Instruction in Nine of the Medium Sized Rural High Schools of Kansas for the First Semester of 1931-1932", Master's Thesis, University of Kansas, 1932.

11. Hendrix, J. J. "Unit Costs of Instruction in Nine of the Larger Rural High Schools of Kansas for the First Semester of 1931-1932", Master's Thesis, University of Kansas, 1932.

12. Henry, Nelson B. "A Study of Public School Costs in Illinois Cities", Educational Finance Inquiry, Vol. 12, 1924, Part III, The Macmillan Co., New York.

13. Hunt, Charles W. "The Cost and Support of Secondary Schools in the State of New York", Educational Finance Inquiry, Vol. 3, 1924, The Macmillan Co.

14.   Hutchinson, J. H. "School Costs and School Accounting", Teachers College, Columbia University, Contributions to Education, No. 62, 1914.

15.   Loomis, A. K. "The Financial Aspects of School Administration in Small and Medium High Schools of Kansas", Bulletin of the University of Kansas, Vol. 24, No. 2, Jan. 15, 1923.

16.   Monroe, Walter S. "The Cost of Instruction in Kansas High Schools", Studies by the Bureau of Educational Measurements and Standards, Kansas State Normal School, Emporia, No. 2, 1915, Kansas State Printing Office, Topeka, Kansas.

17.   Morrison, Henry C. "The Financing of Public Schools in the State of Illinois", Educational Finance Inquiry, Vol. 9, 1924, The Macmillan Co.

18.   Pool, Robert H. "A Study of the Costs of Secondary Education in Pawnee County, Kansas", Master's Thesis, University of Kansas, 1926.

19.   Rankin, Christopher R. "Reorganization of Finances of the Schools in Sedgwick County", Master's Thesis, University of Wichita, 1930.

20.   Russell, William F., Holy, Thomas C., Stone, Raleigh W., and Others. "The Financing of Education in Iowa", Educational Finance Inquiry, Vol. 8, The Macmillan Co.

21.   Scholz, Paul. "A Study of School Finances and Unit Costs", American School Board Journal, Vol. 58, No. 5, May, 1919.

22.   Stevens, Edwin B., and Elliott, Edward C. "Unit Costs of Higher Education", Educational Finance Inquiry, Vol. 13, 1925, The Macmillan Co.

23.   Strayer and Haig. "The Financing of Education in the State of New York", Educational Finance Inquiry, Vol. 1, 1923, The Macmillan Co.

24.   Wedel, Edward B. "A Study of the Costs of Public Secondary Education in Harvey County, Kansas", Master's Thesis, University of Kansas, 1928.

25.   Wheat, Harry G. "Costs of Instruction in the High Schools of West Virginia", School Review, Vol. XXVI, June, 1918.

26.   White, Robert J. "Cost of High School Instruction in the State of Washington", American School Board Journal, Vol. 58, January, 1919.

27.  Whitney, F. L. "Exchange of Pupil Unit Costs Among
Small School Systems", <u>American School Board Journal</u>, Vol.
56, No. 5, May, 1918.