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SURVEY OF THE SCHOOLS OF ALEXANDRIA, VIRGINIA

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SURVEY OF THE SCHOOLS OF ALEXANDRIA, VIRGINIA.

INTRODUCTION.

The survey of the school system of Alexandria was made in May, 1923, by the United States Commissioner of Education upon the invitation of the Board of Education of Alexandria and of the State superintendent of public instruction of Virginia. The following persons from the Bureau of Education were detailed to make the survey, each person being assigned a particular phase of work:

W. S. Deffenbaugh, director of the survey.
Miss Alice Barrows, school building program.
Miss Florence C. Fox, primary instruction and tests.
Miss Harriet E. Howard, primary instruction and tests.
Miss Dorothy Hutchinson, health education.
Miss Nina C. Vandewalker, music, art, and nature study.
Miss Harriet Wedgwood, health education.
Miss Emeline S. Whitcomb, home economics.

To the bureau staff the Commissioner of Education added the following faculty members of Teachers' College, George Washington University, to conduct the educational testing in the intermediate, grammar-school, and high-school grades: Dr. W. C. Ruediger, Prof. Fred A. Moss, and Prof. James B. Sullivan.

Members of the survey staff during the three weeks of field work visited the schools, made observation of instruction, gave tests, and secured such other information as would assist them in making constructive recommendations.

SUMMARY OF FINDINGS AND RECOMMENDATIONS.

SCHOOL POPULATION, FAILURES, ETC.

1. The school enrollment has increased more rapidly than the population, which fact shows that the schools are becoming more popular. The high-school enrollment has increased much more rapidly than the grade-school enrollment.

2. The per cent of pupils in the last year of the high school is less than in other cities, showing that fewer of the Alexandria high-

school pupils graduate. The greatest loss is during the first high-school year.

3. The school children are much overage for their respective grades. The overageness is due to several causes—inflexible grading, irregular attendance, too heavy requirements of formal subject matter in primary grades.

4. Too many children in the primary grades have to repeat their work. There are also too many failures in the first year of high school.

5. Retardation can be reduced by grouping the children in classes according to ability. Special classes should also be formed for the very backward children. Pupils should be promoted semiannually.

6. There should be a continuous school census, so that it may be known what each child in the city is doing, whether in school, at home, or at work.

7. A compulsory-attendance officer should be employed on full time to visit the parents who are not sending their children to school regularly and to keep a continuous census list. After a year a full-time attendance officer might not be needed.

8. The practice of requiring a child to present a tax receipt at the beginning of the school term should be discontinued.

TEACHING CORPS.

1. The elementary-school teachers of Alexandria average one and two-tenth years of schooling beyond the high school; the minimum should be two years. The high-school teachers average three and seven-tenth years beyond high-school graduation; the minimum should be four years. The school board is to be commended for now demanding better prepared teachers.

2. The average salary paid elementary and high-school teachers is less than the average paid in other cities of from 10,000 to 30,000 population. A salary schedule should be adopted providing an increase of from $50 to $100 a year for a period of 8 to 10 years.

COURSES OF STUDY.

1. The elementary school program of studies should be vitalized by the introduction of music, drawing, nature study, manual training, and home economics. A beginning in music has been made, but more work in the subject should be provided. None of the other subjects named have a place in the elementary school program. The school day should be lengthened, so as to permit the introduction of these subjects.

2. The high-school program of studies should be completely reorganized. Foreign languages should be offered only as electives. The amount of work required in mathematics is excessive.

3. First and second year pupils should not be permitted to carry more than four subjects except by permission from the high-school principal.

4. The commercial course should cover four years. Typing and other elementary commercial subjects should be introduced the first year.

5. Classes in elective subjects should not be formed unless enough pupils ask for the subject to justify the formation of a class. At present several of the classes in the high school are too small, enrolling only two or three pupils.

6. A five or six year high-school program of studies should be adopted. The first two or three years might be designated as the junior high school and the last three years as the senior high school. If such a program of studies were adopted, the transition from the elementary to the high school would not be so abrupt as it is.

EDUCATIONAL ACHIEVEMENTS AS REVEALED BY TESTS.

1. The children in the primary grades made the standard grade scores in spelling, but fell below the score which children of the same age should make.

2. In language the primary grades fell slightly below the standard score.

3. Grades 4 to 7 in the white schools made the average score. The grades in the colored schools fell much below the average.

4. The tests reveal a poor classification of pupils.

5. The schools should be reclassified on the basis of the tests given and on the judgment of the teachers.

BUILDING PROGRAM.

1. More school room is needed.

2. The high-school building is wholly inadequate for a modern program of studies, there being no laboratories, manual-training shops, and the like.

3. The building problem can be solved best by erecting a 12-room building containing laboratories and shops, and in addition an auditorium and two gymnasiums, on the space east of the present high-school building and south of the Jefferson Building. This is not only the most economical plan, but the best from an educational standpoint.

4. The addition of such a unit, together with the old high-school building, would accommodate about 800 pupils. The seventh grade, now housed in the Jefferson School, should be removed to the high-school building, and then a five or six year high school organized.

5. After the seventh grade has been removed from the Jefferson Building, this building will accommodate under the same plan of organization as at present the fourth grade now housed in the Lee and Washington Schools, but there will be no room left for growth.

6. Under a different plan of organization the Jefferson Building can accommodate more children than at present, and at the same time a more vitalized program of studies can be offered.

7. Until the new high-school building is erected and the seventh grade in the Jefferson School removed, this school should be so organized that some of the fourth grades in the Lee and Washington Schools could be removed to the Jefferson Building. In this way more first, second, and third grade children could be accommodated at the Washington and Lee Schools. Even the schools in these buildings could be so organized that two more classes could be accommodated in each of them. But this plan of organization at these two buildings should be deferred until the reorganization proposed is in successful operation at the Jefferson Building.

8. If possible, a cottage should be rented or erected near the high school for the teaching of home economics, and another cottage near the Parker-Gray School for the teaching of home economics. These cottages could be used as teacherages.

9. In order to accommodate the children west of the railroad tracks, a school building to accommodate the first four grades should be erected in that section. It should be so constructed that additional rooms may be added as needed. The building should be adapted to the work of the primary grades.

10. The plan of housing only boys in the Washington School and only girls in the Lee School should be abandoned.

11. At the Parker-Gray School there are, on the basis of 40 pupils to a class, six more classes than there are classrooms. If organized differently, 800 pupils can be accommodated, or 80 more than are enrolled at present, and at the same time better educational opportunities will be provided.

SUPERVISION.

1. The general supervisors should work largely through the principals. If, however, the superintendent is given sufficient clerical help, he should do most of the general supervision. The duties of the general supervisor should, therefore, be changed to include the giving of various kinds of tests to discover what help the teachers need. This help should then be given by the principals.

2. If the schools continue to be organized on the same plan as at present, it will be necessary to have supervisors of music, drawing, handwork, and physical training. These supervisors should supervise and not teach.

3. If all the schools should be organized on the platoon plan, special supervisors of music, drawing, and physical education would be no more necessary than supervisors of arithmetic and other subjects. There should, however, be a supervisor to coordinate all the health work of the schools.

4. The superintendent of schools should be the executive officer of the board. He should have complete control of the preparation of courses of study, promotion of pupils, and the like.

HEALTH.

1. Alexandria is to be congratulated upon the good school nurse work. It is, however, a physical impossibility for one person to handle the work satisfactorily. An assistant nurse should be provided.

2. Many children need attention with respect to their nutrition, their health habits, their posture, and their general health.

3. The children should be weighed and their height taken at regular intervals.

4. More attention should be given to nutrition. Perhaps this can best be done through the home economics department.

5. There should be less formal gymnastics, especially in the lower grades. There should be more attention to games and plays. Special work should be given for stooped shoulders and other physical defects.

6. The toilet facilities are inadequate.

7. The playgrounds and athletic field need to be put into better condition and marked off for games.

8. The ventilation of the school building should be improved.

9. Under the present organization there should be one physical training teacher, possibly two, in the high school and one supervisor for the elementary schools. If the platoon plan should be adopted, one or more physical education teachers would be required in each building organized on the platoon plan.

FINANCE.

1. Alexandria is not expending as much per pupil as other cities of between 10,000 and 30,000 population. In 1921–22 Alexandria expended $29 per pupil, while the average for 50 other cities of between 10,000 and 30,000 population was $73. The present year the per capita expenditure is about $43 for Alexandria, or $30 less than the average in the other cities.

2. The per cent of city funds appropriated for schools is small compared with the per cent appropriated in other cities.

3. Out of 51 cities Alexandria ranks fifty-first in per capita expenditure for schools, and sixteenth in per capita wealth.

4. The bonded indebtedness for school purposes is small compared with that in other cities of between 10,000 and 30,000 population.

SCHOOL POPULATION.

ENROLLMENT.

The public schools of Alexandria are enrolling a larger proportion of the population now than in 1910. The population from 1910 to 1920 increased 17.8 per cent and the school enrollment 64 per cent. The white population increased 25.3 per cent and the white school enrollment 90 per cent; the colored population decreased 2 per cent and the school enrollment increased 6 per cent. The high school shows a very great increase in enrollment. The Alexandria high school was first organized in 1911–12. From that date to 1920 the enrollment increased 213 per cent.

The following table shows the rank of Alexandria among 30 other cities in increase in population and in elementary and high-school enrollment from 1910 to 1920.

Per cent of increase in population and in elementary and high school enrollment, 1910 to 1920.

Rank.	Population.	Per cent.	Rank.	Elementary-school enrollment.	Per cent.	Rank.	High-school enrollment.	Per cent.
1	Newport News, Va...	76	1	Bessemer, Ala.....	85	1	Selma, Ala.....	389
2	Bessemer, Ala.....	72	2	Watertown, Mass.....	83	2	Bessemer, Ala.....	328
3	Watertown, Mass....	67	3	Selma, Ala.....	76	3	*Alexandria, Va*.....	213
4	Hannibal, Mo.....	63	4	Newport News, Va....	67	4	Lebanon, Pa.....	200
5	Greenfield, Mass.....	48	5	Greenfield, Mass.....	53	5	Brunswick, Ga.....	191
6	Bloomfield, N. J.....	46	6	Huntington, Ind.....	52	6	Walla Walla, Wash...	165
7	Beloit, Wis.....	40	7	*Alexandria, Va*.....	45	7	Parkersburg, W. Va..	144
8	Huntington, Ind.....	36	8	Brunswick, Ga.....	39	8	Butler, Pa.....	140
9	Janesville, Wis.....	32	8	Butler, Pa.....	39	9	Marshall, Tex.....	136
10	Plainfield, N. J.....	29	10	Fort Smith, Ark.....	37	10	Ottumwa, Iowa.....	118
11	Lebanon, Pa.....	28	11	Marshall, Tex.....	32	11	Holland, Mich.....	116
12	Marshall, Tex.....	24	12	Jackson, Tenn.....	31	12	Watertown, Mass.....	105
13	Fort Smith, Ark.....	21	13	Ottumwa, Iowa.....	29	13	Galesburg, Ill.....	100
14	Holland, Mich.....	20	14	Plainfield, N. J.....	28	14	Eureka, Calif.....	95
15	*Alexandria, Va*.....	18	15	Lebanon, Pa.....	26	15	Plainfield, N. J.....	87
16	Selma, Ala.....	14	16	Walla Walla, Wash...	22	16	Bloomfield, N. J.....	85
17	Butler, Pa.....	14	17	Hannibal, Mo.....	20	17	Beloit, Wis.....	80
18	Parkersburg, W. Va..	13	18	Parkersburg, W. Va..	18	18	Santa Cruz, Calif.....	76
18	Freeport, Ill.....	12	19	Eureka, Calif.....	17	19	Keokuk, Iowa.....	70
20	Eureka, Calif.....	9	20	Staunton, Va.....	14	19	Greenfield, Mass.....	70
21	Galesburg, Ill.....	7	20	Beloit, Wis.....	14	19	Jackson, Tenn.....	70
22	Dunkirk, N. Y.....	6	22	Galesburg, Ill.....	13	22	Dunkirk, N. Y.....	67
23	Ottumwa, Iowa.....	4	22	Bloomfield, N. J.....	13	23	Huntington, Ind.....	60
23	Johnstown, N. Y.....	4	24	Owensboro, Ky.....	10	24	Newport News, Va....	55
25	Owensboro, Ky.....	2	25	Dunkirk, N. Y.....	8	25	Staunton, Va.....	53
26	Staunton, Va.....	0	26	Santa Cruz, Calif.....	6	25	Owensboro, Ky.....	53
27	Santa Cruz, Calif.....	−2	27	Danbury, Conn.....	4	27	Hannibal, Mo.....	50
28	Brunswick, Ga.....	−3	28	Keokuk, Iowa.....	0	28	Freeport, Ill.....	48
29	Danbury, Conn.....	−5	29	Holland, Mich.....	−1	29	Fort Smith, Ark.....	45
30	Jackson, Tenn.....	−6	30	Johnstown, N. Y.....	−5	30	Johnstown, N. Y.....	19
31	Walla Walla, Wash..	−19	31	Fairport, Ill.....	−7	31	Danbury, Conn.....	18

[1] 1911–1920.

Per cent enrolled in each grade in Alexandria and in 80 other cities.

Grade	Alexandria	80 cities	Grade	Alexandria	80 cities
1	16.6	16.3	8	7.1	6.4
2	13.7	12.4	9	3.3	4.9
3	14.7	12.4	10	3.4	3.0
4	11.6	12.1	11	1.7	[1] 3.3
5	11.5	11.2		100.0	100.0
6	9.7	9.8			
7	6.7	8.0			

[1] Eleventh and twelfth grades.

It may be observed in the above that the per cent enrolled by grades compares favorably with the per cent enrolled by grades in 80 other cities.

The schools of Alexandria enroll a somewhat larger per cent of pupils 14 to 19 years of age than do 80 other cities. The following table shows the per cent enrolled at each age:

Per cent enrolled of each age.

Ages.	Alexandria.	80 cities.	Ages.	Alexandria.	80 cities.
5	0.4	.....	14	10.2	7.2
6	7.5	11.7	15	5.7	4.7
7	10.4	10.7	16	4.0	2.8
8	10.9	10.5	17	2.1	1.7
9	10.8	10.6	18	.4	.8
10	8.1	10.3	19	.1	.3
11	9.6	9.8		100.0	100.0
12	10.1	9.6			
13	9.7	9.3			

ATTENDANCE.

It was not possible for the survey staff to discover whether all the children of compulsory school age are attending school, since no recent school census has been taken. Teachers and others report that some children of compulsory school age are not in school and that some attend very irregularly; in brief, it is reported that the compulsory attendance law is not enforced as it should be. The first step toward its enforcement is to employ an attendance officer on full time, who should take a census of the children of school age to discover what children are not in school. This census should be revised continuously. As children move away from the city, their names should be taken off the census roll, and as children move into the city their names should be added. The attendance officer should not think that his only duty is to get children who have not been attending school into school. His chief work is to keep the children in regular attendance. Possibly a full-time attendance officer would not be needed after a year.

PROGRESS THROUGH THE GRADES.

Although the per cent of children from 14 to 19 years of age enrolled is somewhat greater than in the 80 other cities, more children in the Alexandria schools are overage for their respective grades. The following table shows the per cent overage for each grade in Alexandria and in 80 other cities:

Per cent of children overage.

Grade.	Alexandria.	80 cities.	Grade.	Alexandria.	80 cities.
1	19.5	8.6	7	35.3	23.7
2	36.9	15.7	8	36.1	16.5
3	37.3	19.4	9	28.2	15.2
4	48.2	25.5	10	31.2	15.8
5	58.1	29.0	11	13.0	13.8
6	65.2	27.8	12		10.8

Forty-one per cent of the white elementary school pupils of Alexandria are overage for their respective grades. The average for other cities is about 20 per cent. The overageness in the colored schools is much more serious, averaging 55.7 per cent. The greatest amount for the colored schools is in grades 3, 4, and 5, reaching 79.7 per cent in the fourth grade.

The cause of the excessive overageness all through the school system is the fact that many of the children in the primary grades have to repeat their work. Since the first two or three years of school determine to a large extent the subsequent progress of the children, a special report on the progress of the children in the first three grades is included at this point.

The following table shows the range of ages for pupils in grades 1, 2, 3 in the Alexandria schools together with the standard age:

Range of ages of pupils in grades 1, 2, and 3 of Alexandria schools.

Grades.	Name of school.	Range of ages, in years.	Standard age, in years.[1]
1	Washington	6-14	7.4
	Lee	6-14	
	West End	6-9	
	Parker-Gray	5-14	
2	Washington	7-14	8.5
	Lee	7-13	
	West End	7-11	
	Parker-Gray	6-14	
3	Washington	8-15	9.6
	Lee	7-14	
	West End	8-13	
	Parker-Gray	6-18	

[1] Standard age computed by Ayres.

The range of ages in many of the classes in the first grade runs from 6 years to 14 years; in the second from 7 to 14; and in the third from 8 to 18, making a difference of 8 years in the first, 7 in the second, and 10 in the third for pupils who sit side by side and attempt to do the same work in the same length of time and in the same way.

This is an impossible situation for any teacher. A child 6 years of age and one 14 can not profitably work together in the first grade, since this condition discloses a wide difference in mental ability and a difficulty in social adjustment which it is impossible to reconcile.

It is an incontrovertible argument to show that something must be done to save the public expense of failures, if for no other reason, when it is stated that, of the pupils in the first grade, 29.7 per cent are repeating the work for the first time, 6.1 per cent are repeating it for the second time, 4.6 per cent are repeating it for the third time, making a total repeating of 40.4 per cent.

Nearly 30 per cent in Alexandria repeat their first-grade work the second year, while 25 per cent for the country has been considered a high average. This has been reduced in the past few years to 20 per cent quite generally in most city school systems. Nearly one pupil in every three in Alexandria goes over his first year's work at least a second time, while one in five repeats in other cities. The following table shows a comparison of failures with four other cities where surveys have been made within the last few years:

Comparison of failures of pupils.

Cities.	Grade 1.	Grade 2.	Grade 3.
Alexandria, Va	40.4	23.6	16.7
Butte, Mont	25.0	15.0	14.0
Cleveland, Ohio	17.0	13.0	15.0
Wilmington, Del	10.0	12.0	10.3
Elyria, Ohio	15.0	12.0	18.0

Forty per cent of failures, against 25 in Butte, 17 in Cleveland, 10 in Wilmington, and 15 in Elyria, looms large in this comparison. What does it cost the city to pay for this amount of repeating which was done last year in the first grade? Estimating the cost per pupil in the elementary grades at $24.93, Alexandria paid this year just $6,721 for those children in the primary grades who did not pass. And the fault does not lie primarily with the teacher. It rests on the nonadjustment of pupils to the grades and the work required of them.

The percent of failures in the other grades, while not as great as in the first three grades, runs high. In the high school, too, many

pupils are failing in mathematics and Latin, as many as 40 per cent failing in these subjects.

The number of failures in the primary, intermediate, and high-school grades may be reduced by homogeneous grouping of pupils. As it is, pupils of varying ability are placed in the same class from the slow to the gifted. As a result the slow child is nagged, threatened, and finally failed; the bright child does no work and becomes lazy.

In every building in Alexandria, with the exception of the West End, the children can be divided into groups with only a few weeks' interval between these groups. In the Lee School, for instance, there are 6 first grades which could be divided into 12 groups, thus leaving less than a month's interval from one group to another. No pupil would have to repeat a year's work or even a half year's work. The pupils in the slower groups would not cover as much ground in a year as the brighter groups, but they would be going forward all the time, which is the important thing. The 1-talent pupil would be gaining as much relatively as the 10-talent pupil.

The per cent of retardation could be reduced by promoting the children semiannually instead of annually.

The organization of kindergartens or of kindergarten-primary classes would help reduce the number of failures in the first grade. Some of the children are not ready for academic work. As it is, they are held down to a study of the book long before they are mature enough to master the technique of reading. To be sure these children enter at the age of 6 years, but they are not yet ready to do the work that is easily done by the other members of the class. They need a year at least for development, which should be spent in kindergarten activities until they are prepared for the early lessons in reading, writing, and arithmetic.

To group these immature pupils in a room by themselves in charge of a kindergarten-primary teacher would not require any additional space, because their segregation would mean more room in the regular first-grade classes. Several of the teachers already on the force have had kindergarten-primary training and could be allotted to these classes without additional expense for teachers. The only outlay required is for equipment, which can be purchased at low cost from distributing houses. One of the first grades has already been equipped with movable furniture through the initiative and enterprise of the teacher in charge.

Special classes for the subnormal children who need different treatment from the normal child would help reduce the amount of retardation. A course of study as suggested in another section of the report would also help.

There are tests arranged for these children to determine their grade in these early years of school life, and it is recommended by the survey committee that advantage be taken of the opportunity which near-by clinics afford for grading these little beginners and placing them where they can make the quickest and best progress. It is simply a question of readjustment and of grouping pupils already in schools according to their ability. One room in each building should be cleared of its stationary desks, and movable furniture substituted. A test should be given in the first three grades to determine what children need this freer approach to academic instruction. There would probably not be more than enough for a primary class, and their places in the regular first grade which they now occupy could be filled by those who are ready to do the required work. Eventually, of course, Alexandria will adopt a system of kindergartens, but until that time comes the surest and quickest relief for the maladjustment in the primary grades will be the establishment of lower-primary classes in charge of kindergarten-primary teachers.

A reorganization of the course of study, which is discussed in another section of this report, would also help reduce the number of failures.

METHOD OF ENROLLING PUPILS.

The method of admitting children to school at the beginning of the fall term is unique. The children are not admitted until they have presented to the school principals a tax receipt for a 50-cent tax. The result is that the schools are practically inoperative for the first few days of the term, since very few of the children obtain the tax receipts until school opens in the fall. It is reported that as many as four days are required to collect all these tax receipts, and that during this time there is no teaching. Each school day teachers' salaries alone cost Alexandria more than $400. So four days will amount to more than $1,600 of school money gone with no organization and no teaching. Obviously, the plan of requiring children to present a tax receipt should be discontinued at the earliest possible moment.

INSTRUCTION AND COURSES OF STUDY.

PRIMARY GRADES.

Instruction.—Too much formal work is now done in the three primary grades, especially in the first. Technical number work and an overemphasis on sight vocabulary in the first grade tend to make the work mechanical and spiritless. Too many idle hours are spent by the children in their seats. Only one or two types of handwork

are available, and these through much use have become a bore to the pupils who have long ago exhausted all interest in them. "This is so tiresome," whispered a little first-grade girl to one of the survey committee while she was matching words and pictures on her desk, as she undoubtedly had been doing every day since she entered school. To say that a better type of teaching is possible is not a theoretical statement, for the formal type of work just mentioned is not found in all the primary classes of the city. One of the lessons observed in a first-grade room was a notable example of a teacher's skill in using an imaginary trip to the zoo, based upon a previous experience, as the center of a series of correlated projects. There were many subjects of study touched in this lesson, but that of applied number was probably the outstanding value of the exercise.

Without criticizing in a negative way much of the teaching observed, one kind of work that can and should be done in the primary grades can best be made clear by outlining what one of the teachers was doing to vitalize the work of her grade.

Counting money and making change.—The street car which carried the pupils to the zoo was formed by lines of chairs, four in a row, arranged by the class. The pupil-conductor passed along the side of the car and collected the fares. Often he and the passengers were obliged to make change, and much adding and subtracting of numbers were involved in these transactions. After the trip was over the conductor, with the help of some of the passengers, made a report on the cost of the trip by adding up the pieces of money collected by the conductor, as the sum total, and then adding by fives to find the number of passengers.

Points of interest on the way.—One of the duties of the conductor was to call attention to the historical landmarks within view as they came to Washington. Lee's home at Arlington, the Washington Monument, and the Lincoln Memorial were mentioned, but evidently no very definite observations had been made of these memorials on previous trips. A pertinent suggestion was made here by the teacher that the pupils try to locate them on their next trip to Washington.

Highway safety was another lesson woven into this interesting project. When the car stopped at the entrance to the zoo a wide thoroughfare had to be crossed. The teacher had secured a toy street-traffic sign from the five-and-ten-cent store, which was placed in the middle of the street and manipulated by one of the pupils acting as traffic officer. While the teacher and some of the larger children personated automobiles by whizzing up and down the street, the pupils worked out a safe transit for themselves by carefully obeying the traffic officer's signals.

Buying fruit and checking lunches.—Arrived at the zoo the children bought their fruit at the fruit stand and checked their lunches,

those they had brought to school in the morning, at the lunch counter. Paying for the fruit and checking lunches at 3 cents each required further exercise in the process of making change. The checks which they received for their lunch had been numbered by the children and were carried in their purses until lunch time.

Animal study.—The children with the teacher made a tour of the zoo and inspected the animals. These were cut-out pictures representing most of the animals at the Zoo in Washington and were pinned along the walls of the schoolroom. Discussions of the form and color of these animals, their habits and habitats were the principal points discussed.

Health lessons on food and recreation.—While the children ate their lunches, still at the zoo, they talked about foods and the kinds they liked best, which led to adroit suggestions from the teacher regarding what were suitable foods for a lunch at school, on an excursion, or for a luncheon at home.

Games.—After the lunch was eaten the children played a vigorous game of ball, and then were given a choice of rides on the various recreational amusements offered at the zoo. They chose a boat ride. The chairs were arranged and with imaginary oars they rowed back and forth across the lake until it was time to go home.

A detailed criticism of this project is not possible in this report, but it points the way to the possibilities of freer work for little children in primary grades in Alexandria. The *use* of numbers, as before stated, is one of its greatest values. The motives for handwork stand out significantly throughout the exercise, and the correlation of art with nature study is one of its greatest assets. The opportunity for giving children the training they especially need by placing them in responsible positions, as conductor on the street car or in charge of the fruit stand and the checking counter, is made use of by the teacher throughout the entire lesson. Responsibility and resourcefulness are developed and initiative encouraged. As material for reading and language lessons, the exercise has many possibilities. It should be used from day to day as a basis for all the subjects of study in the daily program.

SUGGESTIONS FOR FIRST GRADE.

1. A shorter list of words to memorize by sight during the first year.
2. An all-round study of this vocabulary—
   - (*a*) To recognize the words by sight.
   - (*b*) To write the phonetic words learned in families in large free script at blackboard and on paper.
   - (*c*) To spell these phonetic words by sound and by letter.

3. Some changes in methods of teaching reading.
   (*a*) Emphasizing development lessons on the blackboard as a method of teaching reading.
   (*b*) Less use of the book in these early reading lessons.
   (*c*) Typed reading lessons, mimeographed, as reproductions of the development lessons, for use as basic reading lessons.

The course of study in primary grades.[1]—Perhaps so elaborate a school exercise as the one just described should not be undertaken without consultation with supervisors and principals, but any teacher can make some attempt at this type of work. A new course of study for Alexandria is to be offered next year. There should be included in this course many suggestions for various units of study similar to the one reported here. These suggestions should be supplemented by detailed directions in regard to the method to be used in carrying out the lines of work which are recommended. Frequent teachers' meetings should be held, grade by grade, with principals and supervisors present, and plans for primary projects should be presented by individual teachers. Observation lessons should be given with groups of children by their teacher to illustrate some of the newer methods that are being used in various schools. Open discussions should follow these exercises, to give the teacher an opportunity to explain her method and its values. Samples of handwork prepared by the teacher may be shown and passed upon by the group, or advice for teaching some difficult lesson in a technical subject may be presented. A spirit of cooperation and reciprocity may be fostered by this plan, which is not now generally found among the teaching force. Only in this way can the radical changes much needed in the primary schools of Alexandria be made. The curriculum and the method of instruction will in this way become a vital part of the teacher's equipment when she has worked it out for herself and has explained its value to others.

Suggestions for handwork.—A few types of handwork are given here which may be correlated with lessons in civics, history, and nature study. A list of miscellaneous materials is also appended, which may be used as free activities without particular direction and supervision by the teacher.

1. Related to lessons on the home—"Making a house book." This piece of handwork is made by pasting pictures of furniture which have been cut out of magazines on large sheets of paper to represent the rooms in a house, dining room, bedroom, bathroom, sitting room, and kitchen. The children may select the room they wish to furnish, after which they should be encouraged to use their own

[1] See Bul., 1922, No. 15, Bu. of Educ.—"A Kindergarten-First-Grade Curriculum."

initiative in securing material, in arranging the furniture, and in cutting and pasting the pictures. After the pages are finished, they may be bound together in a book with the picture of a house on the cover.

2. Another subject for these booklets may be "Our town," with each page representing a collection of pictures showing the churches in our town, schools in our town, stores in our town, etc.

3. One showing foods may be divided into pages presenting pictures of fruits, cereals, meats, sweets, etc.

4. A booklet may represent the clothes which we wear, with pictures of clothing made of leather, of wool, and of linen, with pictures of sheep, the cotton plant, and the flax plant on the cover.

5. The next step logically following the flat work is the making of furniture in three dimensions and the furnishing of little boxes to represent rooms in a house. Each child may be responsible for a room and may design wall paper, weave a rug for the floor, and frame tiny pictures to hang on the wall. The box model may be used for the furniture, and includes paper folding, cutting, and pasting, and the coloring of the various pieces of furniture to represent wood.

6. Dressing paper dolls out of crêpe paper representing the family that lives in the house, father, mother, brother, and sister and baby, may follow the furnishing of the rooms of the house.

7. Of course the educative value of these activities lies primarily in the talks and discussions which accompany their making. Writing the names of the pictures and giving descriptions of them will prove of language value. The skill which the children acquire, the training in judgment of form and proportion, and the cultivation of habits of accurate observation, are all part of the benefits derived from this type of handwork.

8. *Sand table building.*—The sand tables which have been provided for a few of the first-grade rooms were not in use during the survey, with one exception. This is unfortunate, for there is no way more valuable by which the children may tell a story or represent in a tangible form their lessons on the home, the farm, and the simple history stories of our country. The town of Plymouth, George Washington and his hatchet, Abraham Lincoln and his first book, Hiawatha and his wigwam, the Eskimos and other types of Indian life are all subjects which may be built on the sand table. This work fosters the community spirit, for each child has a part in the building. It includes the use of many kinds of materials, clay, paper, twigs from trees, planting of seeds and their growth, and several types of construction work with tools and wood. It makes the child think out a situation clearly when he tries to build

on his sand table. He studies the relation of one object to another in size and form and proportion. The number value of sand table building is its greatest asset, for the child must measure with his ruler and reduce actual measurements to the limitations of his sand table. He must add, subtract, multiply, and divide in order to get the correct proportion.

Building projects should be worked out on these sand tables, now standing idle during the entire school year. Something of absorbing interest to the children, a center of study around which these eager little workers may express some of the new ideas which are being awakened by their contact with their school life. All day long they are dealing with symbols, the letters in their reading, and the figures in their number work. Little opportunity for real thought is given them or opportunity to express that thought. Why not use the sand table as a medium for building a scene in a history story or a simple lesson in geography?

9. *The camera club and blue prints.*—If a pupil or a teacher has a camera, a camera club may be organized. Pictures may be taken of points of interest which it is desirable to include in the booklets described above.

After the negative has been developed it can be used by the school for printing blue prints. Each child can in this way secure a copy of the picture. The camera-club idea leads to field lessons and to an outdoor study of nature which is most desirable. Trees may be photographed and studied from season to season. Landscapes of winter, spring, and autumn may be preserved in this way; and bridges, highways, lakes, and rivers be reproduced by the camera and the prints be brought into the class for a detailed study.

Blue prints may be used for printing an object without recourse to the camera by laying a flower or leaf over the sensitive paper and exposing it to the light in the usual way.

10. Nature study lessons, where specimens are collected, should be followed by the mounting of specimens on sheets of paper and the binding of the leaves into books. A seed book may be made in this way by collecting sprays of plants and weeds bearing seeds and mounting them on paper by pasting narrow strips of paper over the stems. They should be classified as seeds that fall, seeds that sail, seeds that fly, and seeds that stick. Early language lessons may be developed from this field lesson, both in oral and written language. Another collection of wild flowers may be mounted in the same way and bound into a flower book.

11. *Miscellaneous materials for handwork.*—The primary teachers of Alexandria, almost without exception, recognize the desirability of offering the children an opportunity for constructive work, and deplore the lack of available funds with which to purchase quanti-

ties of material for this phase of school work. Although standard supplies for handwork are very desirable, and certain equipment, including scissors and paste, is absolutely necessary if handwork is to be included in the program, yet no great expense need be incurred, providing the teachers train themselves to recognize the possibilities of "cast-offs" from homes, stores, and school. Therefore a few brief statements regarding the use of miscellaneous materials which children can help collect may be suggestive.

Before listing such materials and the uses to which they may be put, it should be clearly understood that the nature of such resources determines definitely the method of their use. It must be largely experimental and individual, as it is difficult to get large enough numbers of the same article to permit much directed work being given. The values of experimental work are generally recognized by educators, and work with miscellaneous materials forms a very good introduction to this method of work, as shape and quality frequently suggest the thing which can be made.

Not only does the interest in collecting such materials form a unifying experience for a group of children, but the many uses discovered by members of the class stimulate children to do similar work at home—a thing which is seldom true if commercial supplies are used exclusively.

Some of the most easily obtainable objects, and the uses to which children have put them, are listed below. Each child will discover new combinations for himself.

MISCELLANEOUS MATERIALS.	USES TO WHICH SUCH MATERIALS HAVE BEEN PUT.
Boxes:	
Can or soap boxes	Rooms of doll houses, stores, etc.
Shoe boxes	Bodies of vehicles, street cars, foundation forms for furniture, work boxes for children's unfinished work, etc.
Spool boxes	Christmas boxes, open cars, carts, etc.
Oatmeal boxes	Bird houses, cradles, locomotives, etc.
Match boxes	Drawers in furniture, wheelbarrows, etc.
Papers:	
Newspapers	Trade and Indian costumes, kites, patterns for aprons and doll clothes. Cutting words and pictures to be used in equipping, advertising stores, etc.
Samples and left-over pieces of wall paper.	Papering box houses, making rugs, shades, and awnings, pin wheels, baskets, and boxes for Christmas and May Day, cutting designs and flowers for decoration of boxes, books, etc.
Wrapping paper	Pages of picture books, play hats, kites, free construction for houses, stores, etc.
Tissue papers	Curtains in doll houses, fabrics in stores, doilies for parties, trimming for hats for dolls or themselves, flowers, etc.

Papers—Continued.	
Tinsel paper and tin foil	Mirrors on furniture, water in sand box representations, decorations for Christmas trees, valentines, etc.
Black paper from films	Silhouette cutting, etc.
Pad backs, partitions in candy boxes, etc.[2]	Book covers, picture mounts, shelves, free construction work, etc.
Odds and ends of cloth	Doll clothes, costumes, dust cloths for schoolroom, weaving rugs and hammocks if torn into strips and sewed, bedding for box beds, marble bags, hand bags, doilies, etc.
Odds and ends of wood, chalk boxes, cigar boxes, etc.[2]	Bird houses, signboards, furniture, sleds, flower boxes, etc.
Pictures collected from magazines	Mounting in picture books, or on mounts to be kept as illustrative material, or sliced as puzzle pictures, etc.
Spools	Legs on furniture, smokestacks, wheels on vehicles, etc.
Milk-bottle tops	Wheels, table tops, etc.
Button molds	Tops, wheels, etc.
Collar buttons	Fastening wheels on vehicles, etc.
Meat skewers	Axles on vehicles, handles for pin wheels or fans, boat masts, etc.
Film rolls	Wheels, standards, etc.
Ribbon bolts	Clocks, etc.
Cartons	Decorating for vases, flower pots, doll hat boxes, etc.
Nature materials—seeds, grain straws, pumpkins, leaves, etc	Stringing necklaces for costumes, blue printing, making jack-o'lanterns, pressing, etc.

No attempt has been made to make the foregoing list exhaustive, and its intelligent extension and elaboration lies in the hands of the individual teacher. The ideal way in which to use the activities suggested above is as integral parts of larger units rather than isolated bits of handwork, unrelated to anything in the child's program. For example, when transportation is a topic of interest, the wagons, airplanes, automobiles, etc., would normally appear in the handwork period, thus reenforcing the work of other periods of the day's program.

As has been stated, this type of work must be largely experimental and must be done by individuals or in very small groups. The teacher, however, has an important rôle to play. Frequent opportunities should be provided for the children to examine all the work done, judge it critically yet kindly, and offer suggestions regarding future work. Such conversation periods should stimulate the children to do real thinking, to talk freely, and also to seek additional information from reading, investigation, or inquiry; only in this way can each child profit by the contributions of his classmates.

[2] Odds and ends can often be purchased from printing offices for a trifling sum.

[3] If manual training shops do not loan tools for woodwork, it becomes necessary to buy several hammers, some nails, and one saw at least. A large number of tools are unnecessary, as the size of the groups can easily be limited.

INTERMEDIATE AND GRAMMAR SCHOOL GRADES.

Judging from the results of the achievement tests given to the pupils in grades 4 to 7, inclusive, the teaching of spelling, arithmetic, and reading is as well done as in the average city school of the country. Observation of the teaching in a number of rooms leads to the same conclusion. The teaching of such subjects as geography and history, as in many other school systems of the country, is too formal.

The supervisors could well give more attention to the teaching of history, geography, and other content subjects by assisting the teachers in planning the lessons, and by directing the attention of the teachers to supplementary reading matter for the geography and history lessons. The teachers also need assistance in working out various projects.

The course of study, which has been revised recently, sets forth what should be accomplished in each of the elementary school grades. If this course is followed out, and if it is supplemented with more details, which the supervisors and teachers should work out together, much better work may be expected both from the teachers and pupils.

The weakness of the Alexandria schools lies in the fact that the course of study has been a very narrow one. Music has been introduced only recently. There is no instruction in drawing, manual training, home economics, or nature study. The course of study will be made modern only when the children are given instruction in these fundamental subjects. Since these subjects are neglected in the Alexandria schools, a further discussion follows.

MUSIC.

The music instruction in the Alexandria schools is fairly good, in view of its having been introduced the current year only, but it can be greatly improved by a better organization of the work and an improvement of the conditions under which it is given. The instruction is given by a special teacher for one period a week to all the children in the elementary schools and the first year of high school, except those in the Parker Gray School. The work consists in part of instruction in the elements of music, and in part in the teaching of rote songs adapted to the children's age and comprehension. The work has been handicapped by the lack of books, but has been successful in awakening the children's interest in music and developing a pleasure in singing the rote songs, in particular. This is due in part to the good judgment that has been exercised in the selection of the songs presented.

While this beginning has been as good as could be hoped for, the work could be materially strengthened. The children have had 15

minutes of music instruction once a week, but the work in music is not given a place on the daily schedule, and apparently the regular teachers are not held responsible for following up the work done by the special music teacher. The teachers who are interested and have the requisite musical training find time to do this, but others do little or nothing. In consequence, some of the children get the full benefit of the music teacher's effort, while others do not.

This weakness in the conditions can be remedied without added expenditure by doing the following things:

1. Giving music a place on the daily program, and making the teachers responsible for using this period for some phase of music instruction.

2. Making the special teacher of music a music supervisor, giving her the authority to instruct the teachers in the work to be done in the several grades, and to supervise their doing it. This would involve the holding of meetings with the teachers and the planning of the work in the different grades with them and for them. If there are teachers who lack the ability or the training necessary to carry on the work, an exchange of work could doubtless be effected with some other teacher who can do so.

Such an organization of the work is needed to give all the children the full benefit of the special teacher's effort. If music is to serve the purpose that it should in a school system, the conditions should be such as to make adequate instruction possible. These should be especially favorable when a new subject is being introduced. This is especially true in regard to music. Because the children have not had musical training, the voices of many are harsh and unmusical, and much voice training is needed to make their singing a true expression of musical thought and feeling. Because the technical phase of music instruction is new to all, this work also needs much more time than is now allowed for it.

With the work organized on this plan, the music supervisor could devote a part of her time to plans for making music serve the larger purposes of the school. This might include the organizing of a grade or school chorus or orchestra in each building for the purpose of developing individual talent and to provide the musical features for school gatherings, and the planning of school entertainments to motivate the daily instruction. All this would aid in developing school spirit, and in the formation of a taste for the right kind of music.

These suggestions are in line with those made in the State Course of Study for Elementary Schools.

DRAWING.

The inquiry into the work of drawing showed that there is no organized work done in that subject. A number of teachers in the different schools give an occasional lesson, perhaps once or twice a week; some have the pupils buy drawing books and work from these; and some allow the children to draw as best they can during their unoccupied periods. Whether any drawing work is done and what it is if done depends wholly upon the choice or training of the individual teacher.

Under these circumstances, however, it is evident that the children collectively are getting no instruction in drawing that is of real value. The principals and teachers consulted agreed that drawing has value and should be taught; that it should be given a place on the daily schedule for two or three days a week at least; and that some plan should be drawn up for all the teachers to follow, so that the instruction may be progressive. When questioned as to who should draw up this plan and decide how it should be carried out, some suggested the grade supervisor, and others those of the teachers who have instruction in drawing. Two of the principals believe that fairly good instruction could be secured in this way. Since the teachers who are not qualified to teach the subject could exchange with the teachers who are capable of doing so, all the children would be given the instruction in question.

That such an organization of effort would be a great advance under present conditions is evident, but if the right kind of instruction is to be given under the present plan of school organization, something far better even than this is needed, and that is an expert supervisor to inaugurate and direct the work. If, however, the platoon plan is adopted, the instruction would be given by special teachers under the direction of the general supervisor.

Present-day education is based upon the conception that children should be taught, through their activities, play, song, dramatization, and hand work of various kinds. To teach music, dramatic expression, or art successfully from this standpoint the teacher must not only have a knowledge of drawing, but must have a knowledge of the children's progressive development and of what they can and should do at each stage.

The work should be so organized as to serve as the foundation of the work in manual arts which the boys will have, and for that in clothing which the girls will have in their home economics courses. It would mean also the applying of children's knowledge of decoration to the beautifying of the school rooms, buildings, and grounds. The fact that Alexandria has had no art instruction is advertised in the ugliness of many of these; and the children need such instruc-

tion to stimulate them to work together to make the individual classrooms, the buildings, and the grounds more attractive than they now are. What better means could be found for the development of a spirit of pride in their schools than such an effort?

NATURE STUDY.

Nature study is one of the subjects that has come into the curriculum somewhat recently as a result of the new educational ideals and standards. As in the case of art, it has not yet been made a part of the Alexandria curriculum, although the State Course of Study for the Elementary Schools places considerable emphasis upon it and gives some excellent suggestions concerning the work that may be done in that line.

Although nature study does not appear on the schedule, some teachers devote a little time to it because of their own personal interest in the subject. The work done is mostly in the line of bird study, along the lines worked out by the Audubon societies. A few teachers have also made some study of wild flowers and trees. Because only a few do even this, and many do nothing at all, it is evident that the children collectively are not gaining the first-hand knowledge of the fundamental facts of nature or forming the habit of observation which this subject is intended to give. The teachers and principals seem to appreciate the value of nature study, and the desirability of giving it a place on the program, but nothing has been done in the way of organizing it so as to make it effective. They recognize that the present is the psychological moment to make improvements, now that the immediate housing needs have been met, and they seem to wish for suggestions.

In organizing the work in nature study the assistance of an expert would be a great advantage, but much could be done by the grade supervisor in cooperation with the principals of the several schools. The following points would have to be decided upon before the work could be definitely organized:

1. The place of nature study on the daily schedule and the number of periods per week to be devoted to it. At the outset it is suggested that it be given two periods, and that these alternate with drawing for the other three.

2. The phase of nature study to be taken up—birds, flowers, trees, etc. It is suggested that during the fall the emphasis be placed upon the fall fruits, vegetables, and flowers, and the autumn foliage. As the season advances, the gathering of seeds, the planting of bulbs for winter blossoming, the care of birds and animals during the cold weather, and winter phenomena may take the place of the topics mentioned. In the spring the reawakening of nature would be taken up.

3. The correlation to be made between nature-study topics and other subjects, such as language and art. It is suggested that the fruits and vegetables serve as models for painting, drawing, and modeling, and that the flowers and foliage be used mainly for room decorations in various ways. Nature poems may be used for the language work.

4. The method to be followed in acquainting children with the facts of importance. The successful organization and carrying out of such a plan would call for considerable study on the part of teachers, and many conferences between the teachers and principals in the different buildings. At such conferences the presenting and discussing of tentative plans for this or that phase of work would be necessary.

With proper leadership such work would give children a first-hand knowledge of many things, and would not fail to develop their appreciation of beauty in their homes and environment. To develop such appreciation is one of the purposes of the art work, and by taking up the work as indicated the two subjects would reinforce each other. The work of the boy and girl scouts has done much in this direction, and the pupils who belong to these organizations could take the lead in many of the lines suggested.

The classrooms of the Alexandria schools need the beautifying effect of growing plants to relieve their bareness; and the school grounds need the brightening that flowers and gardens can give them. In working together to create beauty in the buildings and on the grounds the children not only acquire important knowledge and gain the esthetic appreciation that is essential to complete living, but by doing it together in groups, small and large, they will develop a school spirit that will mean an improvement of the quality of their work from the first grade up. It is for these reasons and many others that nature study should constitute a part of the modern school curriculum.

In order to be able to carry on work of this kind the teachers will need reference books, and in view of Alexandria's meager library facilities, these should be supplied by the school. In addition to the Virginia State Course of Study for Elementary Schools, which contains some excellent suggestions, the following are recommended:

Baltimore Course of Study, pages 217–260. Lida Lee Tall and Isabel Davidson, Warwick & York, Baltimore, Md.

Nature Study and Life. C. F. Hodge, Ginn & Co.

The Pet Book. Anna Botsford Comstock, Comstock Publishing Co.

Nature Study Lessons. D. W. Hamilton, Renouf Publishing Co., Montreal.

A Nature Study Guide. W. S. Furneaux, Longmans, Green & Co.

The Kindergarten-First Grade Curriculum. Bureau of Education, Department of the Interior, Washington, D. C.

HOME ECONOMICS.

The elementary schools have no home economics. The high school introduced it this year as an elective and as a part of a general educational program, giving the first-year girls a choice between physical geography and clothing, and the third-year girls a choice between foods and physics.

Two double periods of 80 minutes, and three single periods of 40 minutes each are devoted per week to each subject—namely, sewing and cooking. The single periods in foods are devoted primarily to the preparation of a hot dish which is sold to high-school students for lunch, and to "cleaning up", after the luncheon. The single periods in clothing are practically devoted to sewing.

The foods laboratory is equipped with the bare necessities, and is connected with a small room, to be used for a serving room, which is now under construction.

The clothing laboratory is wholly inadequate for even elementary work, to say nothing of high-school work accredited toward graduation, and offered in place of physical geography.

RECOMMENDATIONS FOR IMPROVEMENT.

A. For elementary schools.—1. Equipment for teaching home economics to the pupils of the Jefferson School. It has been proposed to fit up part of the basement for this purpose, but it is highly undesirable to use basement space near the toilets for food laboratories. In this enlightened age, when so much emphasis is placed on hygienic living, it seems paradoxical to equip housekeeping rooms in the basement. Besides, the rooms are needed during inclement weather for play. It would be much more to the point to rent a house in the neighborhood, or build one on the school grounds, and equip it with foods and clothing laboratories, at the same time preserving the housekeeping facilities in order to give the girls practice in housekeeping lessons, or, in other words, practice in running a home efficiently. This house might serve as a much-needed teacherage. In this capacity it would serve several purposes for the school, without financial assistance from the school board: First, a home for some of the teachers, and, second, a civic center for the community, and most important of all, a real place for the girls of Alexandria, elementary and high school alike, to be taught home economics as it is needed to-day in the home. Such an arrangement would also suit admirably the Parker-Gray School. What could be more ideal than to give all the girls opportunities at real household activities?

2. Three home economics teachers should be employed for the elementary schools, one colored, for the Parker-Gray School, a

graduate from one of the recognized home economics courses, such as is found in the Hampton Normal School or at Tuskegee; two white teachers, graduates of four-year recognized home economics courses. One of the white teachers should give part time or more to the nutrition program of the entire school, and have supervision of the school lunch. At present there is no provision made for a hot dish for the many children who bring their lunches, except the small amount of hot chocolate or soup which is sold from the high-school foods laboratory. This is a serious matter, and ought to be given the most earnest consideration by the school authorities. A cold waffle sandwich spread with fat bacon is not conducive to good physical or mental development. "If students appear stupid, let us first examine the food and air they consume, rather than their mental capacity. The other white teacher should give her entire time to the teaching of foods and clothing in the fifth, sixth, and seventh years. Experience in many school systems indicates that two double periods for one semester are more satisfactory than one double period throughout the year; also that food work in the fifth grade is better adapted than clothing to the development of the child.

B. High school.—1. A teacher of home economics is required whose academic preparation is equivalent to that of any other teacher in the high school, which means at least four years of preparation after high school graduation. If home economics credit ranks, as it should, with the credit in chemistry or physics, then as much should be expected from the home economics students. The objectives and the content of the course should require effort equivalent to the other courses. At present the emphasis is on the doing side and too little on the thinking side. The work is spread too thinly over the whole field. We recommend a more thorough course with the fundamental principles of science, economics, and art applied. Mere following of recipes has very little educational value. The whys and wherefores should be emphasized with sufficient practical application to clinch the truth.

2. An adequate clothing laboratory.

3. A library. A very valuable reference library can be developed at a small cost by sending for the Government publications and for the extension bulletins published by our leading State universities and colleges. The Lippincott series is also indispensable to good teaching. The Journal of Home Economics, the American Food Journal, the Textile Journal are all indispensable to the progressive teacher. The Children's Nutrition Council of New York City also has much to offer. Much illustrative material, such as charts and exhibits, can be had for the asking.

LENGTH OF SCHOOL DAY.

One reason given for not including drawing, nature study, manual training, and home economics in the elementary school curriculum is that these subjects would take up so much time that the pupils would neglect the "three R's." These subjects can be introduced without encroaching upon the time devoted to reading, writing, and arithmetic simply by lengthening the school day an hour. There are very few cities in the country that have as short a school day as Alexandria. The morning session should be from about 9 o'clock to 12 and the afternoon session from 1 or 1.15 to 3.30 or 3.45; even then there would be a school day of only 5½ hours, including morning and afternoon recess periods of 10 or 15 minutes each.

HIGH SCHOOL.

In the high school the teaching ranges from very poor to very good. Several teachers visited need help, and if they can not be helped their services should be dispensed with. The morale in several rooms is such as should not be tolerated in any school system. One or two weak teachers soon demoralize a whole school. Hereafter whenever teachers have no more control of their classes than have several in the Alexandria High School they should be requested to resign before the close of the term.

The program of studies of the Alexandria High School needs a thorough revision.

Pupils in the first and second years should not be required to carry more than four subjects. At present they are required to carry five, or one more than is required in other high schools of the country. Only 16 units should be required for graduation. Of these about one-half should be elective, as suggested in the State High School Manual. The work in the Alexandria High School would be greatly improved if the State high-school program of studies were adopted, which requires 16 units, distributed as follows:

English	4
Mathematics	2
History (American history and civics)	1
Science	1
Electives	8
Total	16

No foreign language should be required. One year of general mathematics would be sufficient except for those students preparing for colleges that require two units of mathematics. At present the amount of mathematics required in the Alexandria high school is excessive, even for college entrance.

Among the electives offered should be 2 or 3 units of history, 1 of mathematics, 2 or 3 of science, 4 to 6 of foreign languages, 2 to 4 of home economics, 2 to 4 of industrial work for boys, 2 to 6 of commercial subjects. Some elementary commercial work should be offered the first year of high school, and a four-year commercial curriculum should be offered.

A study of the administration of the elective system in the Alexandria high school shows that some improvements should be made. There are too many small classes in some of the electives. For example, there is only one student in third-year Latin, and three in fourth-year Latin. Whenever so few students ask for a subject, a class should not be formed. There are only seven students in solid geometry and trigonometry. Since neither of these subjects is required for college entrance, there can be no excuse for forming a class in these subjects for only seven students.

The program of studies should be so organized that five or six years of high-school work may be offered to the boys and girls of Alexandria. As recommended in another section of this report, grade 7, now housed in the Jefferson Building, should be transferred to the high school and a five or six year program worked out. The first two or three years, grades 7 and 8, or grades 7, 8, and 9, might be designated as the junior high school and the remaining grades as the senior high school. This plan of organization is being rapidly introduced into the city school systems of the country. The junior high school grades include such subjects as general science, general mathematics, general social science, a foreign language, manual training, home economics, music, drawing, and physical education. This plan of organization makes transition from the elementary school to the high school less abrupt. At present too many of the first-year high-school pupils in Alexandria are failing. One reason assigned is that the transition from the grades to the high school is so abrupt that many children can not adapt themselves to the work of the high school, which is entirely new to the pupils entering from the elementary grades.

TEACHING STAFF.

EDUCATION AND EXPERIENCE.

The generally recognized minimum educational and professional standard for elementary teachers is four years of high-school and in addition two years of normal-school work or its equivalent. Thirty-two per cent of the white elementary teachers of Alexandria measure up to this standard. The average amount of schooling for these teachers is 1.2 years beyond high school. The average for the

cities of the country is about 2.2 years. The high-school teachers average 3.7 years schooling beyond high school. The average for the cities of the country is 4.4 years.

The policy recently adopted by the Alexandria school board of employing no new elementary teachers who are not normal school graduates or the equivalent is to be commended. All high-school teachers should be college graduates, or the equivalent.

The educational qualifications of the colored teachers are low, averaging only the fraction of a year's schooling beyond high school. Several have not attended a high school.

The white elementary teachers are comparatively inexperienced. The average experience in the schools of Alexandria is 2.8 years, and including experience elsewhere 4.1 years. The high-school teachers average only 1.8 years of teaching service in Alexandria and 3.9 years in all. The colored teachers have had considerably more experience in Alexandria than the white teachers, averaging 10 years in Alexandria and 20 years in all.

Such impermanency in the teaching corps as these facts disclose regarding the white elementary and high-school teachers must seriously handicap the superintendent and his supervisors in working out a unified, consistent, and well coordinated educational policy. Just why so many new teachers are required each year is difficult to determine. Some of the teachers not returning are failures and not reappointed, some quit teaching, and others obtain positions in other school systems paying more salary.

SALARIES.

The median salary paid the white elementary teachers is $1,050, and that paid all teachers, including the colored teachers, $1,000. The median salary for other cities with from 10,000 to 30,000 population is $1,275, or $275 more than the median for Alexandria. The maximum paid elementary teachers in Alexandria is $1,200, or $75 less than the median for other cities. Data recently compiled by the National Education Association show that the salaries paid in the cities of three States bordering Virginia—North Carolina, West Virginia, and Maryland—are higher than those paid in Alexandria, as may be seen from the following table:

Salaries of teachers.

	Minimum.	Median.	Maximum.
North Carolina	$600	$1,185	$1,400
West Virginia	900	1,291	1,400
Maryland	700	1,005	1,300
Alexandria	580	1,000	1,200

The median salary paid the high-school teachers of Alexandria is $1,316, the minimum $1,200, and the maximum $1,600. The median salary for other cities of the same size is $1,670, the minimum $1,288, and the maximum $2,040.

The Alexandria schedule should be revised so that it would be possible for the better teachers to obtain a higher maximum. A principle to follow in making a salary schedule is to pay a minimum sufficiently large to secure teachers of standard academic and professional preparation, and then to provide for increases up to a maximum that will retain the best teachers and assist in maintaining the morale of the teaching corps. If teachers reach the maximum, as they do in Alexandria, after only a few years' experience, the tendency is for them to become dissatisfied and to cease to improve. As might be expected, there is dissatisfaction among some of the better and more experienced teachers in Alexandria because they have been on the maximum salary for several years without any opportunity for possible increases.

It should be stated, however, that just before the completion of the work of the survey commission, the Alexandria board of education increased teachers' salaries about 10 per cent for the year 1923–24.

EDUCATIONAL ACHIEVEMENTS AND INTELLIGENCE TESTS.

SCOPE OF EXAMINATION AND TESTS USED.

The pupils of grades 2 and 3 were given two achievement tests, the Ayres Spelling Test and the Trabue Completion Test. No intelligence tests were given in the first three grades.

All the pupils from the fourth grade through high-school were given three or more standardized tests. One test was given to every pupil examined, viz, the Thorndike-McCall Silent Reading Test. In all the fourth grades two other tests were used, the Woody-McCall Mixed Fundamentals in Arithmetic and 50 words from the Ayres' Spelling Test. In grades 5 to 7, inclusive, the three achievement tests used in the fourth grades were supplemented by the National Intelligence Test. The primary purpose for using the intelligence test was to study the classification of the children in these grades and to check the efficiency of the school as measured by the achievement tests. In the high-school three achievement tests were used, viz, the Hotz First Year Algebra Test, the Hinmon Latin Test, the Thorndike-McCall Silent Reading Test. In these grades also the Terman Group Test of Mental Ability was used.

RESULTS.

PRIMARY GRADES.

The following table shows the grade and age scores in spelling for the children of Alexandria compared with the standard scores by grade and age:

Grade and age scores in Ayres' Spelling Test for Alexandria pupils compared with standard scores in grade and age for Grades II and III.

Grade.	Standard score by grades.	Score made by Alexandria pupils.	
		By grades.	Compared with grade score.
II	79	79.8	+0.8
III	92	92.2	+0.2

The second grade made a good score of 0.8 per cent above and the third grade 0.2 per cent above standard. The fact should be remembered that the children of Alexandria are considerably over age for their respective grades and should have made a higher score.

The following table shows the grade scores in the Trabue Completion Test compared with the standard scores:

Alexandria grade score in Trabue Completion Test compared with standard scores in Grades II and III.

Grades.	Standard grade score.	Alexandria grade score.	Difference in points.
II	5.8	5.3	−0.5
III	8.6	7.1	−1.5

The following table shows the scores by buildings:

Alexandria scores in the Trabue Completion Test compared by grades and buildings for Grades II and III.

Buildings.	Room.	Grade II (standard score, 5.8).		Grade III (standard score, 8.6).	
		Alexandria score.	Points above or below standard.	Alexandria score.	Points above or below standard.
Lee	1	6	+0.2	8	−0.6
	2	6	+.2	6	−2.6
West	1	6	+.2	8	−.6
	2	.....	.....	6.5	−2.1
Washington	1	6	+.2	8	−.6
	2	4	−1.5	6	−2.1
Parker-Gray	1	4	−1.5	7	−1.6
	2	.....	.....	.....	.....

The second grade in the Lee School, each room, makes a plus score of 0.2 of a point. The West School second grade and one second in the Washington make the same plus score. All other grades, both second and third, make a minus score. One second grade in Washington and one in Parker-Gray drop one and one-half points below the standard, while one third grade in each building hardly makes the score required for second grade.

The following table shows the range of scores in these classes:

Alexandria scores in the Trabue Completion Test, showing range of scores and range of grades for each building.

Building.	Room.	Second grade (standard score, 5.8).		Third grade (standard score, 8.6).	
		Range of scores for each class.	Range of grades.	Range of scores for each class.	Range of grades.
Lee	1	0 to 8	I to III	4 to 13	II to VII
	2	0 to 10	I to IV	2 to 12	I to VI.
West	1	0 to 9	I to III	0 to 12	I to VI.
	2	.....	.....	0 to 14	I to VIII.
Washington	1	0 to 8	I to III	4 to 11	II to V.
	2	0 to 12	I to VI	2 to 13	I to VII.
Parker-Gray	1	0 to 13	I to VII	4 to 12	II to VI.

A careful study of these scores only emphasizes the general conclusions reached by the survey committee, namely, that the schools in Alexandria must be reorganized before acceptable work can be done, and that those pupils who are working under a handicap must be provided for in some better way than the present one.

As recommended elsewhere in this report, the children in the primary grades should be classified into groups of like mental ability. This can be done easily in the Washington, Lee, and Parker-Gray Schools from the fact that there are several rooms of each grade in each building. It is recommended that more tests be given these children in the primary grades as soon as school opens in September, 1923, and that they be classified partly on the basis of these tests.

GRADES FOUR TO SEVEN (WHITE).

The combined scores in the standardized tests in reading, arithmetic, and spelling, after weighing the spelling score five-tenths (5/10), show the following results:

FOURTH GRADE.

The median score for the schools in Alexandria is 69, and the range in scores is from 36 to 100. The norm, or standard median, for the fourth grade is 68. If we consider only the central tendency,

or median, the fourth grades in Alexandria are up to average and are doing all that we should expect of them. But when we consider the wide ranges of achievement as represented in the composite scores, the results are not so pleasing. These results show that there are some children in the fourth grade whose actual achievement is about what you would expect from those in the second grade, and that there are also some children in the fourth grade whose achievement is above the average achievement of those in the sixth grade. These conditions were general in the three white schools and were exceedingly frequent in the colored school.

FIFTH GRADE.

The combined scores on the three educational tests in the fifth grade for the white schools show a median score of 86 and a range of scores from 49 to 126. The standardization, or norm, for this grade is 82. Although the average achievement of this grade is four points above norm, the classification in this grade is even worse than in the fourth, for here the results show a scattering of abilities all the way from the second through the eighth grade. When we consider trying to teach the child with second-grade ability along with the child with eighth-grade ability, we can appreciate the difficulties involved.

SIXTH GRADE.

The sixth grade shows a median composite score on the achievement test of 97, and a range in scores from 61 to 128. The standard median for this grade is 96. The grades represented in the sixth grade, so far as educational achievement is concerned, range from the third to the eighth.

SEVENTH GRADE.

The median of the composite scores on the educational test in the seventh grade is 106. The range of scores in this grade was from 73 to 128. The standard median is 107. This is the only grade in the white elementary schools that does not surpass the standard for that grade. The grades represented in the grade class are from the fourth to the eighth, inclusive.

ELEMENTARY COLORED SCHOOLS.

Fourth grade.—The fourth grade in the colored school shows a retardation in achievement of approximately 0.8 of one grade. In other words it is only a few points above the standard median for the third grade.

Fifth grade.—The fifth grade shows a deficiency of achievement of 1.2 grades. Or, to put it another way, their median score is below the median score of the fourth grade.

Sixth grade.—The sixth grade shows a retardation of one and nine-tenths grades (1.9), or approximately two full grades deficiency in accomplishment.

Seventh grade.—The seventh grade is even worse than the sixth, showing an actual retardation of 2½ grades. This shows an average retardation for these four elementary grades of the colored school of 1.6 grades.

The scores on the intelligence test for the colored children show a corresponding deficiency, and when we compare the average intelligence of the colored seventh grade with the white fifth grade we find an explanation of the poor achievement scores made by the pupils in the colored schools.

WHITE HIGH SCHOOL.

In the high school we find the median scores in reading, algebra, and Latin up to the standard for those grades, while we find a very wide distribution of scores in the same grades. We find that some effort had been made in arranging the various sections of each grade to group the children according to ability. In this way the variability in various sections was not so wide as it otherwise would have been.

RECOMMENDATIONS.

The above results make necessary two very important recommendations:

First, reclassification.—Each child should be placed in a class with others of approximately the same educational achievement and mental ability. This reclassification should be made according to a combined judgment based on his actual achievement as shown by his scores on the standardized educational test, his ability to learn as indicated by his standing on the intelligence test, and by his attitude toward school work as indicated by the combined judgment of his teachers. These three factors would furnish a very satisfactory basis for reclassification.

Second, special class.—It is recommended that at least one special class be provided for those students of very marked subnormal ability. No student should be assigned to this class who does not show an intelligence quotient of below 70 on the Stanford Revision of the Binet Intelligence Test. This test should only be given by a trained examiner.

SUPERVISION.

The schools of Alexandria are provided with an adequate number of general supervisors, there being the superintendent of schools, who should devote at least half his time to the supervision of instruction, a general supervisor for the elementary grades, and the principals of three buildings, Jefferson, Washington, and Lee, who do no teaching.

The plan of supervision can be improved in several respects. The general supervisors should work through the principals and not around them. These supervisors should go into the classrooms and by means of tests and observation discover the results obtained and the methods used. Whenever it is found that a certain teacher needs help, the principal and the supervisor should confer and the principal set the task of improving the work of that teacher.

The general supervisor should make considerable use of the standard achievement tests as aids in classifying pupils and in discovering the weak and the strong points in the instruction. In brief, the general supervisor might be made the director of educational tests and measurements.

The number of special supervisors is not as large as in some other cities the size of Alexandria, there being but two, one of music and one of physical education. The term supervisor is, however, scarcely applicable, since these two supervisors are merely special teachers. They should be made supervisors in the real sense of the term. The actual instruction in music should be given by the regular classroom teacher, and by the supervisor only as she gives lessons to demonstrate methods to the teacher.

If the schools continue under the same plan of organization as at present, a supervisor of drawing should be added, but if the schools are organized on the platoon plan, as explained in another section of this report, the work in drawing can be done by special teachers under the direction of the general supervisor. The same is true of the work in music and physical education. However, there should be some one to have general supervision of the whole health field, including physical education.

Under this heading a word may be said regarding the relation of the superintendent of schools and the board of education. It appears that the board of education rightly considers the superintendent as the executive officer of the board. The State school law gives the superintendent the rightful authority to nominate teachers. All matters relating to the administration of the schools should be referred to the superintendent for report and recommendation. He should make up the budget estimates for the year, make recommendations regarding repairs of buildings and everything requiring the

expenditure of funds. The board should then, as a whole, consider these recommendations, either approving or disapproving. Such matters as the organization of the schools, courses of study, promotion of pupils, and transfer of teachers should be left entirely in the hands of the superintendent.

SCHOOL HEALTH SERVICE.

The term "school health service" is used to embrace all factors which have a definite bearing, either directly or indirectly, on the health and well-being of school children. These factors include environmental conditions (buildings, school grounds, lighting, heating, ventilation, sanitation, cleanliness, crowding of pupils in rooms, and the like); remedial and corrective work with individual children and school nursing work; disease and accident prevention; definite health promotion (physical education, nutrition work for special groups and for all children); and health education.

THE SCHOOL PLANT.

Inadequacy of accommodations from the viewpoint of health.—The crowding of classrooms and of school buildings makes inadequate the ventilation of rooms, the toilet facilities of the building, the number of desks and seats that can be adjusted to fit the pupils. Crowded conditions foster the spread of colds and contagious diseases among school children.

Ventilation and heating.—Some of the rooms were too warm for the comfort of the person making the survey; but no thermometers were found by which to check up on the temperature. The weather outside was warm, but not a great deal of outside air could enter the schoolroom. It is impossible to say what the heating and ventilation problems are in cold weather, but there were reports that some rooms are not warm enough for the comfort of the teacher until 10 or 11 o'clock; that comfortable temperature is reached at midday; and that uncomfortably warm temperature is reached before the end of the school day. The opening of windows, even for the period of physical exercises, would seem to have been discouraged, as teachers opened windows somewhat reluctantly and apprehensively.

What is the best way to ventilate a schoolroom? Can we depend wholly on the windows? Must there also be an exhaust outlet for circulation? Is it necessary to have mechanical ventilation to force air through the room and other fans to draw it out?

The New York State commission on ventilation has recently issued its report, covering its work since 1913. The commission spent

two years in studying the various types of ventilating systems in school buildings. Window ventilation without gravity exhaust was found unsatisfactory. Window ventilation with gravity exhaust was found generally satisfactory. In fact the commission concludes that "window ventilation with ample direct radiation, window deflectors, and adequate gravity exhaust, seems the most generally promising method for the ventilation of the classroom."

Alexandria could well make greater use of window ventilation. One or more open-window rooms in each building might very well be provided. They have proved beneficial in other places; why not in Alexandria? Open pavilions, or porches, for study and for physical exercises would be easy to provide and would undoubtedly be of benefit to the children.

Lighting.—The lighting in some of the buildings could be very much improved if more attention were given to the adjustment of shades, and if the windows were kept cleaner. Principals should, when visiting classrooms, make note of the shade adjustment and if they are not properly adjusted call the teacher's attention to the fact.

SANITATION AND CLEANLINESS.

Floors.—The present practice is to put too much oil on the floors. The floors are apparently not properly cleaned between treatments. The intervals at which floors are oiled vary in different buildings.

Before a floor is used it should be sandpapered or planed to an even surface and treated with a boiling mixture of linseed oil and paraffin, in the proportion of 2 pounds of paraffin to each gallon of linseed oil. This mixture should be applied with a brush, about 1 gallon to every 500 square feet of surface to be covered. The linseed oil prevents the lumber from shrinking by closing the pores and the paraffin coats it with a wax and prevents the adherence of dust. Or to the new floor, after it is sandpapered, hot linseed oil may be applied sparingly, so that the floor will take up every bit of it, then shellac applied and a bit of oil or wax used for polishing.

About once every three months after a building is in use the oil-paraffin mixture mentioned above, or one having a similar effect, should be used to keep the floor in good condition and to keep down the dust. In oiling floors care should be taken lest too much oil be used, and the floors be made greasy and unsightly. There should be just enough to *slightly* cover the floor, and this ought to be spread evenly by the use of mops and sprays, or a brush. Oil should never be put on until the floor is thoroughly cleaned of all dirt patches, of wax, or excess oil, or any other substance clinging to the floor. The floors should be thoroughly scraped and cleaned and sandpapered with a sandpaper weight to even up certain places before additional oil is put on.

Sweeping ought to be done with a brush broom, and some preparation of sawdust with a bit of kerosene and possibly a small amount of paraffin mixed with it. A small amount of coarse salt added to the mixture is helpful. This mixture with the sawdust should not, however, produce a messy, oily sweeping compound. It should be just sufficiently moist with oil to relieve dust and it will leave very little oil on the floor.

Toilets and basements.—In no building do the toilets have sufficient light and ventilation. In the newer buildings they are kept comparatively clean. In the older buildings the condition of the basements and toilets is such as no parent would tolerate in his own home. At the Lee, Washington, and Parker Gray the toilets should be put into sanitary condition. Doors should be put on the girls' toilets at the Parker Gray. Toilet seats should be scrubbed frequently with soap and water. The flushing of the urinals should not cause water and urine to flow over the basement floor for the boys to walk in. Toilets should not be located in basements or narrow rooms that are dark and badly ventilated. Seats should be of the sort that are open in front. It is difficult to see the advantage, and there are disadvantages in having seat covers that will not stay up without holding. As stated above, the *number* of toilets and urinals is quite insufficient for the number of pupils in the buildings in all schools except the West End and High Schools.

Hand-washing facilities.—The facilities are inadequate in every building. There is an insufficient number of bowls, a lack of hot water, soap, and paper towels.

Toilet facilities.—The inadequacy of the toilet facilities applies to all schools, except the West End and high school, but particularly to the Lee, Washington, and Parker Gray. Several States have regulations calling for one closet for every 15 girls or every 25 boys, and one urinal for every 15 boys.

By this standard Alexandria compares as follows:

Toilet facilities.

Schools.	Enrollment.		Toilet requirements.			Number of toilets now in building.			Additional number of toilets needed on basis of present enrollment.		
	Boys.	Girls.	Boys' seats.	Urinals.	Girls' seats.	Boys' seats.	Urinals.	Girls' seats.	Boys' seats.	Urinals.	Girls' seats.
High School	160	240	7	11	16	10	14	16	0	0	0
Lee School	151	562	6	10	38	4	5	15	2	5	23
Jefferson School	345	324	14	23	22	7	16	15	7	7	7
Washington School	440	0	18	29	0	11	14	0	7	15	0
West End School	60	50	3	4	4	3	4	4	0	0	0
Parker Gray School	231	400	14	22	27	5	10	12	9	12	15

At present there are only 151 boys in the Lee school and no girls in the Washington school. If the schools are to be reorganized so that there will be about the same number of boys and girls in each of these schools, the following table shows what the toilet requirements should be:

Requirements on basis of a 50–50 division of boys and girls in the Lee and Washington schools.

Schools.	Enrollment.		Toilet requirements.			Number of toilets now in building.			Additional number of toilets needed on basis of present enrollment.		
	Boys.	Girls.	Boys' seats.	Urinals.	Girls' seats.	Boys' seats.	Urinals.	Girls' seats.	Boys' seats.	Urinals.	Girls' seats.
Lee School	281	281	12	19	19	4	5	15	8	14	4
Washington School	220	220	9	15	15	11	14	0	0	1	15

Lunch rooms.—Not even the high school has a room, other than classrooms, where boys and girls may sit down at tables and eat their lunches. Many pupils go home for lunch; but many remain at school during the lunch hour and eat cold lunches. Even in the high school, where a hot soup or drink and a salad are purchasable, the pupils eat their lunches as they walk about the corridors or school grounds with their food in their hands. No suitable place for eating is provided for them.

THE PUPILS.

The first impression of the appearance of the pupils as a whole is good; they appear well nourished. Further inspection shows that, while many are well nourished and in good condition, one soon picks out a child with slight spinal curvature, another with markedly stooped shoulders, several that are much too thin and whose color is not good. The weighing and measuring of the children showed that a small number are from 15 to 25 per cent below the commonly accepted standard of normal weight. Many nutrition workers consider 7 per cent, and nearly all consider 10 per cent, a sufficient deviation from the standard to warrant attention. Besides the children 10 per cent or more underweight, there are a large number who would benefit by putting on 4 or 5 pounds, and a few who are very much overweight.

The pupils in the elementary schools were asked to reply, without signing their names, to a questionnaire which covered certain health habits and physical conditions or symptoms. The replies indicate the following:

Number of children in elementary schools who answered, 1,786.
194 do not sleep with the windows open.
777 do not drink at least two glasses of milk a day.
147 do not eat breakfast.
299 do not eat some vegetables every day.
225 in the third grade drink coffee. (341 answered in the third grade.)
195 in the second grade drink coffee. (267 answered in the second grade.)
Over a thousand children in the school drink coffee.
Less than half the children have formed the habit of going to the toilet at a regular time each day.
700 children say they have toothache.
799 have never visited a dentist.
676 have headaches.
485 say their eyes often hurt; nearly 200 of these are in the second and third grades.
179 can not easily read the writing on the blackboard.
52 cannot easily hear what the teacher says.
737 take cold often.
180 children have no toothbrush.
360 do not brush their teeth at least once a day.
35 children do not play a part of every day in the open air.

The need of a sufficient amount of sleep and of a regular early bed hour is emphasized as a necessity for child health and well-being. Children from 8 to 10 years of age should sleep, according to the best authorities, 11½ to 12 hours; more if they are undernourished. If they rise at 7.30, they must be in bed at 8 p. m.

Taking at random the replies from 100 second-grade children, we find that:

11 sleep 12 hours.
39 sleep 11 hours.
1 sleeps 10½ hours.
33 sleep 10 hours.
13 sleep 9 hours—one is 7, another 8.
3 sleep 8 hours—and 2 of these are 7 years old.

100

The school nurse reported a large amount of remedial work done and much more that needs attention.

The teachers reported only a few children that had been free from colds this last winter. Thirty-one teachers reported that all their pupils had had their eyes examined and cared for, and 29 report dental care for all pupils in their rooms. Other teachers report nothing done through the schools.

HEALTH EDUCATION.

In the program of the public schools health education is the process by which pupils acquire ideas, ideals, and practical habits affecting their own health and the health of others. This definition should include physical, mental, and social aspects of health.

The general purpose of health education is to conserve and improve the health of school children so that throughout their school life, and in later years of achievement, they may be relieved of any handicap of ill health, and may possess abundant vigor and vitality as a basis for the greatest possible happiness and service in personal, family, and community life. The specific purposes of health education are to establish the habits, attitudes, and knowledge which contribute to health.

The health work done by teachers in Alexandria varies according to the vision and enthusiasm of the individual teacher. Some teachers are better informed than others in regard to what affects child health; some teachers correlate health instruction with their other work; some do not. Some teachers weigh and measure children regularly, some do it occasionally, some not at all. Some teachers base their health instruction on the height-weight measurements; others do not. Some teachers relate their health instruction to the child's individual needs; others give formal, general instruction. Some teachers have enthusiasm for health work; others do not see its importance and possibilities. Some would gladly do health work if it did not seem to mean "just one more thing to teach"; others see how it can become an integral part of all the school work, and a help rather than a hindrance.

There is need for some one person to take this matter under advisement, working out a program and instructing teachers how to put it into effect. The objective should be to improve the health habits of Alexandria's school children, rather than merely to impart instruction. There is less need for a course of study in health than an understanding of the general aim and suggestions which teachers can adapt to their pupils' needs, collectively and individually.

PHYSICAL EDUCATION.

The personnel, equipment, and program content in physical education in Alexandria are all inadequate. In order, therefore, that Alexandria may meet the requirements of the Virginia law, and in order that an efficient physical education program may be established, the following recommendations are suggested:

PERSONNEL.

Under the present traditional system of organization a minimum personnel of three instructors or supervisors is advisable for the work in Alexandria; two for the high school and one supervisor for the five elementary schools, including the Parker Gray School. In the high school there should be a woman director for the girls and a man for the boys. This of course suggests the need for

two gymnasiums. However, in view of the enrollment a program might well be arranged on the basis of one gymnasium. In the spring and fall, during pleasant weather, the work for both boys and girls should be conducted out of doors. On rainy days and during inclement winter weather an alternate program could be worked out. The class that does not have the gymnasium might at that hour be given a lesson in health education in some classroom. A definite schedule for the winter term should be worked out on this basis. For rainy days a schedule of health and physical education projects might be planned. Such topics as the value of exercise, types of exercise for different individuals, the study of the rules of certain games, scoring, etc., are all topics which should be covered in the physical education program in order to make it function in the lives of the students. This arrangement offers a splendid opportunity whereby this phase of the work may be included.

In view of the fact that the number of boys in the high school is less than the number of girls, the number of classes for boys will be less. The director will therefore be free to take charge of the athletic program of the fifth, sixth, seventh, and eighth grade boys in the elementary schools.

If the "work-study-play," or platoon, plan as outlined in the section on school buildings is adopted, a corps of eight physical education teachers will be the minimum quota—one each for the Lee and Washington Schools and two each for the High, Parker Gray, and Jefferson Schools. This of course will not necessitate an increased expenditure, since the total cost for equipping and maintaining the schools under this plan will be considerably reduced. The director in the high school could very easily arrange her program so as to include supervision of the work in the West End School, not included in the platoon plan.

Under the "work-study-play" plan two playrooms are provided for each school, and each physical education teacher will have approximately 80 children at a time. As far as possible the work should be carried on out of doors, the playrooms being used only in inclement weather. When the work has to be conducted indoors in the two schools which have only one director and two playrooms, the system of play leaders (see page 43) will prove most helpful to the teacher. Much of the teacher's success will depend on the degree to which this pupil leadership is organized and developed and on the importance which is given to the duties involved.

EQUIPMENT.

In regard to equipment under the traditional plan, as far as possible the work should be conducted out of doors, as stated above. For severe winter weather and rainy days an indoor space, with

minimum dimensions of 50 feet by 70 feet, is desirable. However, in the elementary schools the work may be carried on in the classrooms, although this is by no means desirable.

Playground space should be provided for each child. Thirty square feet for each individual has been suggested as a minimum requirement by authorities on the subject. The Playground and Recreation Association of America has adopted the following standard:

> Minimum essential in regard to a playground for a school of less than 100 children is a play space of 10,000 square feet, exclusive of school buildings. For elementary schools of 100 children there should be added 4,000 square feet, and 4,000 square feet for each additional 100 children or fraction thereof.

A desirable surface for playgrounds is a mixture of clay and loam.

Each school should be equipped with at least the following: 1 basket ball, 1 volley ball, 2 outdoor baseball bats, 6 12-inch indoor baseballs (for girls), 6 regulation baseballs (for boys), 1 volley ball net, 2 baskets with standards for basket ball (may be made in workshop), 1 soccer ball.

As far as possible the playgrounds should be marked out for the various games.[1] The indoor playrooms should be equipped with baskets for basket ball and marked for indoor basket ball and indoor baseball.

Organization.—The third feature of the physical education program is the organization and planning of the work. As stated previously this is a most important item to consider. A carefully selected, well-rounded program adapted to meet the needs of the children is absolutely essential.

In the first place the time allotted to the work during school hours and provision for after-school activities should be considered. The Virginia requirement is 20 minutes per day. In Alexandria an excellent system provides for two 10-minute recess periods per day, in addition to the regular physical education period, one in the morning and one in the afternoon. These periods added to the required 20 minutes per day provide adequate opportunity for physical activity of various types. A splendid opportunity is here offered for the physical director, with the aid of the State supervisor of physical education, to prepare a program which shall include all the various phases of the physical education work and to promote a highly developed, efficient, and beneficial program for the children of Alexandria.

The work should be carefully organized and planned for each grade so that it will (*a*) meet the needs of the children at the various stages of their development; (*b*) be easy for the classroom teacher

[1] See Bu. of Educ. Bul., Physical Education Series No. 1.

itional system) to follow, in between the visits of the supervisor; and (*c*) show progression, variation, and development, thus maintaining interest for the children.

TRAINING OF LEADERS FOR CLASS WORK.

A plan of great educational value provides for the selection of play leaders appointed at periodic intervals. This plan is of particular help to the teacher in handling a large class. It should be made an honor to be selected as a leader.

THE HIGH SCHOOL.

The work in the high school should continue the program as adopted in the grades. Squad and group leadership should be encouraged. Class teams, group teams, and color teams should be organized. Athletic contests with provision for *every* individual in the school should form part of the carefully worked-out program.

GENERAL SUGGESTIONS.

On the whole the work in Alexandria should be developed to include all phases of the program. As far as possible vigorous movements should be secured in the gymnastic work. If the activities are conducted indoors, all windows should be opened wide. The bulk of the time should be devoted to recreational activities.

No formal work should be given below the third grade. Rythms, story plays, singing games, active games, and mimetic play should be included in the program for the first two grades. The material should be arranged to coincide with the seasons and holidays.

In the upper grades, rainy day programs might include individual work, such as stunts and efficiency tests (Athletic Badge Tests).[3]

Athletic activity and contests of all kinds in the upper grades and the high school should be encouraged for after-school activity. Field days have already been started and should be promoted. All participants in athletic activities should have a careful medical examination before entering any activity or sport. Doubtful cases, those who in the mind of the teacher should not take any of the physical education work, should also be referred to the school physician. In the high school a thorough physical examination should be included with the medical examination at least once a year.

Careful attention should be given to the promotion of good posture and poise of the body. Special gymnastic classes should be conducted for those needing special attention along this line. Emphasis should be placed on the relation of good posture to self-respect.

[3] See Bu. of Educ. Bul., Physical Education Series No. 2, 1923.

The whole program should be promoted for the children of Alexandria with the idea that:

> Physical education is that which sees in measures insuring bodily health and the right kind and amount of motor activity an avenue of approach through which the whole individual may be influenced for good, in mind and character as well as in body; it employs the word "physical" to denote the means and not the end.[4]

SCHOOL BUILDING PROGRAM.

WHITE SCHOOLS.

It is recommended that children in all first three grades *east* of the railroad track be housed in the Washington and Lee Schools, and that all children in the first four grades *west* of the railroad track be housed in a small primary school building to be erected west of the tracks.

It is further recommended that grades 4–11 be housed in the Jefferson School and the present high-school building and an addition to be erected between the present Jefferson School and the high school.

By this arrangement congestion in the Washington and Lee Schools will be relieved and space provided for some special activities for those children, and a central modern school plant will be created on the site on which the Jefferson and high-school buildings stand.

The following report shows how this can be done both under the traditional plan of school organization and under the work-study-play, or platoon, plan. This latter type of organization is now in operation in 53 cities in the country. Under this plan half the children are in classrooms while the other half are in play, auditorium, and special activities. All children receive the same amount of time for academic work as under the traditional plan, but in addition receive the advantages of enriched school facilities; and at the same time the capacity of the school building is increased from 30 to 50 per cent. For further information about this plan, the board of education is referred to Bureau of Education Bulletin No. 8, 1923, Significant Movements in City School Systems, pp. 19–24, inclusive, and Bulletin No. 25, 1921, A School Building Program for Athens, Georgia.

The plans for each school will now be given, followed by a summary for all the schools.

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[4] From a report of a committee from the Society of Directors of Physical Education in Colleges.

WASHINGTON SCHOOL.

According to the plans recommended, the fourth grade in the Washington School would be transferred to the Jefferson School. The enrollment in the other three grades is as follows:

First grade	72
Second grade	128
Third grade	135
Total	335, or 9 classes.

There are 8 classrooms in the main building and 3 in the annex. Capacity on basis of 40 to a class, 440. There are also 2 rooms in the basement of the main building that could be used for playrooms. This makes a total of 11 rooms and 2 playrooms.

This should be made into a 12-class school (480 pupils). Under the work-study-play plan it will be necessary to take only 6 rooms in the main building as classrooms. That would leave 5 rooms—2 rooms in the main building and 3 in the annex—for special activities. One room could be used for nature study, 1 for drawing, 1 for handwork, 1 for music—these 4 rooms taking care of 160 children. There should be two groups at play each period of the day—80 children. This makes a total of 240 children in play and special activities at any one time, while 240 children are in academic work. The number of teachers would be on the same basis as in the traditional school, i. e., one teacher for every 40 pupils. This arrangement also leaves an extra room that could be used for over-age children. Counting 20 for this class, the capacity of the building would thus be increased to 500, or an increase of 14 per cent over the present capacity.

The play space around the building is adequate, if filled in with earth, graded, and given a proper surface. This space would always be used for play except in bad weather, when the children would use the playrooms.

There would be no cost involved in this arrangement except for supplies for special activities, which would be very small, and should come out of the supply fund, and therefore not charged to building expense.

Under the traditional plan, the present main building and annex take care of 11 classes (440) in classrooms—2 more than at present accommodated in the first three grades, but there would be no room for special activities or over-age classes.

LEE SCHOOL.

This school now has an enrollment of 725 pupils, which at present is divided into 16 classes, which, apparently, indicates that there are no more classes than there are classrooms. But on the basis of 40

pupils to a class, there are now 18 classes in the building. As a matter of fact, however, if the classes were made up on the basis of 40 to a class, there would have to be 7 classes in the first grade instead of 6, and 5 in the second grade instead of 4, and 4 classes in the third grade instead of 3—making a total of 19 classes in all, which means that there are now 3 more classes in the building than there are classrooms.

According to the plan recommended, the fourth grade in this school would be transferred to the Jefferson School. This would leave an enrollment in the remaining first three grades as follows:

First grade	259
Second grade	188
Third grade	151
Total	598, or 15 classes.

There are 16 classrooms in this building—capacity, 640 pupils, or 16 classes—and 2 rooms in the basement which could be used as playrooms, provided that modern sanitary toilets are installed in the basement, and partitions put up separating them from the playrooms.

This school could be made into a 20-class school (800 pupils), thus providing for a 25 per cent increase over the capacity of the building on the basis of 40 pupils to a class (640).

Under the work-study-play plan, 10 of the 16 rooms would be used as classrooms, leaving 6 for such special activities as the superintendent may recommend. The special activities should all be at the same end of the building. It is suggested that 2 rooms be devoted to manual or constructive work; 1 room could be used for nature study, and 1 for drawing. On the next floor one could be used for music, and the other room for other special activities or for over-age classes.

If the toilets in the basement are made sanitary, the 2 vacant rooms in the basement can be used for playrooms, otherwise 2 of the rooms referred to above would have to be used for playrooms.

The cost of thus increasing the capacity of the building by 3 classes and providing 5 special activity rooms, 1 room for an over-age class, and 2 playrooms would be nothing except the cost of a few supplies for special activities.

Under the traditional plan this building would accommodate only 16 classes, or 640 pupils, i. e., the exact capacity of the building and one more class than the present enrollment in the first three grades. There would be no rooms for special activities. There would be the 2 rooms in the basement for play, but under the traditional program of course the children would get only 10 minutes recess time a day and they would all take it together, the 2 playrooms would be entirely inadequate.

The out-door play space is adequate for play under the work-study-play plan, since only 80 to 100 children would play at once. It is inadequate for 640 children to play at once.

THE JEFFERSON SCHOOL AND THE HIGH SCHOOL.

The present enrollment in the Jefferson School in the fifth, sixth, and seventh grades is 668 pupils, or 17 classes, exactly the same number as there are classrooms in the building. It is proposed, however, to transfer the fourth grades from Washington and Lee Schools to this building—242 pupils. This makes a total of 910 pupils, or 23 classes, i. e., when the seventh grade is included.

In the high school there are 398 pupils in grades 8, 9, 10, and 11.

It is recommended that grades 4, 5, and 6 be housed in the Jefferson building, and grades 7, 8, 9, 10, and 11 in the high-school building and the new building hereinafter recommended. Under such a plan the elementary grades would be housed in one building, and the grades usually designated as junior and senior high school grades would be housed in the other two buildings, but all grades could use the auditorium and gymnasium to be erected.

In this way the school could be operated either as a single unit comprising grades 4–11 inclusive, or as two separate units, made up of the elementary school in one building and the junior and senior high school in the other buildings, but using certain facilities in common.

Housing grades 4, 5, and 6 in the Jefferson School.—The capacity of the Jefferson School—17 classrooms on the basis of 40 pupils to a class—is 680 pupils, or 17 classes.

The number of pupils in the fourth, fifth, and sixth grades is 748, or 19 classes. This is *2 more classes* than there are *classrooms* in the Jefferson School. The space available in the building is as follows:

Number of regular classrooms	17
Number of rooms in basement available—	
For shops	2
For play or shops	2
Total	21

It is obvious, then, that under the traditional plan the fourth, fifth, and sixth grades can not all be accommodated in the present Jefferson School, therefore a new building would have to be erected to take care of the present enrollment in those grades and provide for increase.

Under the work-study-play plan, however, the capacity of the building can be increased to 800 pupils, or to 880 pupils, depending

upon whether or not the domestic science classes are taken care of in a separate building recommended elsewhere in this report. Therefore the housing of the fourth, fifth, and sixth grades in the Jefferson School will be considered under two separate plans: First, on the basis of teaching cooking and sewing in the Jefferson School; and second, on the basis of teaching cooking and sewing in a separate building, as recommended elsewhere in this report.

Plan I.

A plan for housing the fourth, fifth, and sixth grades in the Jefferson School on the basis of the work-study-play plan, and having cooking and sewing in the Jefferson building.

Under the work-study-play plan, 20 classes, or 800 pupils, could be accommodated in this building. On the basis of the present capacity of the building (680 pupils—i. e., 40 pupils to a class in 17 rooms) the capacity of the building under the work-study-play plan will be increased by three classes (120 children), or an increase of 18 per cent over the present capacity.

Under this plan 10 rooms would have to be taken for classrooms. That leaves seven classrooms for special activities, plus two rooms in the basement which could be used for shops but not for classrooms. There are also two rooms in the basement, each of which is sufficiently large for 80 children to play in at one time.

At any one time during the day, 400 children would be in classrooms and 400 children would be in special activities and play.

Of the 400 children in special activities and play, 160 would be at play each period of the day. Except in case of inclement weather these children would play out-of-doors; in bad weather they would play in the two rooms in the basement.

The remaining 240 children would be in the 9 special activity rooms. The school authorities can, of course, choose whatever special activities they wish to give to the children. The following are merely suggested as possible special activities. Any one of them can be omitted and another one substituted just so long as 240 pupils are provided for in special rooms at one time.

Special activities.	Number of pupils.	Number of rooms.
One shop for boys (woodwork)	20	1
One shop for boys (printing)	20	1
One cooking room	20	1
One sewing room	20	1
Nature study	20	1
General science	20	1
Music	40	1
Drawing	40	1
Dramatics and literature	40	1
Total	240	9

The cost of the equipment for these rooms would depend upon the type desired by the authorities, but in general the cost of the equipment of the shops for boys would be about $1,000; for domestic science about $1,000; for science and nature study, $200; for music, $500; drawing, $100; making a total of $2,800.

Under this plan there would be provided an increase of 18 per cent in the housing capacity of the school, every child would have the same amount of time for academic work as formerly and at the same time there would be provided nine special activity rooms and space for children to play every period of the day.

Under the traditional plan, in order to accommodate the present enrollment in the fourth, fifth, and sixth grades, it would be necessary to build an annex for two additional classes. If the growth for three classes were also to be provided, and this of course would be necessary, it would be necessary to have an annex of five rooms at an approximate cost of $25,000. There would be the two rooms in the present building for play, but they would obviously not be adequate for the whole school to play in at one time. So that the total cost under the traditional plan for taking care of 800 pupils would be $26,000, instead of $2,800 under the work-study-play plan.

Plan II.

A plan for housing the fourth, fifth, and sixth grades in the Jefferson School on the basis of the work-study-play plan, and having cooking and sewing outside the Jefferson building, in a separate building.

If the cooking and sewing are taught outside the Jefferson School, then two rooms will be released in the Jefferson School for other activities. Therefore under the work-study-play plan Jefferson School could then accommodate 880 pupils. On the basis of the present capacity of the building (680 pupils—i. e., 40 pupils to a class in 17 rooms), the capacity of the building under the work-study-play plan will be increased by 5 classes, or 200 children, an increase of 29.4 per cent.

Under this plan 11 rooms would have to be taken for classrooms. That leaves six rooms for special activities plus two in the basement, or a total of eight rooms. The other two rooms in the basement would be used for play, as suggested above. At any one time during the day one-half of the school, 440 pupils, would be in classrooms, and half the school, 440 pupils, would be in special activities and play.

Of the 440 children in special activities and play, 160 would be at play each period of the day, and the remaining 240 children would be in special activities. As stated above, school authorities can of

course choose whatever special activities they wish to give the children. The following are suggested:

Special activities.	Number of pupils.	Number of rooms.
One shop for boys (woodwork)	20	1
One shop for boys (printing)	20	1
Nature study	20	1
General science	20	1
Music	40	1
Drawing	40	1
Dramatics and literature	40	1
Library	40	1
Total	240	8

In addition to these 240 pupils in special activities in the Jefferson building, there would be 40 pupils in sewing and cooking in the building recommended for that purpose in another section of the report, thus making 10 special activities in all; therefore at any one time during the day there would be 280 pupils in special activities and 160 in play, or 440 in all.

The cost of equipment for these special activity rooms would be the same as in Plan I except for the additional cost of the library—about $500. This, however, would be offset by the saving of the cost of equipment for domestic science, owing to the fact that that building would be largely self-supporting.

Therefore the total cost of increasing the capacity of the Jefferson School under Plan II to 880 pupils would be $2,800.

Under the traditional plan the cost would be, as stated above, $26,000; and there would be only 2 special activity rooms instead of 8.

A NEW BUILDING FOR THE WEST END.

A school building to house the first four grades should be erected in the West End. There would be needed three classrooms, one playroom, and one nature-study and work room as well as a kindergarten room, if a kindergarten class is organized in that section of the city. The building could be so constructed that additional rooms could be added when necessary, and pending such growth it will be possible to erect the present unit with folding doors between the playroom and the manual-training room or workroom, so that those two rooms could be made into an assembly room when desired.

This building would cost about $30,000 and would accommodate under the work-study-play plan 240 children, or about 136 more children than are now enrolled in the West End. If, however, all the children of the first four grades living in the West End were to attend school in that section, the enrollment would be about 154. Therefore this building, even with this increased enrollment, would provide for growth for about 80 pupils.

THE HIGH SCHOOL BUILDING.

The present enrollment in the high school is 398, distributed as follows: Eighth grade, 160; ninth grade, 100; tenth grade, 90; eleventh grade, 48.

The number of rooms is as follows: Classrooms, 14; in basement, 1 cooking room. There is also an auditorium.

The enrollment is on the basis of 30 to a class. On the basis of 30 to a class, the capacity of the building is 420. Practically none of the rooms, however, are fitted for special activities, such as science, domestic science, etc. What is needed is a modern new building with modern equipment for such subjects as shops, domestic science, chemistry and physics, mechanical drawing, commercial work, etc.

It is therefore recommended that a combined junior and senior high school with grades from the seventh through the eleventh or twelfth be organized.

As there are 162 pupils in the seventh grade and 398 in the eighth, ninth, tenth, and eleventh that would make an enrollment of 560, or, on a basis of 30 pupils per class, 18 classes.

The present building should be used for classrooms. The auditorium, which is not suited to auditorium purposes, should be turned either into two classrooms, or a library, which would take care of 40 pupils.

A new modern building should be erected to contain the following rooms—or any other arrangement of special rooms which the authorities desire—in addition to an auditorium and two gymnasiums:

Rooms and cost of building to be erected.

Subjects.	Number of rooms.	Pupils.	Cost of equipment.
Chemistry	1½	20	$1,500
Physics	1½	20	1,000
Mechanical drawing	1	30	1,000
Music	1	40	500
Art	1	20	1,000
Commercial	2	40	1,000
Shops	2	50	2,000
Total	10	220	8,000

[1] Units.

According to the recommendations for domestic science, those activities would be carried on in the teachers' building, or if that recommendation is not carried out, two more rooms would have to be added to the new building, and the cost for the same added to the total cost of this building.

These two buildings, the present high-school building and the new one recommended, would allow for a capacity of about 800 pupils, or

380 more than the capacity of the present building, an increase of 90 per cent.

The new building should be placed between the Jefferson School and the present high-school building, and in addition to the special rooms there should be an auditorium and a gymnasium placed at the end of the new wing nearest the Jefferson School; so that the children in that school could also use the auditorium, and so that it would be easily available for a community center. By placing the new building between the two present buildings the fine play space would be left for play for the elementary school and the junior and senior high school. That is most important, for it is impossible to operate this new type of school without ample play space. The average city is very poor in play space, but Alexandria is to be congratulated upon the fine amount of space for play and athletics available on this site. *It should under no circumstances be covered up by buildings.*

It is extremely difficult to estimate the cost of this building, but judging by the cost of the Jefferson the cost of these 10 rooms would be between $50,000 and $60,000. The cost of the auditorium and two gymnasiums would come to approximately $80,000. Furthermore, equipment must be provided for these special activities. The minimum amount for this would come to $8,000, plus $5,000 for auditorium equipment, or a total of $13,000.

However, it is not necessary to erect the whole building at once, but only as much as would be necessary to accommodate somewhat more than the present enrollment, approximately 5 or 6 rooms, and the auditorium and gymnasium.

The cost under the traditional plan would be the same if the auditorium under the work-study-play plan is not used every period of the day.

COLORED SCHOOLS.

THE PARKER GRAY SCHOOL.

This is an 8-grade school, with an enrollment of 728 pupils, or 18 classes on the basis of 40 pupils to a class.

The space available in the building is as follows:

Number of regular classrooms	12
Auditorium	1
In the basement [a]—	
Number of playrooms	2
Available for cooking	1
Available for shop	1

[a] None of the rooms in the basement are equipped for any of these activities.

Therefore the present capacity of the building is 480 pupils. From the above figures it is obvious that there are now 6 more classes than there are classrooms.

It is obvious, then, that under the traditional plan it would be necessary to erect an annex of at least 6 rooms if these surplus classes were to be taken care of.

Under the work-study-play plan, however, the capacity of the building can be increased to 800, or to 880 pupils, depending upon whether or not domestic science classes are taken care of in a separate building recommended elsewhere in this report. Therefore the housing plans for this school will be considered under two separate plans, first on the basis of teaching cooking and sewing in the Parker Gray building; and second, on the basis of teaching cooking and sewing in a separate building as recommended elsewhere in this report.

Plan I.

A plan for the Parker Gray School on the basis of the work-study-play plan having cooking and sewing in the Parker Gray School.

If this school is organized on the work-study-play plan, it will be possible to increase the capacity of the building to 800 pupils (20 classes), or 2 more classes without adding to the building, an increase of 66 per cent over the capacity of the building, or 10 per cent increase over the present enrollment.

Under this plan 10 rooms would have to be taken for regular classrooms, as there would be 400 pupils, or 10 classes, in classrooms each period of the day. This leaves 4 rooms for special activities, counting the 2 in the basement. It also leaves 2 rooms in the basement for pupils to play in inclement weather. It is suggested that one room in the basement be used for a shop for boys—25 pupils; the other room for a cooking room—25 pupils; one of the classrooms for a drawing and nature study room—40 pupils; and one of the classrooms for a music room, 40 pupils—total 130. The cost of equipment would, as has been suggested above, depend upon the quality desired by the school authorities. On the same basis as the cost already suggested, it would be as follows: For the shop, $500; cooking, $500; drawing and nature study, $200; music, $500, in case there is no piano in the school. The total cost would be $1,700.

Under this plan there would be 400 children in special activities, auditorium, and play every period of the day. As suggested above, 130 children would be in special activity rooms; 135 would be in the auditorium each period of the day and 135 in play.

The total cost of thus increasing the capacity of the building 66 per cent (present capacity is 480 and under the plan just sug-

gested it would be increased to 800) would be $1,700. Four special activities would be provided, as well as space and time for play and for the use of the auditorium for the social education for which it was built.[6]

When the school grows beyond the 80 additional pupils provided for by this arrangement, 2 more rooms could be built over the auditorium, thus increasing the capacity of the school by 2 more classes without putting up any additional building. Of course the roof over the auditorium would have to be examined to find out if the additional rooms could safely be put there. Under no circumstances should the auditorium be divided into classrooms. It would both deprive it of its educational value and also be less economical, since the auditorium divided into classrooms would not accommodate the 135 pupils which it will accommodate when used as an auditorium.

Plan II.

A plan for the Parker Gray School on the basis of the work-study-play plan, having cooking and sewing taught in a building outside the Parker Gray School.

If the cooking and sewing are taught in a separate building, as recommended elsewhere in this report, then one of the rooms in the basement will be released for another special activity.

By a change in the type of special activity it would be possible under this arrangement to accommodate 880 pupils, or an increase of 83 per cent over the present capacity of the building, or an increase of 21 per cent over present enrollment. Under the work-study-play plan, 11 classrooms would be needed, leaving 1 room upstairs and 2 in the basement for special activities. The 2 rooms in the basement could be used for 2 shops for boys (40 pupils), and the room upstairs for a nature study and drawing or a music room (40 pupils). There would be 40 pupils in the cooking and sewing in the separate building, making 120 pupils in five special activities. There could be 160 pupils in the auditorium at one time and 160 pupils in play—making 440 pupils in special activities, auditorium, and play at one time, while there are 440 pupils in classrooms. This would not be needed, however, until the school had grown to 880 enrollment.

Under the traditional plan, since there are already 6 more classes than there are classrooms, it would be necessary, in order to take care of these 6 classes and provide for the 2 more classes for growth, to erect a building of 8 rooms at a cost of about $40,000. And there

[6] For a description of kind of activities carried on in auditoriums in work-study-play, or platoon, schools see Detroit Bulletin No. 2, 1920, pp. 32–7, "The auditorium as a socializing, integrating, and correlating unit."

would be no special activity rooms in either of the buildings. Under the work-study-play plan it is possible to provide for these 6 classes and take care of growth of 2 classes for $1,700.

SUMMARY.

UNDER PLAN I.

Under Plan I domestic science is taught in the Jefferson Building and the Parker Gray Building.

WHITE SCHOOLS.

Under the work-study-play plan it would be possible to accommodate in the white schools 3,140 pupils, or an increase of 960 pupils, 44 per cent increase over the present capacity of the buildings. It would also be possible to provide in these buildings not only enough school seats for all children when they need them but also 30 special activity rooms—shops, domestic science, drawing, music, etc.—and a kindergarten; and in addition 2 rooms for over-age children. To do this it would not be necessary to erect any additional buildings except for the high school and the West End School. The total cost of such a program would be $185,800 ($170,000 for buildings and $15,800 for equipment).

Under the traditional plan it would be possible to accommodate only 2,920 pupils, or an increase of 34 per cent over the present capacity of the buildings. Furthermore, under this plan it would be possible to provide only 12 activity rooms, 10 of which would be in the high school and only 2 in the elementary schools. (Under the work-study-play plan, 20 of the special activity rooms which it would provide would be in elementary schools and 10 in the high school.) Under the traditional plan no rooms for over-age classes would be provided. Under this plan it would be necessary to erect an addition to Jefferson as well as a building for the West End and the high school. The total cost would be $209,000 ($195,000 for buildings and $14,000 for equipment).

Relative to the increase in capacity under the two plans, it should be pointed out that the increase in capacity in the three schools, Washington, Lee, and Jefferson, would be 20 per cent under the work-study-play plan and only 11 per cent under the traditional plan.

COLORED SCHOOLS—PARKER GRAY.

Under the work-study-play plan it would be possible to accommodate 800 pupils in the Parker Gray School, an increase of 66 per cent over the capacity of the building and 10 per cent over the present enrollment. It would be possible to provide four special activity

rooms—shop, cooking and sewing, nature study and drawing, and music. There would be no cost except $1,700 for equipment and supplies.

Under the traditional plan, since there are already six more classes than there are classrooms, it would be necessary to erect a building immediately to take care of these six classes and provide for two more classes of growth. The minimum cost for such a building would be $40,000. No special activity rooms would be provided under this plan.

TOTAL COST FOR ALL SCHOOLS.

The total cost of the building program for *all schools*, white and colored, would be, *under the work-study-play plan*, $187,500. An increase of 48 per cent over the present capacity of the buildings would be provided; 34 special activity rooms and kindergarten would be provided and 2 rooms for over-age classes.

The total cost of the building program for *all schools*, white and colored, would be, *under the traditional plan*, $249,000. An increase of 39 per cent over the present capacity of the buildings would be provided; but only 12 special activity rooms would be provided, 10 of which would be in the high school, and there would be no rooms for over-age classes.

UNDER PLAN II.

Under Plan II domestic science would be taught in a separate building in connection with the Jefferson building and a separate building in connection with the Parker Gray building.

WHITE SCHOOLS.

Under the work-study-play plan it would be possible to accommodate in the white schools 3,220 children, or an increase of 1,040 pupils, a 48 per cent increase over the present capacity of the buildings. It would also be possible to provide in these buildings not only enough school seats for all children when they need them, but also 31 special activity rooms (1 more than under Plan I) and also a kindergarten. Two rooms for over-age children would also be provided. To do this it would not be necessary to erect any additional buildings except for the high school and the West End School. The total cost would be the same as under Plan I.

Under the traditional plan it would be possible to accommodate only 2,920 pupils, or an increase of 34 per cent over the present capacity of the building. It would be possible to provide 14 special activity rooms—2 more than under Plan I. No rooms for over-age classes would be provided. Under this plan it would be necessary to

erect an addition to Jefferson as well as a building for the West End and the high school. The total cost would be the same as under Plan I.

COLORED SCHOOL—PARKER GRAY.

Under the work-study-play plan it would be possible to accommodate 880 pupils in the Parker Gray School, an increase of 83 per cent over the present capacity of the building and 21 per cent over the present enrollment. It would be possible to provide 5 special activity rooms. The cost would be the same as under Plan I.

Under the traditional plan it would be possible to accommodate only 800 pupils, as under Plan I, and it would be necessary to erect an addition at a cost of $40,000 in order to do this.

TOTAL COST FOR ALL SCHOOLS.

The total cost of the building program for all schools, white and colored, would be, under the work-study-play plan, $187,500, the same as under Plan I. An increase, however, of 54 per cent over the present capacity of the buildings would be provided under Plan II, and 36 special activity rooms and kindergarten, and two rooms for overage classes.

The total cost of the building program for all schools, white and colored, would be, under the traditional plan, $249,000, the same as under Plan I. An increase of 40 per cent over the present capacity of the buildings would be provided; but only 16 special-activity rooms would be provided, instead of 36 as under the work-study-play plan, and there would be no rooms for overage classes.

See attached table for summary of costs and facilities provided under both the work-study-play plan and traditional plan of school organization.

Alexandria, Virginia.—Summary of cost of building program and facilities provided under both the work-study-play type of school organization and under the traditional type of school organization.

UNDER PLAN I.[1]

Schools.	Present capacity of building.	Capacity, facilities provided, and cost under the platoon, or work-study-play plan.								Present capacity of building.	Capacity, facilities provided, and cost under the traditional plan.							
		Capacity.	Increase in capacity.		Special activities provided.	Rooms for over-age children.	Cost.				Capacity.	Increase in capacity.		Special activities provided.	Rooms for over-age children.	Cost.		
			Pupils.	Per cent increase.			For supplies.	For buildings.	Total cost.			Pupils.	Per cent increase.			For supplies.	For buildings.	Total cost.
White elementary:																		
Washington School, grades 1–3, inclusive	440	500	660	14	4	1	None.	None.	None.	440	440	None.	0	None.	None.	None.	None.	None.
Lee School, grades 1–3, inclusive	640	800	160	25	5	1	None.	None.	None.	640	640	None.	0	None.	None.	None.	None.	None.
Jefferson School, Plan I; domestic science in building	680	800	120	18	9	None.	$2,800	None.	$2,800	680	800	120	18	2	None.	$1,000	$25,000	$26,000
West End, new building	.....	240	.....	.....	2 and K.	None.	None.	$30,000	30,000	.....	240	.....	.....	None.	None.	.....	30,000	30,000
High school—Annex junior and senior (grades 7–11)	420	800	380	90	10	.....	13,000	[2] 140,000	153,000	420	800	380	90	10	.....	13,000	[2] 140,000	153,000
Total for white schools	2,180	3,140	960	44	30 and K.	2	15,800	170,000	185,800	2,180	2,920	740	34	12	None.	14,000	195,000	209,000
Colored school, Plan I	480	800	320	66	4	None.	1,700	None.	1,700	480	800	320	66	None.	None.	.....	40,000	40,000
Grand total for all schools under Plan I	2,660	3,940	1,280	48	34 and K.	2	17,500	170,000	187,500	2,660	3,720	1,060	39	12	None.	14,000	235,000	249,000

UNDER PLAN II.[1]

White elementary:																		
Washington School, grades 1-3, inclusive	440	500	60	14	4	1	None.	None.	None.	440	440	None.	0	None.	None.	None.	None.	None.
Lee School, grades 1-3, inclusive	640	800	160	25	5	1	None.	None.	None.	640	640	None.	0	None.	None.	None.	None.	None.
Jefferson School, Plan II; domestic science outside building	680	880	200	29	[3] 10	None.	$2,800	None.	$2,800	680	800	120	18	4	None.	$1,000	$25,000	$26,000
West End, new building	.....	240	.....	.....	2 and K.	None.	None.	$30,000	30,000	.....	240	.....	....	None.	None.	.....	30,000	30,000
High school—Annex, junior and senior (grades 7-11)	420	800	380	90	10	.....	13,000	[2] 140,000	153,000	420	800	380	90	10	.....	13,000	[2] 140,000	153,000
Total for white schools	2,180	3,220	1,040	48	31 and K.	2	15,800	170,000	185,800	2,180	2,920	740	34	14	None.	14,000	195,000	209,000
Colored school, Plan II; Parker Gray, grades 1-8	480	880	400	83	5	None.	1,700	None.	1,700	480	800	320	66	2	None.	.....	40,000	40,000
Grand total for all schools under Plan II	2,660	4,100	1,440	54	[4] 36 and K.	2	17,500	170,000	187,500	2,660	3,720	1,060	40	16	None.	14,000	235,000	249,000

[1] Under Plan I, domestic science (cooking and sewing) are carried on in two rooms in the Jefferson and in the Parker Gray School. Under Plan II, domestic science (cooking and sewing) are carried on in a separate building recommended elsewhere in this report.

[2] For an annex including 10 special rooms, an auditorium, and 2 gymnasiums.

[3] This includes eight special activity rooms in the Jefferson School building and two special activities in the domestic science building.

[4] This includes three special activity rooms in the Parker Gray building and two special activities in the domestic science building.

FINANCIAL SUPPORT.

EXPENDITURE PER PUPIL.

Compared with other cities of the same size in population, Alexandria is spending but little on its schools. In 1921–22 the average cost per pupil in average daily attendance in 50 cities of between 10,000 and 30,000 population, selected at random, was $73.72. The average for Alexandria was only $29 for that year. The present year the average is about $43.50, or less than the average was for cities of the same size in 1921–22.

The following table shows the per capita cost in each of the cities ranked from the highest expenditure to the lowest:

Per capita school expenditures.

Bloomfield, N. J	$109.06	Urbana, Ill	$72.99
Missoula, Mont	105.55	Johnstown, N. Y	71.35
Eureka, Calif	100.84	Norwich, Conn	71.06
Santa Cruz, Calif	97.60	Leavenworth, Kans	70.86
Plainfield, N. J	96.62	Ottumwa, Iowa	70.62
Concord, N. H	96.17	Freeport, Ill	70.33
Grand Forks, N. Dak	96.16	Glendale, Calif	69.48
Huntington, Ind	92.69	Holland, Mich	67.55
Astoria, Oreg	90.96	Enfield, Conn	64.11
Beloit, Wis	90.94	New Albany, Ind	62.42
Walla Walla, Wash	89.58	Columbia, Mo	61.89
Parkersburg, W. Va	87.86	Lebanon, Pa	61.77
Janesville, Wis	87.48	Butler, Pa	61.03
Dunkirk, N. Y	86.89	Carthage, Mo	60.03
Calumet, Mich	83.85	Fort Smith, Ark	59.93
Morgantown, W. Va	83.85	Enid, Okla	56.16
Galesburg, Ill	81.06	Jeffersonville, Ind	53.89
Sanford, Me	80.57	Chicago Heights, Ill	52.35
Independence, Kans	80.22	Owensboro, Ky	48.24
Aberdeen, Wash	79.96	Marshall, Tex	41.94
Keokuk, Iowa	79.80	Bessemer, Ala	31.26
Danbury, Conn	77.56	Rome, Ga	31.13
Oneonta, N. Y	76.60	Gadsden, Ala	30.70
Watertown, Mass	76.48		
Greenfield, Mass	76.34	Average	73.72
Nashua, N. H	74.29	Alexandria, Va	29.00
Clinton, Mass	73.11		

If the per capita expenditure of $43.50 for the present year is substituted, Alexandria ranks forty-sixth in the list of 50 other cities.

Data for the year 1921–22 obtained from the county superintendents for Arlington County, Va., and Montgomery County, Md., show that Alexandria is expending less per pupil in average daily attendance than either of these counties, the average for Arlington County being $41.04 and for Montgomery County $45.49.

The question arises, how does Alexandria compare in wealth with the other cities? The following table shows the per capita wealth based upon the estimated real valuation. The assessed valuation of Alexandria, according to estimates of several persons consulted, is about 40 per cent of the real value. One estimate placed it as low as 25 per cent.

Per capita wealth, based upon real value.

	Real value.		*Real value.*
Morgantown, W. Va	$2,822	Dunkirk, N. Y	$1,216
Fort Smith, Ark	2,193	Greenfield, Mass	1,200
Parkersburg, W. Va	2,038	Concord, N. H	1,194
Janesville, Wis	2,036	Sanford, Me	1,142
Santa Cruz, Calif	2,004	Calumet, Mich	1,136
Glendale, Calif	1,932	Astoria, Oreg	1,098
Missoula, Mont	1,863	Owensboro, Ky	1,097
Rome, Ga	1,716	Eureka, Calif	1,084
Enid, Okla	1,698	Marshall, Tex	1,076
Norwich, Conn	1,682	Danbury, Conn	1,074
Enfield, Conn	1,626	Lebanon, Pa	1,055
Walla Walla, Wash	1,586	Grand Forks, N. Dak	1,045
Oneonta, N. Y	1,516	Galesburg, Ill	1,008
Huntington, Ind	1,428	Clinton, Mass	980
Watertown, Mass	1,419	New Albany, Ind	973
Alexandria, Va	1,418	Leavenworth, Kans	958
Bloomfield, N. J	1,361	Urbana, Ill	896
Beloit, Wis	1,334	Freeport, Ill	866
Aberdeen, Wash	1,322	Carthage, Mo	774
Independence, Kans	1,313	Jeffersonville, Ind	748
Nashua, N. H	1,306	Johnstown, N. Y	741
Butler, Pa	1,302	Bessemer, Ala	733
Holland, Mich	1,268	Chicago Heights, Ill	480

From the foregoing tables it will be noted that Alexandria ranks sixteenth in wealth and lowest in expenditure per pupil.

Another comparison reveals the fact that the proportion of city funds expended on the schools is small, compared with other cities. According to the Bureau of the Census, the average for cities from 30,000 to 50,000 population ranges from 24.8 per cent to 62.3 per cent, the median being 42.7.

The city council of Alexandria appropriated this past year (1922–23) 24 per cent of the city revenue to the schools, while for previous years the per cent had been much smaller. In 1921–22 it was only 18.7 per cent. Including what the State appropriates with the appropriation made by the city, the amount expended on the schools was for the year 1921–22 only 39.7 per cent of the total city expenditure. Evidently the schools have not fared as well as they should at the hands of the city council, but possibly the board of education has not seen the needs of the schools as clearly as it should, and for

this reason has not made the requests for funds that it should, to maintain the school system.

Heretofore appropriations have been made from time to time during the year. This is not a good plan. Before the council makes its levy for the year it should require the school board to submit estimates and then make the appropriations and levy a school tax for the amount. By this plan the school board would know in advance how much money it could expend during the year and how much cash is available at any one time.