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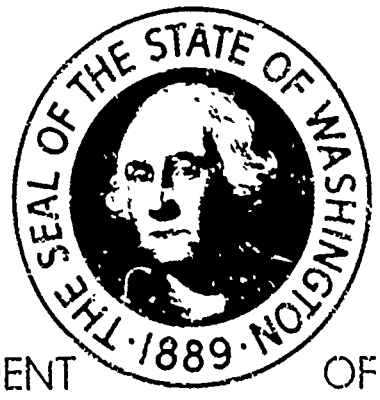
ABSTRACT

The conclusions of this study were that modernization of school buildings is feasible if the costs do not exceed 20 to 40 percent of the cost of new or replacement construction. Variables include site, type of interior and exterior construction, and the number of teaching stations. The teaching staff needs to correlate educational changes with proposed building changes; building changes must be reviewed in coordination with the local planning commission, fire and health officials, engineering office, and architectural services. An incidental consideration to this study was a formula for state aid for modernization costs and a statement of the role of the state educational department in modernization programs. The appendix includes the preliminary modernization survey instrument developed in the Washington Program. (JZ)

Modernization of School Buildings

A Feasibility Study



LOUIS BRUNO STATE SUPERINTENDENT OF PUBLIC INSTRUCTION OLYMPIA

A report to the 1963 Washington State Legislature on the feasibility of providing state school building funds for modernization of school buildings and other facilities

Submitted by the State Board of Education

Prepared under the supervision of the
Office of State Superintendent of Public Instruction

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Research Report No. 09-01
February 1963

STATE OF WASHINGTON

Superintendent of Public Instruction

Olympia

LOUIS BRUNO
STATE SUPERINTENDENT

February 1963

Members of the House of Representatives
Thirty-eighth Legislature of the State of Washington
Olympia, Washington

Dear Mr. Speaker and Members of the House of Representatives:

On March 24, 1961, the House of Representatives of the Thirty-seventh Legislature adopted the following resolution relating to renovation and modernization of school plant facilities, a copy of which was transmitted to the State Board of Education by S. R. Holcomb, Chief Clerk:

> WHEREAS, Under the present law, the allocation of funds to assist school districts in school plant projects is limited to site acquisition, construction, equipment costs, and expenses in connection therewith; and
>
> WHEREAS, In many instances economies might be effected by the renovation and modernization of existing school facilities rather than by acquiring new ones;
>
> NOW, THEREFORE, BE IT RESOLVED, by the House of Representatives, that the State Board of Education is hereby requested to study the feasibility of providing state school building funds for renovation or modernization of school buildings and other school facilities and to submit a report thereon to the House of Representatives at the opening of the thirty-eighth legislature.

At the request of the State Board of Education, the study was conducted by the Division of Research of the office of the State Superintendent of Public Instruction with the cooperation and assistance of staff members responsible for administration of the school building construction aid program.

I am pleased to submit to you on behalf of the State Board of Education this report on the feasibility of providing State funds for renovation or modernization of school plant facilities. It represents a sincere and objective effort on our part to study this serious problem in accordance with the intent of the resolution.

Sincerely yours,

Louis Bruno

Louis Bruno
State Superintendent of Public Instruction
President of the State Board of Education

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A STUDY OF THE FEASIBILITY OF PROVIDING STATE SCHOOL BUILDING FUNDS FOR RENOVATION OR MODERNIZATION OF SCHOOL BUILDINGS AND OTHER SCHOOL FACILITIES

Introduction

Maintaining a proper educational environment involves considerable thought and planning for present and future school building needs on the part of local school boards and their professional staffs. In these deliberations, the problem of what to do with existing buildings is of no less a concern than the problem of planning new buildings.[1] The projected length of service expected of a structure, its adequacy for contributing to the educational program and its objectives, and economic feasibility are major factors when modernization of physical facilities is considered.

Frequently, in discussions of building modernization, terminology and semantic differences tend to confuse intended meanings. For purposes of clarity and to facilitate communication, the terms used in this report are defined in the following manner:[2]

a. Modernization--The changing of the design, fixtures, fittings, furnishings, appearance, and service systems of a building in order to bring it up to a contemporary state consistent with the needs of changing educational programs.

b. Rehabilitation--The general overhauling of a complete building or major section thereof to better adapt it for continued use for the school program or a different type of occupancy.

c. Remodeling--Any major permanent structural improvement to a building. It includes changes of partitions, roof structure, or walls. Repairs are not included here but are included under maintenance.

1. AASA. Planning America's School Buildings. 1960. p. 202
2. U.S. Office of Education Handbook III, Property Accounting, Bulletin 1959, No. 22

d. Renovation--The renewing of a building or part thereof without changing structure, function or design.

e. Repairs--The restoration of a given piece of equipment of a given building or of grounds to original condition of completeness or efficiency from a worn, damaged, or deteriorated condition.

Throughout this study the term modernization is used, since this is the purpose of this inquiry as defined above.

The Problem and Background

The question of whether a school district should modernize a school building is a perennial problem. Though comparatively little is written on this subject, it is a fact that each year many school buildings in the United States are being remodeled or torn down and replaced with new construction. Guidelines to assist school districts in proceeding wisely in determining whether or not they are making a wise investment of public funds are practically non-existent.

Building technology studies undertaken have indicated that rehabilitation and modernization needs occur most often in certain parts or areas of school buildings. Some parts wear out, deteriorate or become obsolete more rapidly than do others. Some surfaces need attention more often than do some structural items. Educational changes, upgrading of standards, passage of time, maintenance neglect, improvement of design, new materials and construction patterns make many school buildings inefficient or obsolete even though they are structurally sound. Because many of these buildings cannot be abandoned, local school officials need to plan and carry on continued modernization programs.

School districts may decide to modernize school buildings without an adequate analysis of building conditions, long-range planning and sufficient information on a building's probable useful life expectancy. An unrecognized commitment to moderni-

zation may come with a decision to improve a heating plant, remodel toilets, replace plumbing, replace a roof, repaint exterior brick walls or do other extensive single operations to improve a building. Once a sizeable investment has been made in improving some of the expensive items, it is too late to make a complete appraisal of what to do with a building. A commitment to remodel a building has been made. This is a "piecemeal" approach to modernization and may be expensive and result in perpetuating the life expectancy of an educationally inadequate structure. The problem of whether or not to modernize is truly complex and requires thorough analysis and careful planning.

Nationally, few states provide assistance to school districts for modernization purposes. The State of Tennessee is an exception and provides some financial help for major repairs that may be classified as capital outlay. However, from evidence examined, no other state has adopted rules, regulations, or provided matching money for modernization of school facilities.

Individual school districts throughout the United States have undertaken the modernization of school buildings by using local funds. During the period from 1957-1961, Milwaukee, Wisconsin, has modernized seven buildings and has scheduled forty more to be modernized on a priority basis during the next few years.

In the State of Washington, Seattle, Spokane, Tacoma, Everett, Longview, Wenatchee and other school districts have undertaken modernization projects on a limited basis using local funds exclusively.

Since the State of Washington is a relatively new state, thus having comparatively few of its approximate 1800 school buildings in the "old" classification, and since emphasis since World War II has been on providing for its rapidly expanding enrollments, modernization has not received much attention.

Chapter 278 of the Laws of 1947 provided that the State Board of Education "shall have the power and it shall be its duty to prescribe regulations covering state aid to school districts for school building construction, and to approve grants for such a purpose." The resultant effect has been the construction of 1250 building projects containing more than 13,300 new "teaching stations" or classrooms.

Table 1 summarizes state appropriations for public school construction as of December 31, 1962. It shows itemized total construction costs, number of teaching stations or classrooms, and the average cost of construction per classroom.

Table 1

SUMMARY OF STATE FINANCED PUBLIC SCHOOL CONSTRUCTION

December 31, 1962

Bond Issue	Total Cost	No. Teaching Stations or Classrooms	Average Cost per Teaching Station or Classroom*
$40,000,000 (1950)	$ 87,200,443.06	2,503	$ 34,838.37
20,000,000 (1953)	43,958,644.14	1,459	30,129.30
30,000,000 (1955)	67,360,621.71	1,885	35,735.08
52,000,000 (1957)	111,805,938.11	2,979	37,531.36
34,000,000 (1959)	87,149,163.29	2,289	38,073.03
50,750,000 (1961)	83,464,498.52	2,231	37,411.24
Totals	$ 480,939,308.83	13,346 (Average)	$ 36,036.21

*This includes all facilities necessary for the support of these teaching stations.

In view of the large amount of money being spent on new construction, as shown under the item "Total Cost" in Table 1, individuals and groups have raised the question that significant savings might accrue if state matching funds were allowed for modernization of structurally sound buildings. No evidence has been available to date to prove this point. Thus a feasibility study of modernization of school

facil ties is timely and should contribute substantially to information presently available.

Formal action in the State of Washington toward a study of the feasibility of providing state school building funds for renovation or modernization of school buildings and other school facilities began in 1960. The Legislative Interim Committee on Education appointed a Citizens' Subcommittee on Efficiency and Economy of School Management. This subcommittee recommended that a study of the modernization of older school buildings be undertaken by the State Board of Education. In June 1960 the State Board directed the State Department of Education's Facilities and Organization staff to make a study and submit its findings. A progress report was made in September, followed by a second report in December. They recommended the following:[1]

Proposed General Requirements

If it is the decision of the State Board of Education to provide state matching funds for the modernization and/or reconstruction of existing school buildings, the following outline of requirements should be embodied in the regulations governing administration of the state assistance program:

A. Site size requirements must be met as set forth in Section III of the current Procedures, Policies and Regulations of the State Board of Education.

B. The applicant school district shall submit an appraisal of the existing building on the basis of replacement cost. The appraisal shall be prepared by a person who is licensed and qualified to appraise public buildings.

C. Plans and specifications for modernization and/or reconstruction of an existing building shall comply with applicable code requirements and/or the Uniform Building Code of the Pacific Coast Officials Conference.

D. The applicant school district must have met all existing requirements for eligibility to receive state assistance for new school building construction prior to the application for state assistance for modernization and/or reconstruction.

E. The applicant school district must secure written approval from its local planning commission to the effect that a need exists for a school at the particular location for an extended period of time.

1. Minutes of State Board of Education meeting, December 1-2, 1960

Estimate of Program Cost

It would not be possible, at this time, to estimate the amount of state funds required for a program of this kind. Only a district-by-district survey could reveal the needs of the school districts of the state and the estimated cost of such a program.

The staff has reviewed carefully the list of projects proposed for the 1961-63 biennium to determine whether or not the buildings scheduled to be razed might be modernized and/or reconstructed if state matching funds were available for that purpose. The review shows that two high schools, two high school additions, one junior high school and seven elementary schools are scheduled to be replaced. The state's share of the cost of replacement is estimated at $2,559,429. However, it is our judgment that these buildings should be replaced rather than modernized and/or reconstructed.

This report was presented to the State Board of Education in December 1960 and was accepted, but action was indefinitely deferred.

Legislative Request

The next formal action took place on March 24, 1961, when the House of Representatives passed a resolution concerning school building modernization which stated:[1]

> WHEREAS, Under the present law, the allocation of funds to assist school districts in school plant projects is limited to site acquisition, construction, equipment costs, and expenses in connection therewith; and
>
> WHEREAS, In many instances economies might be effected by the renovation and modernization of existing school facilities rather than by acquiring new ones;
>
> NOW, THEREFORE, BE IT RESOLVED, By the House of Representatives, that the State Board of Education is hereby requested to study the feasibility of providing state school building funds for renovation or modernization of school buildings and other school facilities and to submit a report thereon to the House of Representatives of the thirty-eighth Legislature.

1. House Journal, 1961 Extraordinary Session, page 115

Beginning of Feasibility Study

State Superintendent Louis Bruno, in the fall of 1961, directed the newly established Research Office in the State Department of Education to cooperate with Facilities and Organization personnel in designing a feasibility study on modernization of school facilities. Actual work began in December 1961, and the design of the study was completed in February 1962.

In brief, the feasibility study included a survey of all school districts in the state to discover the number of districts that reported having school buildings suitable for consideration in any modernization program. For those who responded affirmatively, follow-up procedures were planned. First, a resolution was requested to be passed by the local school board which indicated their interest in the study and their desire to participate in it. Second, each participating district was asked to complete a detailed form on which specific items of information were requested. After these steps had been completed, the third follow-up procedure included a personal visit by a representative of the Facilities and Organization Division to review these data and conduct an on-site inspection of the building.

Final procedures included analysis of data by the staff and the Research Office and production of a final report.

Objectives

The basic purpose of the study was to determine whether state monies should be appropriated for renovation or modernization of school buildings and other school facilities in addition to those funds already provided for construction, site acquisition, equipment costs and other related expenses. Specific questions were also stated to which answers would be sought, i.e.

1. Would additional classrooms result if state monies were available for modernization purposes?

2. What economies, if any, would be effected if the state assisted school districts financially with modernization?

3. Would substandard classrooms be reduced if this plan were to be instituted?

4. Is it possible to establish when it is more feasible to modernize than to build? If so, what are the factors that are necessary to make this decision?

5. Can a set of guidelines be established which will assist school districts in determining whether or not a building should be modernized?

6. What should the role of the State Superintendent of Public Instruction become in any proposed partnership with respect to modernization, e.g. Supervisor? Inspector? Consultant?

7. How shall monies be distributed to school districts for modernization if funds are provided? Is a formula necessary? If so, what should it be?

8. What requirements, if any, should school districts meet to qualify for state assistance in a modernization program?

9. As a result of this study, assuming that a need has been shown to exist for providing state funds for modernization purposes, how much money is required for this purpose during the next biennium?

Expected Outcomes

The Research Office and the Facilities and Organization Division, in designing this feasibility study, expected the following results from it:

1. An accurate compilation would result of data on all buildings within the state thought to be good subjects for modernization. This would yield a comprehensive picture of the status of these older buildings and their strengths and weaknesses.

2. The question would be answered as to whether additional classroom space that satisfactorily meets required standards for safety, program, sanitation, etc., could be obtained at a more reasonable cost than constructing new classrooms. The basic question of whether or not it is feasible to provide state funds for modernization would then be answered.

3. Assuming that it is feasible to provide state money for modernization, it would be possible to estimate accurately the amount needed during the next biennium from data obtained in the survey.

4. Through the survey conducted by the questionnaire and personal examination of these buildings by the representatives of the Facilities and Organization staff, a set of guidelines may be developed that could be used by school districts and the state in a modernization program.

5. The need for developing a policy for distributing state funds and establishing requirements for school districts to qualify for modernization would become clear.

6. Greater insight would be available into the role of the Office of the State Superintendent of Public Instruction in a modernization program.

7. The study would satisfy the legislative resolution to investigate the feasibility of renovation or modernization of school buildings and provide a basis for making recommendations to them at the next session.

8. The study would contribute to the completion of an inventory of all school buildings in the State of Washington.

Procedures

The initial problem was to devise survey instruments that could be used as guidelines to standardize the procedures to be followed. Staff members of the Facilities and Organization Division engaged in considerable research and study to determine the criteria that would be appropriate to the analysis of the educational adequacy of a local project.

Two forms[1] resulted from this analysis. Form S-4(m) contained a proposed resolution to be signed by the school board, expressing its interest in the study and accepting the responsibility for making a comprehensive study to determine the feasibility of modernizing certain buildings in that district. This form outlined six steps that a local district should follow in conducting this study, namely:

1. An analysis by the local staff regarding the educational adequacy of the proposed project.

2. A letter of approval from the Planning Commission having jurisdiction, to the effect that a need exists for a school at this particular location for an extended period of time. (Local district to contact Planning Commission.)

1. Bulletin No. 22-62, included in Appendix

3. A letter from the fire marshal having jurisdiction, stating that the present building meets or can be altered to meet code requirements relating to fire safety. (No action required by local district. The fire marshal will contact you.)

4. A letter from the health agency having jurisdiction, stating that the present building meets or can be altered to meet code requirements relating to health and sanitation. (No action required by local district. The county sanitarian will contact you.)

5. A report by a structural engineer, licensed to practice in the State of Washington. (For example, the structural engineer would examine foundations, walls, floors, ceilings and windows for evidence of structural failure. He would be expected to CERTIFY to the structural adequacy and safety of the building.)

6. An architect's cost breakdown of the proposed project.

Note: It is suggested that all districts interested in modernization complete the first four items listed above. If it is then found feasible to modernize, the next step is outlined in items 5 and 6. This will require the expenditure of school district funds without any financial commitment for state assistance.

If the school board expressed its desire to participate in the feasibility study by passing the proposed resolution contained in form S-4(m), then a second procedure was to be followed, namely, the completion of additional details analyzing the adequacy of the site and the building itself. A form entitled "Preliminary Modernization Survey" - form S-5(m) - was developed to obtain this information. This contained the specific guidelines used by the local district in making the analysis of buildings being considered for modernization.

Results of the Study

The modernization study actually began in late January of 1962, when the Building and Organization Division sent a bulletin[1] to all 409 school districts in the state to determine need for state funds for (new) building construction and/or modernization during the 1963-65 biennium. On February 15, 1962, when all replies were due, 84 school

1. Bulletin No. 6-62 included in Appendix .

districts indicated a positive interest in school building modernization. On February 28, 1962, another bulletin[1] was sent to each of these districts confirming receipt of their response and enclosing form S-4(m), the resolution and outline of the procedures to be followed in the feasibility study. A copy of the total research study was also enclosed for their information.

Of the 84 school districts who were immediately concerned or had plans for future modernization of existing school facilities, 19[2] returned resolutions signed by their respective school boards. Eleven districts, representing 24% of the total student population in the state, completed all six steps outlined in form S-4(m). These eleven districts indicated that a total of 32 buildings were suitable for consideration of modernization. This total included 12 elementary schools, eight junior high schools, 10 senior high schools and two community college buildings.

The detailed results of the study are presented in the next five tables. These data have been taken directly from the reports of the districts and summarized into this form.

1. Bulletin No. 22-62, included in Appendix

2. The dropout of 65 districts may be accounted for by several factors, i.e., lack of local personnel to conduct a survey; lack of funds required to participate; no assurance of return for efforts expended; physical facilities ineligible according to established criteria; and other reasons.

Table 2

EVALUATION OF EXISTING SITES

Question	Yes	No	NR*
1. Is the site centrally located in respect to the area it serves?	30	1	1
2. Is it possible to expand the present site at reasonable cost?	10	21	1
3. Is the site reasonably free from disturbing or interfering noises?	31	0	1
4. Is the site in a single unit?	24	7	1
5. Is the site free of traffic hazards?	29	1	2
6. Is there ample off-street parking for normal automobile concentration caused by the presence of the school?	23	8	1
7. Is the site well drained?	31	0	1
8. Are service drives properly located for student safety?	29	2	1

*The (NR) indicates "no response."

Evidence presented in Table 2 shows that sites are well located and drained, reasonably free from disturbance, traffic hazards and provide for student safety. In the majority of cases the site is in a single unit and provides for ample parking space. Only one-third of the sites could be expanded at a reasonable cost. The size of these sites ranges from 1.73 to 38.0 acres with the median being 6.0 acres. This means that the sites of buildings included in this study are not as large as presently required for construction of new facilities. An exception to this present requirement would have to be made if these buildings were to be modernized. This procedure is occasionally used at present for new construction, when the circumstances warrant that an exception be made.

When all information presented in Table 2 is considered, it appears that except for economical expansion of present sites, architects, school boards, and professional personnel agree that existing sites were adequate if buildings continued to be located in their present locations.

Table 3

TYPE OF CONSTRUCTION OF EXISTING STRUCTURES

Description	Insurance Rating Bureau Classification*	Number
Fire-resistive or semi-fire-resistive Buildings predominately of masonry, concrete or similar non-combustible wall, floor and roof construction.	Class A	1
Masonry Buildings of masonry, concrete or similar non-combustible wall construction, but with floors or roof of non-combustible construction.	Class B	22
Frame Buildings of combustible wall, floor and roof construction. Frame brick-veneered walls are classed as combustible.	Class D	8
	No Response	1

*School Insurance Economies, WSSDA 1961 p. 30-1

The ages of the buildings reported in Table 3 range in age from 14 to 60 years, with the median age of buildings being 41 years. Two-thirds of the buildings are of masonry, concrete or similar non-combustible wall construction with floors or roofs of combustible material and would carry lower insurance rates than those of combustible construction.

Table 4

EVALUATION OF EXISTING STRUCTURES

Question	Response		
	Yes	No	NR*
Does the building have any hazards to safety, such as blind corridors, unguarded stairs, slippery stairs, or obstructions to traffic?	3	27	2
Is it possible to modernize without destroying or wasting space: (For example, removing the curtain wall between two 650 square foot classrooms would create a classroom of 1300 square feet. This might be wasting space, as it is in excess of the recommended 960 square foot classrooms.)	29	1	2
Is this building flexible? (Structurally, flexibility demands that a building be so designed that internal changes can be made efficiently and economically.)	22	9	1
Do the local staff members concur that if this building is modernized, it will meet the needs of their desired educational program?	31	0	1

*Thirty-two buildings were designated as subjects for modernization. The (NR) indicates "no response" concerning some buildings.

From data presented in Table 4 it appears that existing structures are safe, contain little or no wasted space and will meet the needs of the desired educational program after modernization has been completed. The majority of the structures are also reported to be flexible so that internal changes can be made quite easily.

Table 5

COMPARISON OF PRESENT AND PROPOSED TEACHING STATIONS

Type	Present	Proposed
General classrooms	518	502
Physical education	38	41
Science classrooms	34	38
Home economics classrooms	45	37
Commercial classrooms	28	29
Arts and crafts rooms	28	29
Music rooms	22	27
Science laboratories	24	26
Electric shops	11	11
Wood shops	13	10
Mechanical drawing rooms	11	10
Metal shops	9	9
Shop classrooms	6	8
Dramatics classrooms	3	5
General shops	2	3
Farm shops	0	1
Total	792	786

Information presented in Table 5 compares the number and type of teaching stations that presently exist with those that would result after the proposed modernization is completed. It should be noted that changes in the numbers resulting from modernization vary with the different classroom uses.

When the proposed modernization program has been completed, Table 5 shows that 786 renovated classrooms or teaching stations will result. They will meet all safety, fire, health, and educational standards. Additional space requirements needed for this modernization plan would cause a small decrease of six teaching stations from those presently available, a net loss of only three-fourths of one per cent.

According to available data in the Facilities and Organization Division as taken from a fall report (F-74), there were 681 makeshift, 1136 temporary and portable classrooms, and 210 classrooms located off the premises. This shows that a total of 2027 classrooms were rated substandard at the beginning of the 1962 school year. Of this amount the school districts rated 939 classrooms as unsatisfactory[1] and in need of immediate replacement.

When the fall reports of the eleven districts represented in this study were examined, they showed that 86 classrooms were classified as makeshift, 641 as temporary and portable, and 18 located off the premises. This totaled 743 substandard classrooms in these eleven districts.

If it can be assumed that the eleven districts in this study who collectively reported having 743 substandard classrooms also included these same rooms in their modernization report, then it would be appropriate to state that a modernization program would reduce the number of substandard classrooms in the state by 37%.

Representatives of the Facilities and Organization Division of the State Office, who made personal on-site inspections of all buildings included in this modernization study and also discussed needs for new construction with each district, state that classrooms included in this modernization program were not included in their district-by-district survey of needs for new construction.

1. An "unsatisfactory" facility is one which should be abandoned because its condition or location is such that it cannot be made satisfactory with any reasonable expenditure.

Thus, in addition to modernization problems, these districts also must be concerned with providing new building facilities for increasing enrollments and relieving overcrowded conditions.

A modernization program may improve the safety, sanitation conditions and the educational adequacy for students already housed in substandard facilities. However, it is significant to note that it does not reduce overcrowded conditions, double shifts or provide additional space for increased enrollments. A program of modernization may delay replacement of certain buildings for a number of years, thereby reducing the need for capital fund expenditures which could result in the realization of some economies. However, it must be stated that a modernization program as described in this study would have little or no immediate effect on new construction needs of these districts.

Table 6

ESTIMATED COSTS OF MODERNIZING EXISTING STRUCTURES

rojects	Teaching Stations Present	Proposed	Estimated Local Funds	State Funds	Total
ATCHEE					
igh	85	68	$ 1,398,792.18	$ 349,698.05	$ 1,748,490.23
TTLE					
dams El	19	19	168,000.00	42,000.00	210,000.00
oncord El	9	9	108,000.00	27,000.00	135,000.00
rown Hill El	14	8	32,000.00	8,000.00	40,000.00
merson El	16	16	132,000.00	33,000.00	165,000.00
ay El	9	9	88,000.00	22,000.00	110,000.00
uir El	20	20	160,000.00	40,000.00	200,000.00
ashington El	24	24	80,000.00	20,000.00	100,000.00
ddams Jr. Hi	18	18	140,000.00	35,000.00	175,000.00
amilton Jr. Hi	41	41	280,000.00	70,000.00	350,000.00
adison Jr. Hi	42	42	280,000.00	70,000.00	350,000.00
arshall Jr. Hi	43	48	480,000.00	120,000.00	600,000.00
onroe Jr. Hi	42	46	320,000.00	80,000.00	400,000.00
arfield Hi	60	63	200,000.00	50,000.00	250,000.00
oosevelt Hi	68	68	200,000.00	50,000.00	250,000.00
			$ 2,668,000.00	$ 667,000.00	$ 3,335,000.00
GVIEW					
essler El	45	45	$ 94,600.00	$ 15,400.00	$ 110,000.00
olumbia Valley Gardens El	14	15	132,440.00	21,560.00	154,000.00
t. Helens El	16	17	104,060.00	16,940.00	121,000.00
			$ 331,100.00	$ 53,900.00	$ 385,000.00

Table 6 (Cont'd)
ESTIMATED COSTS OF MODERNIZING EXISTING STRUCTURES

Projects	Teaching Stations Present	Teaching Stations Proposed	Estimated Local Funds	Estimated State Funds	Estimated Total
ABERDEEN					
Weatherwax Hi	20	22	$ 259,758.23	$ 78,909.61	$ 338,667.84
EVERETT					
High	62	72	$1,127,781.37	$ 314,394.30	$1,442,175.67
LAKE STEVENS					
High	15	7	$ 4,684.20	$ 42,157.80	$ 46,842.00
NACHES VALLEY					
High	15	12	$ 199,320.00	$ 20,680.00	$ 220,000.00
MABTON					
High	2	2	$ 57,318.36	$ 18,801.64	$ 76,120.00
BREMERTON					
College St Cntr	2	0	$ 363,151.15	$ 206,944.85	$ 570,096.00
College Admin.	0	1	52,357.58	29,836.42	82,194.00
West Hi	43	49	477,750.00	272,250.00	750,000.00
			$ 893,258.73	$ 509,031.27	$1,402,290.00
BELLEVUE					
Medina El	4	4	$ 6,915.00	$ 18,085.00	$ 25,000.00
Bellevue Jr. Hi	1	1	25,391.88	66,408.12	91,800.00
Highland Jr. Hi	3	3	4,978.80	13,021.20	18,000.00
Bellevue Sr. Hi	1	1	4,204.32	10,995.68	15,200.00
			$ 41,490.00	$ 108,510.00	$ 150,000.00
WEST VALLEY					
Dishman El	14	13	$ 13,109.94	$ 8,417.06	$ 21,527.00
Argonne Jr. Hi	25	23	55,677.60	27,922.40	83,600.00
			$ 68,787.54	$ 36,339.46	$ 105,127.00
TOTALS	792	786	$7,050,290.61	$2,199,422.13	$9,249,712.74

Table 6 shows a breakdown of buildings selected for modernization by each school district, the present teaching stations compared to those proposed, and costs based on school district estimates. In order to obtain an estimate of local and state costs of modernization, the current state matching formula for new construction was applied to each district's buildings. The result shows total cost of the modernization projects may be estimated at $9,249,712.74. Using the proposed number of "teaching stations" expected to result from modernization (786), the average cost per teaching station is $11,768.08. This includes all the service areas and facilities necessary for the support of these teaching stations.

Summary

To determine whether it is feasible for state funds to be used for school building modernization, answers to specific questions were sought in this study. The following statements are made in direct response to these queries from the data presented.

1. Would additional classrooms result if state monies were available for modernization purposes?

Information presented in Table 5 shows that in the process of a proposed modernization program, changes in numbers of teaching stations would occur.

Though 786 educationally adequate teaching stations would result after modernization, there was a decrease of three-fourths of one per cent in the process. Therefore, the question must be answered that additional classrooms would not result from modernization of these school facilities.

2. What economies, if any, would be effected if the state assisted school districts financially with modernization?

Evidence presented in Table 1 reveals that the 10-year average construction cost of a new teaching station is $36,036.21. Data in Table 6 shows that the average modernization cost per teaching station is $11,768.08 or 32.66% of new construction cost.

Dr. Henry Linn, Teachers College, Columbia University, believes that the point at which modernization should not be considered is approximately 40% of the cost of new construction. Linn arrived at this figure by analyzing school building construction in the eastern part of the United States. Some authorities in the West believe that any building 35-40 years old should not be considered for modernization if costs exceed 20% of new construction.

As a general rule of thumb, some buildings experts say that if any two of the following items are necessary to bring a building up-to-date, modernization work should be seriously questioned. These items are: major replacement of

plumbing; heating; total replacement of electrical wiring; basic structural changes involving space rearrangement; complete reroofing; or, complete revamping of the fenestration pattern. Usually, if any two of these items are necessary in the modernization of the building these experts maintain that total cost will likely be excessive.

The answer to question 2 depends upon whether the 20% or the 40% new construction cost is accepted as the maximum cost of modernization.

If economies are to be interpreted as reduced expenditures required to adequately house public school pupils, this becomes a new question. Since added teaching stations would not result from a state modernization program, and since they are not included in the projected new construction needs of the state, the question can be answered negatively. It is true that more children would become adequately housed as a result of the modernization. However, there would be little or no immediate effect on demands for new construction to house increasing enrollments or relieve overcrowded conditions.

3. Would substandard classrooms be reduced if this plan were to be instituted?

Yes, there would be a reduction of approximately 37% in the number of substandard classrooms if a modernization program were undertaken. This assumes the eleven school districts' fall report (F-74) on substandard classrooms are the same classrooms that have been included in this modernization study.

4. Is it possible to establish when it is more feasible to modernize than build? If so, what are the factors that are necessary to make this decision.

Two figures of 20% and 40% of new construction costs have been cited in this study as being maximums within which the costs of modernization of a 35-40 year-old building should be limited. A rule of thumb estimate was also given which stated that a building should not be considered for modernization when any two major items need complete replacement such as, plumbing and heating, or, basic structural

rearrangement of space. The procedures used in this feasibility study inferred that if answers to the first four items on form S-4(m) were negative, further consideration of this facility for modernization would not be feasible.

With these three qualifications to serve as guidelines, an answer to this question has been obtained from the data in this study.

5. Can a set of guidelines be established which will assist school districts in determining whether or not a building should be modernized?

Form S-4(m) used in this study outlined a six-step procedure to be followed in arriving at a decision of whether or not a building should be modernized.

Form S-5(m) provided a more detailed guide for local districts to use in analyzing site adequacy, type of building construction and in estimating costs.

From the experience gained from this study, it is the consensus of the members of the Facilities and Organization Division that a sound and reasonably accurate decision concerning modernization can be made if forms S-4(m) and S-5(m) are employed. Staff members agree that the development of guidelines to aid decisions to modernize should at least contain the following items:

a. a structural engineer's report

b. a mechanical engineer's report

c. an electrical engineer's report

d. a survey of the educational adequacy

e. an architect's or contractor's estimate on costs

f. a study of the location of the site

g. a fire marshal analysis for safety

h. a health agency report on sanitation

6. What should the role of the Superintendent of Public Instruction become in any proposed partnership with respect to modernization, e.g. Supervisor? Inspector? Consultant?

Since members of the Facilities and Organization Division participated directly in the analysis procedures established by the study, there have been frequent discussions of this question. If a conclusion can be drawn from them, it would be that an arrangement should be established between school districts and the State Office similar to the one that now exists relative to new construction. The Facilities and Organization section of the Office of the State Superintendent of Public Instruction, because of experience, competencies, and legal involvement, would serve in a consultant leadership capacity. A set of criteria and regulations should be developed that must be favorably met by local districts in order to guide the modernization program. It is generally agreed that problems would be somewhat different than those involved in new construction, but sufficient similarities do exist that could become generally applicable to modernization situations. Further study would be necessary to delineate exact procedures to be followed.

7. How shall monies be distributed to school districts for modernization if funds are provided? Is a formula necessary? If so, what should it be?

For purposes of this study, procedures were used that are now employed in preparing for new construction. The present formula for new construction was also used in financial participation that might be anticipated in a modernization program.

The fact that these procedures were used may be due to habit and/or expediency; however, it would appear that definite methods are needed to insure that funds are available according to need and are distributed on an equitable basis. Continued study is needed to specifically outline how this should be accomplished.

8. What requirements, if any, should school districts meet to qualify for state assistance in a modernization study?

There are indications from the procedures used in this feasibility study that there is a need for establishing certain requirements to be met by school districts to qualify for modernization. Evidence is needed that the facility is a bona fide modernization project and not a "delayed maintenance" type of project. Certain financial agreements that bind the local district and the state to specific arrangements are also needed.

Answers to this question are highly related to the role of the Office of the Superintendent of Public Instruction and formulae that may be used for distribution of funds. These items must be considered as a whole and would require more study before final procedures could be established.

9. As a result of this study, assuming that a need has been shown to exist for providing state funds for modernization purposes, how much money is required for this purpose during the next biennium?

For the eleven districts in this study, 32 buildings were analyzed which would contain 786 teaching stations (after proposed modernization). The total estimated cost for modernization was $9,249,712.74 or an average cost of $11,768.08 per teaching station.

Though no special formula for use of funds for modernization has been developed for this study, or is being proposed, the present formula for new construction was applied in order to arrive at an estimate of local and state financial participation. As a result, if a method for distribution of state modernization funds was similar to that used in new construction, local districts would bear $7,050,290.61 or 76% of the total cost and the state would supply the remaining $2,199,422.13 or 24%.

Conclusions

Many of the expected results projected in the original design of this feasibility study have been realized. Specifically,

a. A more detailed and comprehensive picture of the status of older buildings in the state has been obtained.

b. It has been determined that for the school buildings considered in this study, modernization could bring these facilities up to required standards of safety, sanitation and educational adequacy at an approximate cost of 33% of the price of a new building.

c. By applying the new building construction formula, it has been possible to estimate the amount of state funds that would be required to participate in a program of modernization.

d. A set of guidelines was developed to assist local districts in ascertaining their modernization needs. These proved to be successful in their use and insights were gained as to how they might be modified and improved if a state modernization program should become a reality.

e. This study showed the need for development of a clear policy for school districts, governing distribution of and qualification for state funds for modernization if they become available.

f. The problems associated with modernization were found to be quite different from those normally accompanying new building construction, thereby necessitating a reassessment of the role of the Office of the Superintendent of Public Instruction in a modernization program if it is to be undertaken.

g. Information gathered has contributed to the total inventory available in the State Office of all school buildings in the State of Washington.

Finally, the basic purpose of this feasibility study was to determine whether state funds should be appropriated for modernization of school buildings and other facilities. From the evidence obtained in the study, it appears that such an appropriation is justified on the basis of providing safer, more sanitary and more educationally adequate facilities for students who are presently housed in substandard classrooms. The cost would be approximately one-third that of replacement by new construction.

The long-range effect of a modernization program may result in some economies, since the need for replacement of old buildings would be delayed for an indefinite number of years. The amount of money needed for immediate new construction would not be affected, however, since the projections for new construction do not include buildings in need of modernization. Therefore, it must be clearly understood that a program of modernization, as described in this study, would have little or no immediate effect on reducing overcrowded classroom conditions, double shifts, nor would it provide additional space for increased enrollments.

APPENDIX

State of Washington
SUPERINTENDENT OF PUBLIC INSTRUCTION
Olympia

January 24, 1962

BULLETIN NO. 6-62

TO: School Administrators

FROM: Louis Bruno, State Superintendent of Public Instruction

RE: Determining Need for State Funds for School Building Construction and/or Modernization During the 1963-65 Biennium

Please complete in triplicate the enclosed form, indicating your needs for additional school plant facilities or for modernizing existing facilities during the 1963-65 biennium. One copy is to be returned to this office, one copy filed with your county superintendent and one copy retained for your files.

The following resolution was adopted by the Washington House of Representatives on March 24, 1961:

> WHEREAS, Under present law, the allocation of funds to assist school districts in school plant projects is limited to site acquisition, construction, equipment costs, and expenses in connection therewith; and
>
> WHEREAS, In many instances economies might be effected by the renovation and modernization of existing school facilities rather than by acquiring new ones;
>
> NOW, THEREFORE, BE IT RESOLVED, By the House of Representatives, that the state board of education is hereby requested to study the feasibility of providing state school building funds for renovation or modernization of school buildings and other school facilities and to submit a report thereon to the House of Representatives at the opening of the thirty-eighth legislature.

In order to provide this information, certain assumptions have been accepted. First, modernization implies bringing existing buildings up to present-day standards; second, a structurally sound building can be modernized to meet all minimum educational standards as well as comply with all applicable codes, and third, modernization should not be confused with "delayed maintenance." Such items of maintenance and operation as repainting, replacing roofing, floor tile or other replacement due to normal wear would not be considered as modernization except when it is a part of the complete modernization of the building.

If you check either item 1, 2 and/or 3, a member of the School Facilities staff will visit your school district prior to the close of the current school year to discuss with you your school housing problems. This form should be returned not later than February 15, 1962, in order that travel itineraries for the staff may be properly planned.

Based on past experience, we anticipate that the Governor will require all requests for capital funds to be submitted to the Budget Director no later than June 1, 1962. To successfully compile the needs of all the districts, we must have sufficient time to do a precise job, and therefore we must commence our work by February 15, 1962.

If you will not have a need for school building construction or modernization of existing, structurally sound buildings during the 1963-65 biennium, please check item 4 and return this form so we may know that all districts have received this communication.

Division of Administration and Finance
School Facilities and District Organization Sectio
By A. L. Beck, Director

Enclosures: 3

1 copy to be returned to the State Director of School Plant Facilities
1 copy to be filed with the county superintendent
1 copy to be retained by the school district

State of Washington
SUPERINTENDENT OF PUBLIC INSTRUCTION
Olympia

PRESENT STATUS OF CONTEMPLATED PLANS FOR SCHOOL BUILDING CONSTRUCTION DURING THE 1963-65 BIENNIUM

Instructions for completion of form:

Please check those of the following four statements which indicate your best appraisal of the current status of the school building situation in your school district.

This form is to be returned to the State Office of Education not later than February 15, 1962.

_____ 1. We have need for school housing and expect to build during the 1963-65 biennium.

_____ 2. We have not yet determined plans for construction during the 1963-65 biennial period, but we should like to discuss our problems with a representative of the School Facilities staff.

_____ 3. We have facilities which we feel should be modernized and would like to discuss them with you.

_____ 4. We do not plan to build or modernize existing facilities during the 1963-65 biennium.

School District _____
(Name) (No.)

County _____

(Signed) _____

_____
(Title)

Date _____

Return original copy to: A.L. Beck, Director
School Facilities and District Organization
Old Capitol Building
Olympia, Washington

File one copy with county superintendent of schools
Retain one copy in school district files

State of Washington
SUPERINTENDENT OF PUBLIC INSTRUCTION
Olympia

February 28, 1962

BULLETIN NO. 22-62

TO: School Administrators

FROM: Louis Bruno

RE: Modernization

Your response to Bulletin 6-62 has been received. In it you have indicated your interest in the modernization of school buildings within your district.

Many discussions have taken place in the past regarding the problem of modernization of school facilities. As you know, there are no state funds available for this purpose at the present time. The big question is -- should money be appropriated for this purpose.

The Office of Superintendent of Public Instruction, at the request of the last Legislature, is beginning a research study (see enclosed copy) of this modernization problem. In it the present status of these older buildings will be surveyed to discover the feasibility of providing state monies for modernization purposes. Until this total need has been analyzed there can be no recommendation to the next Legislature regarding this problem. Therefore, since you have shown an interest in this possibility, you are being urged to participate in this research project. Form S-4(m) has been enclosed in this letter as the next step in this study. The first four items can be accomplished by your district with little or no expenditure of funds. In order to complete Item 5, however, the payment of a fee to a structural engineer will be required.

This is important information to obtain if accurate cost estimates for the entire state are to be ascertained. You realize, of course, that since this is a research study to discover the feasibility of providing money for modernization, there can be no financial commitments made at this point.

If you wish to participate in this modernization study, understanding these conditions, please complete the enclosed resolution and return it to us as soon as possible. This written agreement places responsibility upon your district for the completion of information about these buildings. Upon its receipt a visitation schedule with a representative of our Building Staff can then be arranged.

If your district plans to modernize more than one building, please request additional forms, as a complete set is needed for each survey.

Division of Administration and Finance
School Facilities and District Organization Section
By A.L. Beck, Director

State of Washington
SUPERINTENDENT OF PUBLIC INSTRUCTION
Olympia

To: A.L. Beck, Director of School Facilities and District Organization
Old Capitol Building, Olympia, Washington

Resolution

BE IT RESOLVED That the Board of Directors of _____ School District No. _____, _____ County, State of Washington, accept the responsibility for making a comprehensive study to determine the feasibility of modernizing the _____ _____ School building and will complete the items listed below before the visit of the consultant.

This study shall include the following written statements or reports:

1. An analysis by the local staff regarding the educational adequacy of the proposed project. (See S-5(m) attached.)

2. A letter of approval from Planning Commission having jurisdiction, to the effect that a need exists for a school at this particular location for an extended period of time. (Local district to contact Planning Commission.)

3. A letter from the fire marshal having jurisdiction, stating that the present building meets or can be altered to meet code requirements relating to fire safety. (No action required by local district. The fire marshal will contact you.)

4. A letter from the health agency having jurisdiction, stating that the present building meets or can be altered to meet code requirements relating to health and sanitation. (No action required by local district. The county sanitarian will contact you.)

5. A report by a structural engineer, licensed to practice in the State of Washington. (For example, the structural engineer would examine foundations, walls, floors, ceilings and windows for evidence of structural failure. He would be expected to CERTIFY to the structural adequacy and safety of the building.)

6. An architect's cost breakdown of the proposed project.

Note: It is suggested that all districts interested in modernization complete the first four items listed above. If it is then found feasible to modernize, the next step is outlined in items 5 and 6. This will require the expenditure of school district funds without any financial commitment for State assistance.

Check One

___ Knowing this, we desire to participate in this research study.
___ We do not wish to participate beyond the first four items listed above.

The foregoing resolution was adopted at a _____ meeting of the Board of
(Regular or Special)
Directors of the aforesaid school district on the _____ day of _____, 19___, all of said directors being present and voting.

_____ _____
_____ _____
_____ Board of Directors, _____
Attest: _____ School District No. _____, _____
(Clerk or Secretary) County, Washington

S-5 (m)

State of Washington
SUPERINTENDENT OF PUBLIC INSTRUCTION
Olympia

PRELIMINARY MODERNIZATION SURVEY

(A guide to be used by the local staff for an analysis of their report)

Section A.

County _____, _____ School Dist. No. ___, Name of Bldg._____

Grade Level: Elementary ____ Junior High ____ High ____ Community College ____

This questionnaire is to be used as one of the criteria in determining the feasibility of modernizing one particular building. Please check your choice of answers that best describe this school or fill in the requested information in the space provided in the column to the left of each question. (Use separate form for each building.)

THE SITE

Yes___ No___ 1. Is this site centrally located with respect to the area it serves?

_____ Acres 2. How many acres in the present site?
(Minimum recommendations for an elementary site is 5 acres, plus an additional acre for each 100 expected maximum enrollment; for junior high or high school sites, 10 acres plus an additional acre for each 100 expected maximum enrollment.)

Yes___ No___ 3. Is it possible to expand the present site at reasonable expense?

Yes___ No___ 4. Is the site reasonably free from disturbing or interfering noises?

Yes___ No___ 5. Is the site in a single unit?

Yes___ No___ 6. Is the site free of traffic hazards?
(It might be protected by traffic light signals, officers, underpass or overpass.)

Yes___ No___ 7. Is there ample off-street parking for normal automobile concentration caused by the presence of the school?

Yes___ No___ 8. Is the site well drained?

Yes___ No___ 9. Are service drives properly located for student safety?

THE BUILDING

_____ 1. What is the date of the original construction?

$_____ 2. What was the original construction cost of the building?

3. Complete the following if there were additions to the original building:
First addition.....Cost $_____ Date of construction _____
Second addition.....Cost $_____ Date of construction _____
Third addition.....Cost $_____ Date of construction _____

A B C 4. List the type of construction that best describes this building. Explain any combinations of these three classes of construction.

Class A. (Fire resistive or semi-fire resistive.) Buildings predominately of masonry, concrete or similar non-combustible wall, floor and roof construction.

Class B. (Masonry.) Buildings of masonry, concrete or similar non-combustible wall construction but with floors or roof of combustible construction.

Class C. (Frame.) Buildings of combustible wall, floor and roof construction. Frame brick-veneered walls are classed as combustible.

Yes___ No___ 5. Does this building have any hazards to safety, such as blind corridors, unguarded stairs, slippery stairs, or obstructions to traffic?

Yes___ No___ 6. Is it possible to modernize without destroying or wasting space? (For example; removing the curtain wall between two 650 square foot classrooms would create a classroom of 1300 square feet. This might be wasting space, as it is in excess of the recommended 960 square foot classrooms.)

Yes___ No___ 7. Is this building flexible?
(Structurally, flexibility demands that a building is so designed that internal changes can be made efficiently and economically.)

Yes___ No___ 8. Does the local staff concur that if this building is modernized it will meet the needs of their desired educational program?

9. General comments:

10. Complete the following project analysis:

Compute area from outside wall to outside wall. Interior spaces shall be figured from centerline to centerline of walls.

The square foot area shall include the area of all floors enclosed by outside dimensions of exterior walls of the building. This area shall include heating plant, transformer vaults, and mechanical rooms. It shall not include tunnels, unused spaces under the building and open playcourts.

In computing, use the following factors: Basement playrooms, playsheds, basement or mezzanine storage and mechanical rooms shall be figured at 1/2 their actual area; covered walks or open corridors at 1/3 their actual area; porches at 1/4 their actual area; all other facilities shall be figured at their actual area dimensions. Each facility shall be considered as a unit in computing area dimensions and shall include the corridor, toilet or storage spaces serving the particular facility unit.

Project Facilities	No. Teaching Stations Present	No. Teaching Stations Proposed	Proposed Square Foot Area
A. General Classrooms			
B. Commercial Classroom			
C. Arts and Crafts Classroom			
D. Dramatics Classroom			
E. Science Laboratory			
F. Science Classroom			
G. Home Economics			
H. Wood Shop			
I. General Shop			
J. Metal Shop			
K. Electric Shop			
L. Farm Shop			
M. Shop Classroom			
N. Mechanical Drawing Classroom			
O. Music			
P. Physical Education			
Total Teaching Stations			

	No. Rooms and/or Units Present	No. Rooms and/or Units Proposed	Proposed Square Foot Area
Q. Shower and Locker			
R. Multipurpose			
S. Library			
T. Study			
U. Office			
V. Kitchen			
W. Health			
X. Teachers' Room			
Y. Workroom			
Z. Conference Room			
AA. Meeting			
BB. Storage			
CC. Toilet Rooms			
DD. Classroom Toilets			
EE. Auditorium			
FF. Covered Playcourt			
GG. Water Supply System			
HH. Sewage Disposal System			
II. Cafeteria			
JJ. Corridor			
KK. Covered Walks			
		Total Sq. Ft.	

Section B.

This form is to be completed by those districts having found all recommendations on Form S-4(m) favorable to modernization. Please complete and retain until the meeting is held with the consultant from the State office.

1. Estimated Cost of Project. (To be completed by architect.)

A. Construction Cost:

(1) Foundations . . . . . $ _____

(2) Floors . . . . . $ _____

(3) Exterior walls . . . . . $ _____

(4) Partitions . . . . . $ _____

(5) Roofs . . . . . $ _____

(6) Mechanical . . . . . $ _____

(7) Electrical . . . . . $ _____

(8) Overhead . . . . . $ _____

(9) Other . . . . . $ _____

Sub-total Construction Cost $ _____

B. Architect's fee (_____%) . . . . . $ _____

C. Sales tax . . . . . $ _____

Total estimated cost of project . . . . $ _____

Date _____

_____
Signature of Architect