

Chapter 2

Review of the Literature

The purpose of this chapter is to review the literature regarding the quality and condition, maintenance, and improvement and renovation of existing public school facilities in the United States. The quality and condition of public education facilities continues to be a topic of growing concern among the American public. Debates about the condition of school facilities and what to do about them occur at all levels of society, including the White House and the Congress. The American School Board Journal reported in October 1997 on the nationwide school facilities problem. Especially noted was the ongoing debate in both Congress and a number of state legislatures addressing this issue, all without major initiatives to resolve the problem of aging school buildings throughout the country (Hardy, 1997).

Clearly, national debates that continue to occur regarding the quality of public education in America increased as a result of a landmark report issued by the National Commission on Excellence, A Nation at Risk (1983). This report described falling student achievement and low expectations as typical of public schools across the country. It also noted a consistent decline in federal support for funding public education as one contributor to a public school system mired in mediocrity. Six years later, a conference on education with the nations' governors, held in Charlottesville at the University of Virginia, culminated with the Bush administration's strategic report, America 2000. This plan outlined sweeping proposals for education reform, including thirty million dollars to be spent on demonstration projects (Dept. of Education, 1991).

Still, millions of students in urban, suburban, and rural school districts, continued to attend schools that remained in sub-standard condition, in need of major maintenance or improvement and renovation (Honeyman, 1989). Further, the conditions of these schools continued to deteriorate because the funding required to improve them remained scarce (Honeyman, 1994). The magnitude of this problem had been recognized by the National Governor's Association at its conference in 1986 when it reported that minimal support was provided by state governments to address these issues (NGA, 1986).

Since that conference, there have been four major studies that have addressed the condition of public school facilities across the country. These include two studies by the American Association of School Administrators (AASA) conducted in 1983 and 1992. An important study, conducted by the Educational Writers' Association, resulted in the publication of Wolves at the Schoolhouse Door (1989). The last major study was a comprehensive examination of public school facilities by the Government Accounting Office (GAO, 1995). Additionally, a 1960 study by the AASA provides an historical perspective that foreshadowed the growing crisis in public school facilities. Finally, several related studies have demonstrated a correlation between facility condition and student achievement (Edwards, 1991; Cash, 1993; Hines, 1996).

These studies clearly indicate that as public school buildings age, the requirements for maintenance, and improvement and renovation increase. Earthman (1994) suggests that the findings present a compelling case for addressing public school facilities issues in a manner similar to support requirements necessary to maintain the infrastructure of roads, airports and municipal public buildings. He observes that school systems are generally in a catch-up position in maintaining their aging infrastructure (Earthman, 1994). This study was based on the research of these studies that indicate that the quality and condition of existing public school facilities continues to deteriorate nationwide. This review of literature examines the major findings of each of these major and related studies.

American Association of School Administrators, 1960

The School-Building Commission of the AASA issued a report entitled Planning America's School Buildings in 1960. This historical perspective included two important chapters addressing the maintenance and rehabilitation of existing school buildings of the period. Chapter XIII reports:

The problem of what to do with old school buildings is in many cases of no less concern than the problem of providing new facilities. There are thousands of

school buildings throughout the country which by even the most lenient of standards fall far below the caliber of the newer school buildings in the same community. (p. 202)

The report was aimed at underscoring growing discrepancies in public school building quality and condition when measured against the capacity to provide appropriate support for educational programs. It lamented the natural tendency of school boards and their communities to continue the use of existing facilities without needed modifications simply because these same buildings had performed satisfactorily over the last 20 or 30 years. One primary focus of the report called for the establishment of well-defined criteria against which to evaluate existing public school facilities. A second major focus examined the importance of maintenance, and improvement and renovation of existing facilities as key to the protection of the original capital investment of the school community. It identified a two-pronged basis for attention to these areas: (1) ensuring the on-going appropriateness of the educational environment to support the educational program, and (2) protecting the value of the initial financial commitment to public school facilities. The study was prophetic in observing:

The very fact that it sometimes is possible to defer certain maintenance projects make this item a likely candidate for any required budget cuts. Deferred maintenance is seldom a wise procedure. If maintenance is to be put off, then all concerned should understand that additional expenditures may be necessary in the near future. (p. 213)

It is important to reference this study, despite its age, because it illustrates how far back national concerns extended regarding the need for maintenance, and improvement and renovation of public school facilities.

American Association of School Administrators, 1983

In 1983, AASA, in conjunction with the Council of Great City Schools and the National School Boards Association, issued the first report of major significance

regarding school facilities since the AASA historical report twenty-three years earlier. This report addressed the status of existing public schools in America and was based upon a random sample survey of school administrators representing thirty-three states and the District of Columbia. Results of the study clearly suggested that the quality and condition of America's public schools were in jeopardy. Based on the return from one hundred school districts, the report projected that \$25 billion would be needed to address the maintenance, and improvement and renovation needs of public school facilities throughout the United States. The study attributed six primary reasons to explain the size of this facility maintenance and improvement deficit: (1) The extraordinary increase in energy costs during the later part of the 1970's resulted in deferred maintenance decisions in order to offset the costs of rising fuel prices. (2) The existence of local and state tax limitations restricted the flexibility of school districts to fund maintenance, and improvement and renovation related projects. Instead, the more frequent practice was to direct available funds to support the rising costs of the instructional program. (3) The percent of aging school buildings throughout the country continued to rise with more than twenty percent constructed before 1920. A major factor for consideration focused on the updating of electrical, plumbing and heating systems in these buildings. (4) The finding that public schools in general, particularly in the inner cities, required higher maintenance budgets to offset increased costs associated with vandalism and security issues. (5) The phenomenon of declining school enrollments characteristic of the 1970's translated to budget reductions related to maintenance, renovation and improvement of school facilities. (6) The rising costs associated with state and federal mandates governing the school environment, especially as relates to the removal and/or containment of asbestos, offset the availability of funds for maintenance, and improvement and renovation of other facility needs (AASA, 1983).

Educational Writers' Association, 1989

The Educational Writers Association (EWA), underwritten by the Primerica Foundation, produced the next significant study on the state of America's public schools.

This study, reported in 1989 as Wolves at the Schoolhouse Door, examined national data from the U.S. Census Bureau and the U.S. Department of Education, opinion surveys conducted by the National Governors' Association, the National Association of Education Plant Services and the studies cited above by AASA. It primarily relied upon survey results from twenty-eight state departments of education and the District of Columbia. The surveys were completed by state officials and not by local boards of education. Experienced reporters developed extensive written analyses of public school conditions in seven states by examining representative urban, suburban and rural school districts. The study found that not even a minimal database existed nationally on the condition of America's public schools. Further, few states conducted even occasional, much less routine, assessments of existing school facilities. The federal government's concern for school facilities was limited to disaster aid programs.

There were seventeen major findings in the EWA study. Seven of these had direct bearing on the quality and condition of schools, maintenance, and improvement and renovation issues:

- 25% percent of America's existing public school facilities were in less than adequate condition.
- 61% percent of the inadequate buildings were in need of major maintenance and/or repairs.
- \$41 billion dollars was needed for maintenance and repair of major items.
- Despite recommendations from experts that 2-4% of the replacement value of existing public school facilities (then estimated at \$422 billion) be set aside for annual maintenance purposes, many states were well below that guideline; e.g., Tennessee at 1.3%.
- 61% percent of existing public school facilities had been constructed during the 1950s and 1960s; 20% were more than 50 years old and only 6% percent had been built during the 1980s.
- States varied considerably in data collection initiatives on facilities maintenance issues: 12 states had statewide plans, 31 maintained facility inventories (but no maintenance issues), 4 were in process of setting up facility inventories and 3 states implemented periodic facility inspections.

- One third of the states surveyed in the study (13) had one employee or less identified as responsible for facilities issues.

EWA (1989) reported that “The axiom for school districts seems to be: when a budget has to be cut, slash the maintenance costs first” (p. 16). In 1987, Camden Public Schools in New Jersey deferred maintenance projects to include replacement of school boilers, exit doors, roofs and bathroom plumbing. It was decisions like this that helped build the \$41 billion maintenance deficit described in the study.

EWA (1989) included an examination of safety issues and changing federal mandates in their study as partial explanation of the rising tide of unfunded maintenance projects throughout the country. Their report indicated that although school systems have traditionally accepted a prudent and reasonable responsibility for the safety of children, the decade of the eighties was marked by enormous increases in this area, especially regarding asbestos abatement requirements (EWA, 1989). In October 1986, the Asbestos Emergency Response Act was signed into federal law, resulting in a mandate for asbestos removal projects that would end up costing public school systems \$3.2 billion.

EWA (1989) further reported safety issues regarding lead content in paint found in bathrooms, classrooms and on playgrounds. Playground safety in general was reported as an important emerging facility issue. As example:

About 9% of playground-related injuries to children under four years old occur at schools, according to a 1988 report from the Centers for Disease Control. A survey by the American Association for Leisure and Recreation found serious design and maintenance problems on elementary school playgrounds . . . recommendations included establishing a safety check in design and maintenance of playgrounds. (p. 21)

Also cited were federal requirements regarding lead in water, PCBs and radon. Together these environmental issues emptied school system maintenance, and improvement and renovation budgets in the 80’s at the expense of major projects left unaddressed. For example, the city of Houston reported that 53% of its schools had life-safety code violations relating to fire-retardant doors and walls (EWA, 1989). Also of significance in the EWA study was mention of increased costs associated with education for the handicapped, Chapter I requirements, bilingual education mandates and issues of

sex equity, especially in the areas of athletics and vocational education. The impact of these increasing requirements was described by one school official from Maryland this way:

We deal with threats one at a time. And the American public gets excited over things one at a time. . . . A couple of years ago the hot item was asbestos. Then, the hot item was lead, and until recently the hot item was lead in the water. Now the hot item is radon. And there's nobody who steps back and says, 'Wait a minute. We've only got so many dollars. Where can we put them in these things to do the best good?' You rush off trying to solve all the problems at the same time, which is not possible. (p. 20)

In the EWA study (1989), it was concluded that even though local control over school facilities has been a long-standing tradition in this country, states needed to exercise greater initiative in data collection and facilities planning issues. Most long term planning was occurring primarily in urban areas, and even then planning initiatives were not consistent from one district to another. For example, Montgomery County, Maryland, as a state requirement, projected a six-year plan regarding school facilities. The adequacy of existing facilities to accommodate present and proposed educational programs was a key piece of their planning initiative (EWA, 1989). Other districts had difficulty in addressing even current facility issues. To illustrate, the Dallas Independent Schools District planning initiatives were short term at best (one or two years) and despite advocacy by experts in the field for ten year plans, none had been instituted in the district.

Finally, the EWA study reported that school systems were not alone in the planning deficit; a 1988 report to Congress, Fragile Foundations: A Report on America's Public Works, by the National Council on Public Works Improvement concluded that a federal initiative was needed to develop better data collection and information retrieval systems for purposes of public works planning and development (EWA, 1989).

American Association of School Administrators, 1992

The American Association of School Administrators (AASA) convened a meeting of national educational leaders in January 1992 to examine the issue of the condition of America's public schools. Noting that much discussion was occurring nationally regarding the restructuring of public education but little was being said about the school structure itself, AASA embarked upon a national project to conduct a nation-wide survey of the quality and condition of America's schools. The results of that survey were published in a major report: Schoolhouse In the Red: A Guidebook for Cutting Our Losses (AASA, 1992).

Conference participants discussed the question of what is meant by poor facilities and what to do about them. The superintendent of Anderson School District 5 in South Carolina defined poor facilities as schools that are fifty years old or more and incompatible with the needs of instructional technology. She lamented the absence of air conditioning on days of 100 degree heat and the fact that the public expects teachers and students to function in such an environment but insists on shopping in air conditioned malls (AASA, 1992). The conference called for a national examination of the quality and condition of school facilities. As a result, AASA coordinated a survey of public school district administrators throughout the country. The survey was designed by the Educational Research Service utilizing a stratified random sample methodology. Results of the survey clearly revealed that the quality and condition of public schools throughout the United States was in jeopardy. Specific recommendations in the AASA (1992) report included:

- Educators, parents, and their communities should make the learning environment in their schools a top priority. (p. 6)
- A campaign should be launched to make key decision-makers in the federal agencies, congress, state departments of education, and at the local level aware of the alarming deterioration of America's school buildings and the implications for learning. (p. 10)

- The American people should demand the quality of educational facilities and the learning environment for students not be limited by the wealth of a district. (p. 10)
- deferring maintenance today can lead to structural and environmental problems. (p. 11)
- routine maintenance is a sound investment. (p. 11)
- School facility considerations should be made an integral part of state and local school finance planning. (p. 21)
- Performance contracting should not mean a loss of educational support personnel, but rather a way to re-deploy in-house personnel time and abilities to tasks that were previously deferred. (p. 26)

Additionally, concerns were expressed regarding the ability of state and local governments to properly fund the maintenance projects needed to improve school facilities. Schoolhouse In the Red, included references to earlier studies that addressed relationships between building quality and condition and student achievement, including the Edwards study (1991) in which she examined this relationship by investigating the Washington, DC public school system. She found that:

- Students assigned to schools in poor condition can be expected to fall 5.5 percentage points below those in schools in fair condition.
- Students assigned to schools in poor condition can be expected to fall 11 percentage points below those in buildings in excellent condition.

She concluded that there is a definite correlation between building condition and student achievement (Edwards, 1991).

Schoolhouse in the Red reported that consideration for the replacement of 74% of America's public schools was not unreasonable. Thirty-one percent of them had been constructed before World War II and forty-three percent were built embracing the philosophy of cheap construction prevalent at the time. Especially significant was the revelation that deferred maintenance of existing public school facilities was estimated to be in excess of \$100 billion. Since the EWA study three years earlier, the price tag for maintenance had more than doubled (AASA, 1992).

Another major focus of the AASA study was aimed at examining indoor air quality. Hansen, a facility consultant to the study commented:

The very real fears and concerns for children's health as well as the health of teachers and staff should be enough to prompt preventive strategies. Inadequate maintenance is a leading cause of indoor air problems. It is impossible to ensure quality indoor air without a quality maintenance program. (p. 12)

The AASA report concluded that schools and communities must understand the connection between deferred maintenance and poor indoor air quality. It urged collaboration among local, state and federal authorities to develop appropriate guidelines regarding this issue and called for greater efforts aimed at training inspectors and educators about air quality issues. It also concluded that state departments of education should take a greater role in providing school leaders reliable information about school facilities and called for a national conference to be conducted annually to examine facilities needs, opportunities and new technologies (AASA, 1992).

Government Accounting Office, 1995-1996

The United States General Accounting Office conducted the most comprehensive study to date on the condition of public school facilities throughout the United States from January 1994 through February 1995. A questionnaire was mailed to a representative sample of 9,956 schools across the country and yielded a usable return rate of 78 percent. Respondents consisted of district facilities directors and other central office administrators. Four reports on America's school facilities were produced as a result of this study:

SCHOOL FACILITIES: Condition of America's Schools (1995)

SCHOOL FACILITIES: America's Schools Not Designed or Equipped for 21st Century (1995)

SCHOOL FACILITIES: America's Schools Report Differing Conditions (1996)

SCHOOL FACILITIES: Profiles of School Condition by State (1996)

This comprehensive study was the result of a request by the United States Senate in response to growing awareness that publicly funded school buildings continued to require maintenance in an increasingly stringent financial climate. Wolves at the Schoolhouse Door (EWA, 1989) and Schoolhouse in the Red (AASA, 1992) indicated that on-going deferral of major maintenance projects resulted in exponential increases in funding requirements needed to address the school facilities problem.

Clearly, existing state and local funding mechanisms have been inadequate to address school facility maintenance issues. As a result, Congress passed the Education Infrastructure Act in 1994. \$100 million was designated for grants to schools for repair, renovation, alteration or construction purposes. Congress requested the GAO study in order to provide government officials with information on the amount of funding reported by elementary and secondary school administrators needed to maintain existing school facilities and a report on the overall physical condition and prevalence of schools needing major repairs. This information would give Congress knowledge about the public school facilities issues nationwide, identifying:

. . . differences in the (1) condition of schools, (2) amount of funding needed to repair or upgrade facilities, and (3) number of students attending schools in inadequate condition by the following: location (state and region), community type, percentage of minority and poor students, and school level and size. (p. 1)

Results of the study indicated that in the two years since the 1992 Schoolhouse In the Red report, the price tag for existing public school facility maintenance had climbed more than \$12 billion. The study further projected that \$112 billion dollars would be needed to bring these facilities back in to good overall condition. Ten percent, or \$11 billion, would be required just to comply with existing federal mandates relating to building accessibility and environmental hazard initiatives like asbestos abatement and lead paint removal. One third of the schools were reported as needing extensive repairs and sixty percent indicated a need for at least one major repair in order to restore the quality and condition of the building. Half the schools reported maintenance problems with lighting, ventilation, heating or security issues (GAO, 1996).

Significantly, officials reported back that a major reason for such widespread deficiencies was the repeated decisions of school districts to defer maintenance projects due to lack of adequate funding or competing needs of the school district. Overcrowding in some districts resulted in decisions to spend funds on acquiring additional classroom space using portables. Other districts reported large influxes of immigrant populations requiring extra space. Still others reported federal mandates relative to special education issues that depleted available funds for maintenance, and improvement and renovation purposes (GAO, 1996).

The study concluded that two-thirds of the nation's schools were adequate in overall condition. It found that the remaining third represented 25,000 schools serving 14 million students. In addition, 28 million students attended schools needing at least one major repair (GAO, 1996).

Related Studies

Several related studies have contributed to the growing debate on the quality and condition of existing public school facilities in America. These studies have demonstrated a correlation between school condition and student achievement. Edwards examined selected schools in the District of Columbia (Edwards, 1991). Cash studied 47 small, rural high schools in the Commonwealth of Virginia (Cash, 1993). Hines focused on 88 large urban high schools in the same state (Hines, 1996).

The Cash study illustrates school facility/student achievement connection. She examined scale scores of the Test of Academic Proficiency for grade eleven during the 1991-1992 academic year. She adjusted the scores for socioeconomic status by referencing free and reduced lunch statistics for the sample. Student behavior was determined using a ratio reflecting issues of substance abuse, violence, suspensions and expulsions. The results of her study indicated a positive correlation between good building condition and good test scores. Cosmetic building condition had more impact than structural building condition, and effected student behavior as well. In her study she examined educational research by McGuffey and Brown (1987) and Chan (1980). These

earlier studies also found positive correlation between building age, the physical environment, and student achievement. The importance of the Cash study was that she demonstrated a clear connection between building condition and quality and student success measures across rural school districts throughout an entire state. She designed a model that illustrated relationships between leadership/financial ability variables, building condition, and student achievement/behavior outcomes. She suggested that findings in her study, and their relationships as depicted in her model, provided evidence to support advocacy for greater funding to maintain the quality and condition of school facilities as significant factors contributing to positive student achievement.

Summary

The purpose of this chapter was to review the literature regarding the quality and condition, maintenance, and improvement and renovation of existing public school facilities in the United States. Four national studies (AASA, 1983; EWA, 1989; AASA, 1992; GAO, 1995-96) have surveyed different school district practitioners on these issues, including school district superintendents, assistant superintendents for facilities, maintenance directors, and state department of education administrators. In very small districts, the superintendent was typically the respondent.

The sample size, methodology, and percentage of respondents in these studies varied considerably. The AASA, 1983 study was based on a survey of school district administrators in 100 school districts randomly chosen to represent 33 states and the District of Columbia. Results from this study were used to project facility maintenance needs for 15,500 school districts. This study was the first significant attempt to examine public school facilities across the country. However, it was strictly a random analysis of facility needs, was based largely on respondent opinion, and the results are now fifteen years old.

The EWA, 1989 study relied on responses from state department of education administrators in 28 states and the District of Columbia, a 55% return. It was considerably more comprehensive in scope and focus. It carried significant weight at the

time as the first meaningful study to detail the decline in the quality and condition of America's public school buildings based upon disaggregated analysis of survey data. As a result, it triggered increasing debate among school officials on a growing perception of inadequate attention to the maintenance, and improvement and renovation of our public schools.

This debate led to the AASA, 1992 study. This study utilized a nationwide coded stratified random sample survey and reported data from 922 respondents out of 2,418 school district administrators chosen to receive the questionnaire, a 38 percent return. Again, the analysis of survey data resulted in specific identification of critical issues surrounding the quality and condition of public schools throughout the country.

Lastly, the GAO, 1995-96 study also used a coded stratified random sample survey of 9,956 schools in 5,000 school districts across the country and achieved a 78 percent return rate from district administrators. This is the most comprehensive and significant study to date of existing public school facility issues. The relative condition of public school facilities in each state is profiled in the reports from the study. This study also represents the largest sample size, the best attempt to disaggregate results based on district characteristics and the highest return rate when compared with any of the previous studies.

Each of the studies reported exponential increases in funding needed by school districts across the country to address growing issues with respect to the quality and condition of aging school facilities, maintenance, and improvement and renovation of existing public school facilities. None of these studies have surveyed school board members regarding these same issues.