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Planning and Managing School Facilities

Theodore J. Kowalski
University of Dayton, tkowalski1@udayton.edu

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ASSESSMENT ACTIVITIES

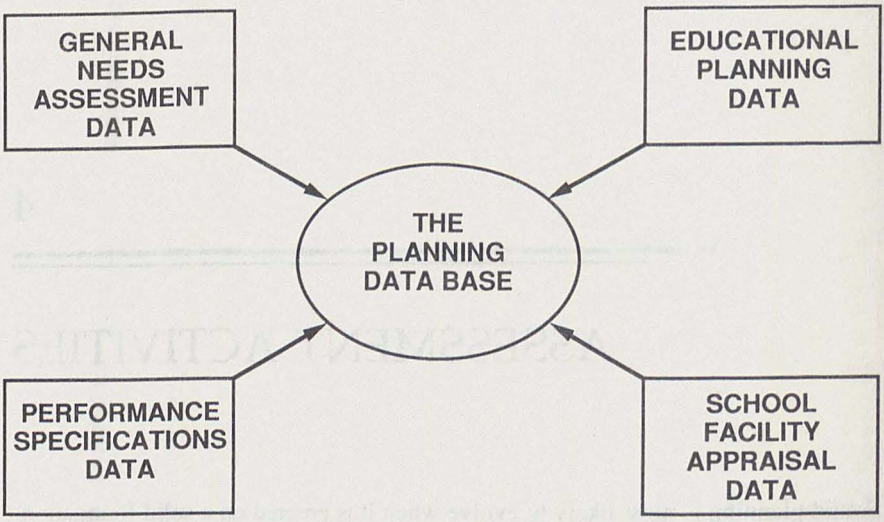
Sound planning is most likely to evolve when it is erected on a solid foundation. This foundation, an amalgam of several key components, does not rely on any single element. For example, choosing the right planning format is indeed an important decision, but a paradigm by itself is relatively useless. In addition to an effective and relevant model for making decisions, planning also relies upon accurate data that provide the inputs for the process. Often school administrators and/or school board members are tempted to leap directly into planning a facility without generating foundational information (i.e., the needs and wants related to facilities). This most often occurs for three reasons: (1) the accurate accumulation and description of needs and wants are deemed too time consuming or costly; (2) the school district lacks the human or material resources necessary to complete the task; and/or (3) the officials believe they already know the wants and needs and decide that a formal assessment is not necessary. Whatever the reasons for the omission, ignoring the assessment stages of facility planning constitutes a critical planning error.

Assessment activities can be viewed as having four potential dimensions as illustrated in Figure 4.1. The distinct information sources are:

1. general needs assessment data,
2. educational planning data,
3. school facility appraisal, and
4. performance specification data.

As previously mentioned, the temptation is often great to bypass the assessment stages in a facility project. School districts frequently fall prey to time manage-

Figure 4.1
Information Sources for Facility Planning



ment problems. Put simply, the needs related to facilities become so acute that adequate time cannot be allocated for comprehensive planning and detailed studies. The penalties for skipping assessment tasks are confusion, uncertainty, and needless errors.

Some needs are rather obvious with regard to facility management. Take, for example, a school district that has a rapidly growing population. The justification for an additional elementary school may be apparent to the entire community. The superintendent may conclude, "I don't need any study to tell me I need a school." What this administrator fails to realize is that comprehensive data-gathering entails more than the mere collection of facts. It also categorizes data to be used systematically as planning occurs, and makes it more probable that a systems approach will be used in creating new school buildings.

NEEDS ASSESSMENT

For school districts engaged in strategic planning, needs assessments are usually completed on an annual or bi-annual basis. This occurs because the process is an element of organized, detailed, long-range studies. In fact, school facility planning experts recommend that long-range plans remain in a flexible format (e.g., a three-ring binder) and be updated annually to assure that data remain current (Graves, 1989). Some authors refer to needs assessment as school surveys (Castaldi, 1987). This label is somewhat restricted and is often interpreted to refer solely to the needs of individual schools or facilities. In practice, needs assessments typically include community information as well as input from

individual schools. When data are collected in this latter context (e.g., as part of strategic planning for the total school district), the term, "needs assessment," is more appropriate.

Needs are essentially gaps between what is and what is needed. Society has needs; communities have needs; school districts have needs; and, individuals have needs. A comprehensive planning effort attempts to address all of these simultaneously. Adjectives commonly attached to the word "needs" can create confusion. Terms such as real needs, felt needs, and ascribed needs are found in the literature, occasionally without adequate explanation. A real need is defined as the difference between present and desired performance; a felt need is a self-identified need; while contrast, an ascribed need is the difference between the actual and desired need determined by an objective assessment specialist. The literature on needs assessment also uses the term educational needs. Wlodowski (1985) defines an educational need as the distance between aspiration and reality. Although each of these terms is important, the critical definition for facility planning is that a need represents the difference between existing facilities and requirements for the present and/or future.

Frequently, needs and wants are confused. Wants involve motivation—the predisposition to achieve something. Alone, wants do not fully reflect needs. For example, a school district may desperately need to close a school because of declining enrollment; however, the board and administration are not motivated to do this. Thus, the need exists but the want does not. In facility planning, wants are usually expressed in performance specification documents.

Instrumentation

There are a number of different tools available for conducting a needs assessment. The most common is the *questionnaire*. These instruments come in many forms; the most widely used is the checklist. Completion of this form of questionnaire entails the placement of a checkmark to indicate response choice for each item. Likert-type scales are also used in school needs assessments. Here the person responding reacts to a statement by selecting a response option provided within the questionnaire (e.g., indicating strong agreement, agreement, disagreement, strong disagreement, or no opinion).

Frequently, the terms *open* and *closed* are used in conjunction with questionnaires. Open questionnaires are designed to allow the respondent to make clarifying comments. By contrast, closed instruments do not permit this alternative. Obviously, open questionnaires produce more information, but they are more difficult to administer, score, and report. Among the advantages of the questionnaire are that it: permits wide coverage (many persons can be included); is relatively easy to use; tends to be less expensive than other options, and allows consistency in the presentation of questions. The questionnaire's disadvantages are that: it is impersonal; it often does not offer appropriate or sufficient response choices, and its users tend to employ it without establishing the reliability and

validity of the instrument. The critical issue in selecting a questionnaire for a needs assessment focuses on determining if the instrument can indeed generate the data that are needed. For instance, a questionnaire may be effective for identifying prevailing attitudes, but may be ineffective with regard to establishing quantitative differences.

Interviews are a second option for needs assessment. Similar in purpose to the questionnaire, this instrument entails direct interaction between the assessor and the assessee. Interviews may be conducted with a single individual or with groups. They may be either structured (predetermined and constant content and procedures) or unstructured (the conversational approach). Structured interviews typically require more work, but offer greater reliability. The advantages of the interview technique for needs assessment include: the opportunity to probe responses, the ability of the assessee to ask questions, and the opportunity for skilled assessors to gain added information from nonverbal behaviors that occur during the interaction.

The debilities of this process include:

- the possibility that the biases of the assessor can affect responses/judgments,
- the time it can consume, and
- the expense, especially when compared to the questionnaire.

For the most part, comprehensive needs assessments for school districts usually rely either on questionnaires or interviews or a combination of the two. There are additional instruments that may be used to add data. They include:

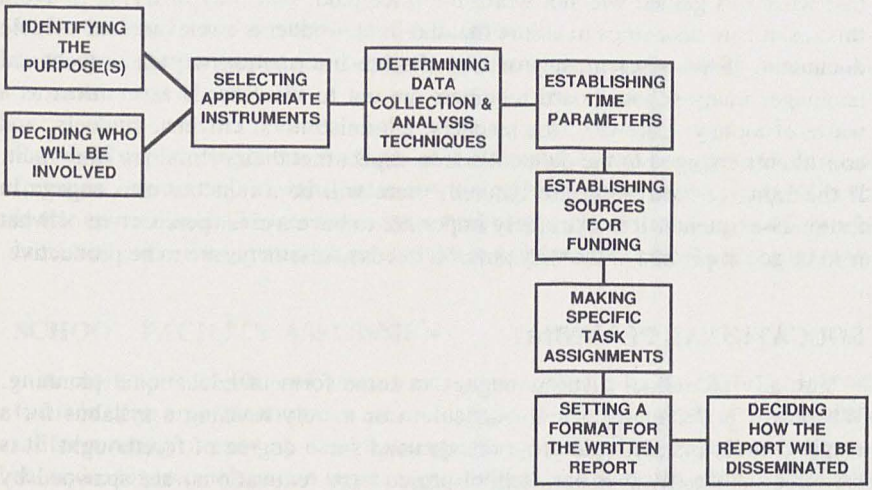
- job analyses (e.g., reviewing job expectations, observations, performance and program evaluations),
- tests (e.g., standardized tests, energy consumption tests, air quality tests),
- national or state surveys (e.g., census data, vital statistics, consumer price indices),
- trend reports (e.g., studies of common needs in a community), and
- information from advisory committees.

The last option, data from advisory committees, is becoming more common in school districts. School administrators who recognize the political dimensions of large capital outlay projects are prone to establish such groups.

Procedures

Each school district should base its needs assessment process on the uniqueness of circumstances surrounding the task. It should be remembered that no two facility projects are ever alike (Brubaker, 1988). Fortunately, there are some standard components that provide a basic framework for assessment as illustrated in Figure 4.2. The first is the identification of purpose. The school board,

Figure 4.2
Key Decisions in Establishing an Assessment Procedure



administration, and entire school community should have a clear perception of why the process is being used. The second is the scope of the process. Who will be involved? What issues will be covered? The first two decisions provide a foundation for the third element, the selection of appropriate instrumentation. The fourth component is the selection of data collection and analysis procedures, while the next essential element is the establishment of time parameters. Decisions are also needed regarding funding the process; an adequate budget should be established to assure necessary resources to complete the assessment. In addition, the designation of task responsibilities should be assigned, while finally, a format for the final report and decisions pertaining to the distribution and use of the final report needs to be established.

One process involving needs assessment that is gaining popularity is the *community survey*. Typically, this iteration of data-gathering utilizes a questionnaire to obtain information from a random sample of the community. The process proves to be especially beneficial when conflicts seem inevitable with regard to a project (e.g., the community seems to be divided over building a new school). Not infrequently, outcomes of community surveys clarify needs, dispel rumors and misperceptions, and provide information useful for establishing planning contingencies. It is highly recommended that a community survey culminate in a written document that provides the data collected, an analysis of that data, conclusions, and recommendations. The results of the community survey can be attenuated if there are suspicions related to credibility, objectivity, validity, reliability, or purpose.

A number of school districts have unsuccessfully experimented with needs

assessment. Discontinuance typically results from an unfavorable balance between costs and benefits. In other words, the administration and/or board decide that what was gained was not worth the price paid. One way of trying to avoid this result is to take steps to assure that the final product is a relevant and useable document. If the assessment produces obscure information written in technical language, many school board members are apt to view needs assessment as a waste of money. Likewise, the teachers, administrators, citizens, students, and consultants engaged in the data collection expect that their efforts are important. If the fruits of their input are ignored, there will be a reluctance to engage in future assessments. It is extremely important to have a clear perspective of what is to be accomplished at the very outset if needs assessments are to be productive.

EDUCATIONAL PLANNING

Virtually all school districts engage in some form of educational planning. Whether it is designing a new curriculum or merely revising a syllabus for a single course, instructional programs demand some degree of forethought. It is assumed commonly that new school projects (or renovations) are spawned by inadequate space or antiquated conditions. Although this assumption is accurate in many instances, some progressive school systems also weigh carefully the degree to which educational objectives are being met and the extent to which the physical environment plays a positive or negative role in goal attainment.

Sustained and systematic curriculum planning are vital to sound facility planning. The most common approach to assessing educational programs is *curriculum evaluation.* Curriculum evaluation is essentially that segment of planning that focuses on what is currently occurring in a school. Schubert (1986) chronicled the evolution of this procedure in American education, correctly noting that the options for completing a curriculum evaluation are numerous. Included are such distinct practices as the use of teacher grades, goal-based evaluation, testing, and naturalistic evaluation.

There are three essential questions related to a school's curriculum: (1) exactly what is the curriculum, (2) how is it sequenced and implemented, and (3) to what extent is it successful? Answering these questions is more likely when a comprehensive evaluation system is employed. An inclusive assessment also creates a cyclical relationship among the three questions. For example, answers to the query regarding outcomes (i.e., to what degree are students meeting current objectives), automatically creates a data base for alterations to curricular content (what should be taught) and instructional methodology (how should it be taught). In general, curricular evaluation is a planning component pinpointing needs and guiding the selection of new materials, procedures, and organizational patterns (McNeil, 1985).

Entire graduate courses are devoted to the subjects of curriculum planning and evaluation. A complete discussion of these topics here is not practical. The administrator should realize, nevertheless, that curriculum evaluation is an indis-

pensable element of educational facility planning. If one accepts the following two premises, the responsibility is fundamental:

1. *Form should follow function in school facilities.*
2. *The primary purpose of a school building is to enhance achievement of educational goals.*

Put simply, planning decisions for school buildings should be governed, first and foremost, by needs and wants related to the educational practices that will occur in the environment. Proceeding with a facility project in the absence of curriculum evaluation data abates the potentialities of even the best planning paradigm.

SCHOOL FACILITY ASSESSMENT

A more specific form of assessment is the school building survey. Here the focus is upon an evaluation of a specific structure. The procedure is based upon a uniform rating of existing conditions against some established standard(s) (e.g., safety codes, recommended standards for schools). All assessments, whether for the site or for the building, should be based upon both qualitative and quantitative standards. Thus, for example, the report should clearly convey if there is an adequate number of classrooms, if the classrooms are of adequate size, and if the location and general condition of classrooms are acceptable.

The term "school facility assessment," can be misleading. In actuality, it is an evaluation of the site and facility. Common items to be assessed with regard to the site include:

- location
- relative freedom from noise and pollution
- relative freedom from hazards
- vehicular access
- pedestrian access
- size
- access to public utilities
- playgrounds
- sidewalks
- roads
- landscaping
- soil quality and drainage
- outdoor instructional capabilities (e.g., physical education, science)
- parking for faculty, guests
- security provisions (e.g., lighting, fencing)

This list is not intended to be exhaustive, but it does communicate the complexity of assessing the site itself.

Assessment of the school facility itself is also an entangled task. Every aspect of the building, from its exterior walls to the size of classrooms to the quality of corridors to the number of restrooms, needs to be included. Two contemporary dimensions of school facility assessment are: (1) determining whether the facility is barrier-free, and (2) whether the facility is void of asbestos problems.

School facility assessments are best completed by a team of experts including at least one architect and one educational consultant. Having a range of expertise permits mechanical and structural elements of the school to be evaluated along with the educational dimensions. Some commercial guides for school facility assessment are available (e.g., *Guide for School Facility Appraisal* by Hawkins and Lilley, 1986); however, the consumer should be aware that many code standards vary from one state to another. Therefore, the use of a commercially produced guide for facility assessment should be preceded by a careful examination of the qualitative and quantitative standards employed in the specific instrument.

A key element of facility assessment is the conscious linkage of these data to evaluative information produced by the curriculum assessment. Hawkins and Overbaugh (1988) developed an interface profile to express the desired relationship between a school environment and learning:

Student Learning is enhanced when a facility:

is an integral part of the community reflecting

- community pride
- community involvement
- broad utilization

is adaptable to the user's needs through

- a controllable physical environment
- provision for varied and ample storage
- flexible instructional space for teaching and learning styles
- walls, floor, fenestration that serve the learning process

permits teachers to function as professionals with

- a reasonable control of the learning environment
- space which permits work-related dialogue
- appropriate space for preparation of instruction
- a motivational environment conducive to professionalism

fosters communication

- through the appropriate use of technology
- through the use of "learning surfaces"
- about the school at points of entry
- that emphasizes student achievement
- that is demonstrated as important to students

creates an appropriate behavioral setting

- with an emphasis on aesthetics
- that encourages student interaction
- that provides a stimulating atmosphere for learning
- that is a comprehensive laboratory for learning

accommodates a variety of learning styles

- through hands-on experiences that result from building design
- that foster fine arts appreciation
- that result from student interaction
- through well-designed and well-equipped space
- that are related to individual needs and interest (p. 7)

School facilities are supposed to enhance the educational process—to be an asset. This relationship requires an awareness of (1) what the educational program is supposed to accomplish, (2) how these goals and objectives are to be accomplished, and (3) the degree to which they are being accomplished. Just in the past 30 years, American public schools have experienced a number of dramatic changes in curriculum and instructional procedures. From the post-Sputnik emphasis on science and mathematics to the era of mini-courses and open-concept schools in the late 1960s to the Back to Basics movement to the current era of reform and accountability, elementary and secondary schools have meandered between concerns for learning and concerns for social/psychological adjustment. Educational experts warned that school buildings erected in the 1960s and 1970s should be expected to accommodate decisive and abrupt alterations in programming priorities. In truth, most buildings were not designed to meet this challenge.

School facility surveys should produce data that reveal more than just information about the size of a school or its current state of repair. The evaluation should also generate judgments that permit an interface between the findings of the educational programming assessment and the evaluation of the environment.

PERFORMANCE SPECIFICATIONS

The third component of comprehensive planning is the development of *performance specifications* (also referred to as *educational specifications*). Just as the needs assessment process identifies deficiencies in the school district, the performance specification document identifies the desired functions of an individual school. There is no universally accepted formula for completing this document, but in general, the effort should provide written statements about the educational program, extracurricular activities, and other intended uses which will permit the architects to begin design activities. This process is distinctively different from needs assessments. Whereas needs assessment may lead to a conclusion that a new facility is required, performance specifications outline what is desired in that facility (remember the distinction between needs and wants).

Every building project involves creating or reshaping spaces. Accordingly, the professionals who will work in the environment provide the primary source of input for the specifications. Most often the tasks of soliciting, collecting, and

analyzing inputs are assigned to the educational consultant. The consultant meets with teachers and administrators and filters their wants through two screens: (1) educational feasibilities, and (2) financial feasibilities. Thus, the competent consultant does far more than collate employee "wish lists."

Some facility planning experts suggest the establishment of an educational specifications task force (The Council of Educational Facility Planners, 1985). This more elaborate process includes not only the consultant, but the architect, board of education, administration, and working committee as well. If this more comprehensive option is employed, it is critical that roles and responsibilities of each party are carefully defined. Time parameters also need to be considered since the use of a committee is likely to be more lengthy than relying upon the more standard option of using a single consultant.

The common elements of performance specifications include:

- a description of the project which addresses the issue of need
- a listing of control specifications (as discussed under systems analysis planning)
- statements regarding the overall educational program (curriculum, instruction, and extracurricular programs)
- a listing of grade levels and/or subjects to be accommodated
- a description of the purpose and objectives of each grade level or subject area
- a description of special uses of the facility (e.g., community uses)
- a listing of required spaces
- a description of spaces and the relationship of spaces
- identification of specifics for each space (e.g., lighting, seating, wall surfaces, floor surfaces, acoustical treatment, storage, chalkboards, display areas, etc.)
- a summary of space requirements
- an estimate of square footage for each area and the entire project.

In essence, this collective information constitutes a description of what is to occur in the school building.

Educational specifications are not supposed to provide design decisions. Teachers and administrators are often tempted to "play" architect and create drawings of what they want their work environment to be. Function, not design, is the nucleus of educational specifications. The specifications are expected to transmit to the design architect clear statements of what is expected to take place in the school environment. The architect then uses this information to generate potential designs.

Before becoming a final product, those who contributed information, especially the administrators, teachers, and staff involved, should have the opportunity to review the content of the specifications. Errors and misinterpretations should be corrected as a matter of course. Disagreements that are substantive,

however, should be adjudicated between the superintendent and consultant. It is essential that the specifications document receive formal approval by the school board prior to being transmitted to the architects. This assures that the information is correct and is supported by the policy body of the school district.

SUMMARY

Facility planning includes a multitude of tasks. The earliest stages are often the most difficult and cumbersome because they require extensive data that frequently are not viewed by administrators and school board members as critical. As such, there is a temptation to leap directly to the decision phase of planning for a school facility without first erecting a data base.

Assessment activities are divided into three categories: needs assessments; educational assessments; and performance specifications. Needs assessments are frequently completed as a component of school district strategic planning. They provide general information about needs for the entire school system, including facility needs. Educational assessments relate to curriculum evaluation. Determining the content of curriculum, the methodology for implementation, and the degree to which the curriculum meets its objectives are valuable inputs for individual school facility projects. Finally, educational specifications provide a statement outlining the expected activities within a facility. As such, they represent wants rather than needs; however, they are more accurately described as an amalgamation of wants and needs.

ISSUES FOR DISCUSSION

1. What are the advantages and disadvantages of having a consultant identify the needs in a school district?
2. Identify the reasons why so many school districts do not engage in strategic planning.
3. Discuss the advantages and disadvantages of teachers and administrators visiting other schools prior to providing input for the development of educational specifications.
4. Defend the decision to use a community survey as part of assessment activities (or, take the opposite position).
5. Do you believe that most school districts wait too long before entering into facility projects (i.e., they only move forward once they are in a crisis or near crisis situation)?
6. Discuss the advantages and disadvantages of completing educational specifications for a new facility without the assistance of a consultant.
7. Why would a curriculum evaluation be important with regard to determining facility needs?
8. In addition to employing an educational consultant, what other options are available for completing educational specifications? What are the advantages and disadvantages of each of these approaches.

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FINANCING FACILITY PROJECTS

Financial planning for educational facility projects is a fundamental task for at least three reasons: (1) large sums of money are involved, (2) the monies come from public sources making accountability critical, and (3) financing plans must be in compliance with existing state statutes. Contemporary conditions also add to the importance of this responsibility. Fluctuating interest rates, changing laws governing tax-exempt bonds, changing tax laws affecting individual investors, and higher construction costs exemplify rather recent developments demanding comprehensive and precise fiscal planning.

Ever since the late 1960s when U.S. citizens began to challenge the constitutionality of long-standing school finance problems, e.g., *San Antonio Independent School District* vs. *Rodriguez* (1973), school finance experts, state legislatures, and school administrators have struggled with the issue of fiscal equality. Public education is a responsibility of state government, and in all states except Hawaii (where there is one state school system), the authority to operate public schools is delegated to local boards of education. Fiscal equality focuses upon the degree to which a student receives equal support for public education within a given state regardless of the local district in which he or she resides. Because most states require local districts to rely to some degree upon revenues from local property tax, and because most districts vary in wealth (assessed valuation), it is not surprising that, historically, districts have exhibited significant variance in both the ability to support educational initiatives and actual expenditures—including facility projects. Although great strides have been made in the last two decades to create fiscal equity for operating schools, school construction costs remain quite dependent upon local revenues in many states.

The battles over inequity of school funding formulas continue. In West Virginia, for example, a suit filed by the parents of five children in 1975 contended

that the financing of public education in that state violated the constitutional provision requiring a "thorough and efficient" education. This case exemplifies how facilities are one factor affected by funding disparities of local school districts. After years of court battles, this case remains subject to judicial review. What is more important, the funding formula in West Virginia, the nucleus of this litigation, remains unchanged (Smith and Zirkel, 1988). The historical elements of this case, *Pauley vs. Kelly,* clearly exhibits how school financing, including financing of capital outlay, is a mixture of economics, law, and politics.

This chapter examines: (1) the sources of revenue for financing school facility projects, (2) potential financing plans, (3) recent changes in the tax laws, and (4) future issues related to financing capital outlay. Special attention is given to the topic of tax-free bonds, the most prevalent method used by school districts to pay for buildings.

FUNDING SOURCES

Although the majority of funding for capital outlay is generated at the local and state levels, other sources of revenue have been used from time to time to help pay for school construction. These sources have received greater attention in recent years as a result of an awareness of the disparity that exists in formulas/statutes that require local property taxes to assume the major portion of the burden. Public funds can be generated from taxes from the federal, state, or local level. Following the lead of higher education, several school districts are experimenting with the potentialities of establishing tax-free foundations in an effort to generate additional funds for construction. These foundations, analogous to alumni operations in colleges, seek private gifts and donations.

Federal Funding

Historically, the federal government has played a minor role in supporting school construction. Most federal dollars that have been designated for school plant financing have been directed not to the local district but rather to the state (i.e., state department of education). The state in turn channels the money to local districts via incentive programs designed to encourage and assist the development of "special" projects such as vocational education. In general, the total impact of federal dollars on school construction in recent decades has been minute.

Although past federal involvement in facility funding has been inconsequential, it has not been because of a lack of suggestions to institute change. A number of ideas have been advanced to increase federal participation in financing school construction costs. One justification for such increases rests with the realization that states themselves vary markedly in the ability to support public education. Thus, federal assistance could provide an avenue of equalization

among the 50 states. Another reason proposed by advocates of a greater federal role is that such funding would, de facto, decrease reliance upon the property tax to fund school projects (Brooks, Conrad, and Griffith, 1980). The property tax, the major source of local revenue, has been unpopular with taxpayers and its limitations and inequities have been well-documented by school finance experts (Guthrie, 1988; Quindry, 1979).

One difficulty inherent in any discussion of a greater role for the federal government in financing capital outlay is the realization that federal aid to education is a perennially unpopular topic among most educators and taxpayers. There is, to be sure, a mindset that federal assistance always comes with "strings attached." This condition creates an approach-avoidance situation for most school districts. The lure of additional dollars is tempting, but the federal regulations (e.g., laws governing construction contracts) that are linked to those dollars are uninviting. One superintendent put it this way, "For 5 percent of the funding the federal government wants 100 percent of the control. It's just not worth it." The fear of losing local autonomy has resulted in many administrators, school board members, and taxpayers looking askance at federal assistance. This timidity about federal control, coupled with a conservative posture toward federal assistance to public elementary and secondary schools emanating from the three branches of government in Washington, D.C., suggests that increased federal support for school construction in the near future is unlikely.

State Funding

The aftermath of landmark legal decisions regarding fiscal equality is a virtual smorgasboard of state school finance plans. Not surprisingly, these varying formulas include an assortment of plans for funding capital outlay. Some states have adopted plans for funding school construction that place a greater share of the burden on state revenues. Other states have maintained programs that require local districts to rely entirely upon local taxes. These differences are exemplified in the following three states:

Hawaii. Having the only statewide system of public education, it is not surprising that Hawaii maintains a program of 100 percent state funding for elementary and secondary facilities. There is no direct relationship between property taxes and school facilities. Funds for education are appropriated by the state legislature. There are no bond issues and local pressure groups find it virtually impossible to prevent or influence building initiatives (Thompson, 1988).

Arizona. Arizona's school finance formula is different from most states. Both capital outlay costs and debt service obligations are infused into the state's equalization formula. The effect is that less wealthy districts (i.e., those with below average assessed valuation per pupil) receive higher levels of state aid for school construction. The purpose is to equalize the effort (tax rates) that must be exerted at the local district level. The increased state assistance brings with it increased state control over the process of planning and executing facility pro-

jects. Thus, the plan is economically defensible but contrary to the political belief of total local control of schools (Jordan, 1988).

Nebraska. Nebraska is at the opposite end of the continuum from Hawaii. In this state, the financing of school construction is totally a local school district responsibility. The only role of state government is one of permissive legislation and regulation (Hudson, 1988).

These three examples verify the tremendous differences in funding practices among the 50 states. But providing funds for school construction is only one role state government can assume. The state also is responsible for establishing a myriad of laws that govern what local districts may or may not do—even with monies raised locally. In the early 1970s, the National School Finance Project (Future Directions for School Financing, 1971) uncovered some serious problems that existed with regard to funding capital outlay and what is more important, emphasized the responsibility of the state for these inequities. One difficulty associated with state mandates was imposed debt limitations. Many states impose debt restrictions upon governmental agencies, and in some instances, these limitations are unduly restrictive (e.g., in Indiana the restriction is 2 percent of assessed valuation). Because the debt ceilings are not adjusted periodically to account for inflation and other economic variables, they eventually become unduly circumscriptive.

Some states (e.g., Pennsylvania) have created grant-in-aid programs to help local districts pay for school construction. These programs may be developed according to an equalization concept (the example presented for Arizona exemplifies this approach), a percentage-matching concept (the state's contribution is based upon the total dollars raised locally), or a flat grant concept (a given amount per student or per project is made available regardless of other variables). The equalization concept comes closest to achieving the goal of *fiscal neutrality* (i.e., eradicating the effects of local district wealth upon required effort to raise revenues). Both matching and flat grant formulas are apt to penalize school districts with below average assessed valuations.

Loan programs are also used by some states to assist the funding of buildings. These loans typically are limited and provide a relatively small percent of the needed funds. The advantage of such programs is that they almost always offer interest rates lower than those available on the open market. Given the significant increase in construction costs since 1970, the overall effect of state loan programs has diminished—especially in those states where adjustments were not made to loan ceilings.

Several states experimented with full state funding for capital outlay only to determine that such a structure would be too costly for state government. Florida is one example. With a rapidly growing population and the need to erect new facilities, an attempt was made to pay school construction costs entirely out of state revenues. After seeing the impact of such a program, the Florida officials rescinded the full state funding program. In addition to Florida, California and

Maryland experimented with full state funding, but in these states, concerns emerged regarding the state taking control of all aspects of the project (Guthrie, Garms, and Pierce, 1988).

Local Funding

The basic economics of generating local funds for education via the property tax is not as complicated as most believe. Two factors, property values and tax rates, combine to determine how much revenue is generated. Wealth of a school system is stated in terms of assessed valuation (the value of property to be taxed). However, total assessed valuation does not present a good measure for comparisons. A better measure is assessed valuation per pupil (i.e., the amount of taxable property for each student enrolled in the school district—determined by dividing the total assessed valuation by the number of pupils). The inequity between wealthy and poor school districts can be seen in the following example where two districts want to generate five million dollars for construction:

District A has an assessed valuation of $200,000,000.00 District B has an assessed valuation of $50,000,000.00. Assume that each district has identical enrollments of 3,000 pupils. District B will have to have a tax rate four times as high as district A to generate the needed $5,000,000.00.

In a state where local funding is used exclusively to support construction, this example illustrates the gross inequities of relying solely upon local school district wealth. The negative effects for the poorer district are exacerbated when it borrows money. Being poorer, the district is likely to have to pay higher interest rates on its debt obligations because of a poorer bond rating. In this regard, the inequity is compounded.

If local funding alone is so grossly unfair, why does it persist? The reasons are largely political. State legislators and governors often are not anxious to assume added fiscal burdens. Additionally, local school boards are usually protective of local control, and when they weigh the economic and political ramifications, they frequently opt for paying higher taxes. Finally, the argument can be made that decisions to erect new schools (or improve existing ones) is a local decision that benefits the local community—thus, local taxpayers ought to assume the financial burden. These positions favoring total local funding for capital outlay are being eroded by court decisions that bring political and economic issues face-to-face with the legal reality that public education is a state responsibility. A recent study in Kansas, for example, revealed that not only does wealth per pupil in that state vary widely, so does the quality of educational facilities (Thompson and Camp, 1988). Finally, Guthrie, Garms, and Pierce (1988) contend that little reform has taken place with debt financing simply because construction costs constitute such a small portion of the budget compared to operating costs.

Other Options

As previously mentioned a small number of school districts are becoming active in a concept long employed in public higher education—fund raising. These districts have created tax-exempt subdivisions within their organizations that solicit donations and gifts from private citizens and from established foundations. Even though the interest in creating such unrestricted funds has escalated in the 1980s, there is little evidence that this effort is having a significant impact upon the funding of capital outlay. Nevertheless, most states permit private funds to be used to assist with school construction projects.

FUNDING METHODS

Putting together a financing package for a contemporary facility project is a complicated task. New comprehensive high schools may have price tags that surpass 40 million dollars. Under these conditions, school officials not only need to know what the various sources of revenues are, they also need to understand alternative methods for generating these monies. Not infrequently, a financing package will be composed of several options.

Pay-As-You-Go Financing

The pay-as-you-go method of financing schools historically has been a popular alternative for fiscal conservatives who embrace the notion that school districts ought not erect new facilities unless the money to pay for them has been accumulated. This is accomplished either by (1) savings in the operating/reserve funds or (2) tax levies which permit accumulation of funds for future building projects. Not all states permit the latter alternative. In simple terms, the pay-as-you-go method functions just like a personal savings account. To buy a new car, for example, two primary methods of payment are available. The first is to finance the car by securing a loan. This creates a debt obligation that must be repaid in a specific period of time. The second alternative is to pay cash. The first option is almost always more expensive in the long term (whether it is actually more expensive may depend upon economic conditions); however, the second alternative may be impossible for some individuals. A school district faced with facility needs essentially has the same alternatives. If paying for a school building with accumulated dollars is impossible, the district must borrow the money.

Advocates put forward three justifications for the pay-as-you-go method:

1. There is never any question as to whether the taxpayers can meet their obligation to pay for the building.
2. There is no chance of default on debt obligation.
3. No option is more economical because interest payments are avoided.

In modern times, these assertions have diminished in relevancy. The rising cost of buildings makes it impossible for most districts to accumulate enough money to pay for a project in advance. Additionally, the fear of default has been markedly reduced by the positive record of school districts paying their debt obligations. Perhaps most important is the fact that inflation has eroded the arguments that favor the pay-as-you-go method. Any savings accrued by waiting until money is available is apt to be counterbalanced by increased construction costs (Kowalski, 1983). In this era of collective bargaining and public scrutiny of budgets, it is difficult for public agencies to accumulate massive balances in their funds.

Bonding

For the majority of public school districts, long-term borrowing is the forced choice for funding school construction. Critics may be quick to attack long-term obligations as being costly, yet the process is defended on the grounds that the debt is spread across generations (Guthrie, Garms, and Pierce, 1988). In this regard, those directly benefiting from the facility will share in the obligation of paying for it.

The sale of tax-free bonds constitutes the major vehicle for long-term borrowing. A bond (or note) is a security whereby the issuer agrees to pay a fixed principal sum on a specified date and at a specified rate of interest. The specified date is referred to as the maturity date. Most bonds are sold through a process of competitive bidding and come under the scrutiny of underwriters and investor analysts. Bonds issued by state or local governmental agencies such as school districts are called *municipal bonds*.

In some states *bond banks* have been established to aid the sale of tax-exempt bonds. This is done through a collective process (i.e., the bond bank takes four or five projects to the market at one time in hopes of receiving more favorable bids because the size of the issue is increased).

The majority of school construction is financed by *general obligation bonds* (called GO bonds). GO bonds are secured by a pledge of the issuer's taxing powers; thus, they are considered solid investments by many bond buyers. Some states establish a statutory limit on the amount of debt a school district can incur via GO bonds. This limitation is almost always established as a percentage of the governmental unit's assessed valuation.

In the vast majority of states, school districts are required to hold a referendum prior to a bond sale. Most states require a simple majority approval to go forward with the sale; however, about 25 percent of the states require more than a simple majority vote. Ever since the so-called "tax payers revolt" in California, referenda have been major hurdles for school systems pursuing facility projects. A study by Lows (1987) found that certain demographic variables are related to positive outcomes in referenda: voter turnout, preference for the Republican

Party among the electorate, percentage of housing occupied by whites, percentage of married couple families, and percentage of children under age 18. There may be other factors that have consequences for referenda since school districts and communities are unique entities with fluid economic and political conditions.

Once a school district has the authority to move forward with a bond sale, a strategy for marketing the debt needs to be established. Virtually all municipal bonds are sold on the open market in order to encourage competition. In select instances, it may be advantageous for a school district to pursue a negotiated sale (if permitted by state law). Negotiated sales should only be pursued after receiving professional counsel from the attorneys and the financial consultant.

There are several different classifications of bonds. Among the more prevalent are:

Callable Bond. This is a bond that can be recalled by the issuer and paid prior to maturity. The advantage of callable bonds is that the issuer (the school district) can take advantage of more favorable interest rates if they emerge after the initial bond sale. This process is commonly referred to as *advanced refunding*. Callable bonds constitute a disadvantage for the buyer in that they create uncertainty regarding long-term investments. Recent changes in federal tax laws place some restrictions on advance refunding.

Coupon Bond. Some bonds are sold with detachable coupons. These coupons provide evidence that interest is due. At the specified time, the coupon is detached and submitted to the issuer for payment of interest.

Registered Bond. The owner of this bond is registered with the issuing agent (or its bank or trustee agent), a registered bond cannot be sold or exchanged without a change of registration. Such a bond may be registered as to principal and interest or as to principal only.

Serial Bond. This is a bond where the principal is repaid in periodic installments over the life of the issue.

Term Bond. These bonds pay all of the principal at one specified time. Interest payments are made periodically during the life of the bond.

The primary purpose of selling bonds in a competitive market is to produce the most favorable interest rate possible. Interest rates are affected to some degree by five primary factors: the bond rating assigned to the issue, size of the bond issue (total dollar amount), length of the issue (duration of the debt obligation), types of bonds that are sold (e.g., callable, term), and economic conditions at the time of the sale (e.g., inflation rates, prime interest rates). One service the school district should expect from the financial consultant is an analysis of how each of these factors may affect a pending issue. The consultant also may be asked to recommend a time frame for selling the bonds to take advantage of market conditions.

Bond ratings are assigned by bond rating firms prior to public sales. These ratings can significantly affect buyer competition and, ultimately, interest rates. The two major rating firms are Moody's and Standard & Poor's. Each firm uses

its own system for reviewing an issue, and each may rely upon different factors in making judgments. Basically, the ratings reflect economic and administrative qualities of the school district, the community environment, current debt obligations, debt structure, wealth, the quantity and quality of industry within the school district's taxing region, debt history, and the current condition of school properties. Tables 9.1 and 9.2 contain the ratings of these two major firms in the area of school construction bonds.

The *Tax Reform Act of 1986* was enacted in October in 1986. It replaced the Internal Revenue Code of 1954. Tax-exempt bonds were especially affected by this revision. The new codes require that bonds meet certain criteria to qualify as tax-exempt. Simply being issued by a governmental agency does not assure this advantage. Additionally, the new codes are more stringent with regard to invest-

Table 9.1
Ratings Used by Moody's Investment Service

Rating	*Explanation*
Aaa	These are bonds which are considered the best quality. They carry the smallest degree of investment risk and are generally referred to as "gilt edge."
Aa	These bonds are judged to be high quality by all standards. With bonds judged Aaa they are considered high grade bonds. The margin of protection is judged to be somewhat less than Aaa
A	These are considered upper medium grade obligations. Factors giving security to principal and interest are considered adequate but elements may be present which suggest susceptibility to impairment sometime in the future.
Baa	These are considered medium grade obligations. They are neither highly protected nor poorly secured. Interest and principal payments appear adequate for the present but certain protective elements may be lacking or may be characteristically unreliable over a long period.
Ba	These bonds are judged to have speculative elements. Their future cannot be considered as well assured. Often the protection of interest and principal payments may be moderate and thereby not well safeguarded during both good and bad times in the future.
B	These bonds lack the characteristics of a desirable investment. Assurance of interest and principal payments or other provisions of the contract over any long period of time may be small.
Caa	These are poor standing bonds. Such issues may be in default or there may be present elements of danger with respect to principal and interest.
Ca	These are obligations that are speculative in a high degree. Such issues are often in default or have other marked shortcomings.
C	These are the lowest rated bonds. These bonds are considered to have extremely poor prospects of ever attaining any real investment standing.

Source: Moody's Industrial Manual, 1988, p. vi.

Table 9.2
Ratings Used By Standard & Poor's

Rating	*Explanation*
AAA	This is the highest rating. Capacity to pay interest and repay principal is extremely strong.
AA	This rating differs from AAA only in small degree. The capacity to pay interest and repay principal is considered very strong.
A	A debt in this category has a strong capacity to pay interest and repay principal but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than the higher rated bonds.
BBB	This rating indicates an adequate capacity to pay interest and repay principal. Although adequate protection parameters are exhibited, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity for payment than higher rated categories.
BB,B, CCC, CC	These debts are considered on balance, as predominantly speculative with respect to paying interest and repaying principal in accordance with the terms of the obligation. BB is the lowest degree of speculation and CC is the highest degree of speculation. Although these debts are likely to have some quality and protective characteristics, these are outweighed by large uncertainties or major risk exposures to adverse conditions.
C	This rating is reserved for income bonds on which no interest is being paid.
D	A debt rated D is in default, and payment of interest and repayment of principal are in arrears.

ments from bond proceeds (arbitrage). Arbitrage is the interest rate differential between the rate on a municipal bond and yield made with the investment of the bond proceeds. Imagine a school system that sells five million dollars worth of bonds for a new elementary school at an interest rate of 7 percent. Since the proceeds of the bonds are made available at the time of the sale, and since the school district will not need to expend all of those proceeds immediately, the proceeds are typically invested until they are needed to pay the bills. The rate of interest earned on the investment is usually higher than the one the school district had to pay to get the money in the first place. Assume that they could invest the money for one year at 8 percent. The difference between the rate on the issue and the rate on the investment is arbitrage. If a school district does not meet the criteria established in the 1986 Act, it may cause the bonds to become retroactively taxable. The 1986 revisions are complex and full discussion here is not feasible. Superintendents and other school officials working in leadership roles related to debt financing should seek consultation regarding the current parameters of tax-exempt bonds early in the planning process.

The sale of bonds involves a number of legal and economic decisions. Insur-

ance, existing state statutes, and familiarity with the bond markets exemplify critical issues. Questions about advertisements, printing the bonds, delivery of the bonds, and the like are sure to arise. The school district's attorney (or project attorney), bond counsel, and the financial advisor have always been considered invaluable to this process; however, the recent revisions in the tax laws make their services even more essential.

Lease/Purchase Agreements

As mentioned earlier, some states impose limitations on debt obligations for school districts. These limitations are typically stated as a ratio of debt to wealth (assessed valuation). The concept of lease/purchase emerged in states imposing debt limitations as one method of providing financing for needed schools without violating existing statutes. The process of lease/purchase entails a school being erected (or remodeled) by a legal entity other than the school district. The school district in turn pays the owner rental payments equal to the amount that is required to retire the debt obligation and the rental payments go toward an eventual purchase. The following example may prove helpful:

A school district is located in a state that imposes a debt limitation of 2 percent of assessed valuation. This district has a total assessed valuation of $100,000,000.00. The district needs to erect a new high school and the estimated cost is $15,000,000.00. This amount is well beyond the state's limitation (2 percent of the current assessed valuation is only $2,000,000.00). In order to meet its needs, the district enters into a contractual agreement with a separate corporation that will pay for the school to be constructed. This corporation then leases the school to the district and the annual rental payments are structured to retire the leasing corporation's debt obligation. If the leasing corporation has scheduled its debt retirement for 22 years, the school district would make the final payment in the twenty-second year and then assume ownership of the facility.

The corporations that enter into such agreements with school districts are commonly called holding corporations or holding authorities. These corporations may either be public (not-for-profit) or private (for profit). In the case of the public corporation, its single purpose is to sell first mortgage bonds in order to construct a school and lease/sell it to the school district. Private corporations, by contrast, provide the same service but do so as a business transaction to gain profit. The major advantage of the private holding corporation is that no bond sale is conducted. The corporation uses its own assets to construct the building. Avoiding a bond sale usually saves time and may also reduce the school district's need for special consultant services. By contrast, some school administrators dislike private financing because (1) it may result in higher interest rates compared to a public holding corporation, and/or (2) they believe that too much control of the project is assumed by the private finance company. School districts planning to use the lease/purchase method should carefully weigh the cost savings, time savings, and decision-making ramifications when contemplating using

a public vs. private holding corporation. Individual circumstances dictate which option is best at any given time.

The laws vary among the 50 states regarding the use of the lease/purchase method of acquiring new schools. As noted previously, this practice is most prevalent in states maintaining highly restrictive debt limits that have not been adjusted as building costs have markedly increased over the past 40 to 50 years.

DEBT MANAGEMENT

Regardless of whether a school district sells GO bonds or enters into a lease/purchase arrangement, a plan must be developed to retire the debt. This plan is based upon the sources of revenue for debt retirement and the conditions established for the debt retirement. With regard to acquiring such monies from local property taxes, the school district usually establishes a *sinking fund* or *debt*

Table 9.3
Sample Amortization Schedule for a Bond Issue (term = 25 years, 9 months; interest rate = 8.5%)

bond year ending Jan.1	principal balance (000)	principal payment (000)	interest payment (000)	total payment (000)
1988	$9,995	----	$618,441	$618,441
1989	9,995	----	824,588	824,588
1990	9,820	$175	824,588	999,588
1991	9,635	185	810,150	995,150
1992	9,435	200	794,888	994,888
1993	9,225	210	778,387	988,387
1994	9,000	225	761,063	986,063
1995	8,760	240	742,500	982,500
1996	8,505	255	722,700	977,700
/	/	/	/	/
/	/	/	/	/
/	/	/	/	/
2011	1,580	715	189,337	904,337
2012	815	765	130,350	895,350
2013	----	815	67,238	882,238
TOTALS		$9,995	$14,313,853	$24,308,853

service fund (the two terms have the same meaning). A sinking fund is an account that includes monies accumulated for the specific purpose of making debt payments.

How does the school district know how much its debt payments will be in a given year? This information comes from schedules that are developed at the time the school district enters into debt obligations. These tables are called *amortization schedules*. They identify the amount of principal and interest to be paid each year for the duration of the debt obligation. If a school district has more than one outstanding debt, the required annual debt service payment is the sum of obligations noted on each amortization schedule. Table 9.3 illustrates an amortization schedule for an amount of $9,995,000.00. The data in Table 9.3 reveal how interest payments decline and principal payments increase throughout the life of this bond issue. The annual payments remain relatively stable. As this amortization schedule illustrates, a debt of just under ten million dollars will require a total payback of about two and one-half times that amount. The annual payment, listed in the last column of Table 9.3, is the amount that must be raised annually in the sinking fund (less any amount made available from sources other than local school taxes).

If the debt retirement is a mix of revenues from local property taxes and other sources (e.g., loans, state aid), the school district needs to create a debt management plan detailing all of these resources used for meeting debt obligations. This plan should include schedules pinpointing the dates on which financial transactions must occur. If state loans will also be used to retire a debt, the finance plan should include amortization tables for retiring those loans as well.

OTHER RESPONSIBILITIES

The financial management portion of facility planning includes much more than debt management. Also requiring attention are such tasks as equipment and furniture acquisition, maintenance, and adequate budgeting for operations. Superintendents are apt to assume these responsibilities directly in smaller school systems or delegate them to the business affairs division in larger districts. The major reasons they are delegated to business affairs (as opposed to some other division such as instructional affairs) are: (1) that most school districts incorporate facility management under this division, and (2) that facility planning includes numerous tasks that are functions of business management. Preoccupation with the design and construction of the facility itself may cause school officials to neglect the less obvious responsibilities regarding equipment and maintenance, resulting in serious problems once the school is occupied.

Purchasing equipment and furniture can be a detailed task. In some projects, virtually all such items are included in the original specifications developed by the architect. In other situations, the movable equipment may be purchased directly by the school district through its normal business procedures (i.e., the items are acquired by using the regular funds of the school district). Regardless

of the method used, the facility planner needs to account for equipment and furniture needs and to specify how these items will be obtained.

Budgeting adequately for operations is another fiscal responsibility for new, expanded, or renovated school buildings. The failure to study operating costs is one way to create a serious problem. One school district, for instance, erected a new high school that included 45 percent more space than the school it was replacing. The new school was designed to be an "all electric" facility—a utility that had higher rates than the utilities used in the existing facility. Despite these conditions, this school district failed to increase its operational budget the year the new high school opened. The result was a $1.5 million deficit in the first year of operation due entirely to higher operating costs. Cost analysis for operating new or renovated facilities is a frequently overlooked task.

Insurance is a responsibility that typically falls within the realm of business management in a school district. Schools should be protected against loss due to fire, tornadoes, and the like. Coverage also is needed for the contents of the school. Most administrators readily realize that property insurance is standard. Less obvious are special insurance policies related to construction, construction contracts, and debt financing. In concert with the architect and other professional resource personnel, a comprehensive insurance document should be completed for a facility project. This document details all the insurance policies obtained for various phases of the project.

Maintenance is another large responsibility that must be addressed. This topic is discussed in detail in three chapters later in this book. Managing a facility once it is opened is much more complex than it was 20 or 30 years ago. Modern school buildings reflect technological innovations, energy management decisions, and more sophisticated designs and equipment.

SUMMARY

Facility planning includes a number of financial responsibilities. Foremost among these is debt financing. Since the statutes governing the financing of capital outlay vary markedly among the 50 states, there is no one method common to all school districts. The prevalent method remains the use of local revenues, either exclusively or in combination with other resources.

Reliance upon local revenues for debt financing typically necessitates the sale of bonds. Prior to changes in the tax laws in recent years, virtually all bonds issued by school districts were classified as municipal bonds (tax-exempt bonds). The new codes place specific qualification requirements for achieving a tax-exempt status. Thus, the task of debt financing has become even more intricate.

Financial management related to facility planning also includes tasks such as insurance, acquisition of furniture and equipment, and future planning for operational costs. Given that such a large portion of a facility project falls within the realm of business management, administrators in larger school systems specializing in fiscal administration are most apt to be a part of the facility planning team.

ISSUES FOR DISCUSSION

1. Develop a position for full state funding for capital outlay related to elementary and secondary schools. Why are most states avoiding this option?
2. Identify the specific requirements for financing capital outlay in your state.
3. Describe circumstances that mitigate against using the pay-as-you-go method of financing capital outlay in your state.
4. Differentiate between serial bonds, general obligation bonds, and coupon bonds.
5. Make a list of the types of insurance that may be needed for a facility project. Compare your list to the actual insurance purchased by a school district in your area recently completing a project.
6. Why is the rating of a debt important?
7. Define the concept of *arbitrage*. Why should the government be concerned about it?
8. List the advantages and disadvantages of incorporating all equipment and furniture into the total cost of a project (thus including these items in the bidding process for the project).
9. Under what conditions would the pay-as-you-go method turn out to be more expensive than debt financing?
10. Develop an argument defending the position that school buildings should be financed entirely—or almost entirely—from local funds.