REVISING POLICY ON PLANNING SCHOOL INFRASTRUCTURE IN THE UNITED STATES

C. Kenneth Tanner

ABSTRACT

Thomas R. Dye (2005) stated, "public policy is whatever governments choose to do or not to do" (p. 1). While there are many other definitions, this popular characterization of governmental policy in the United States is more than adequate to consider the rules, regulations, and actions of people surrounding the complicated issues related to building public schools. This definition, according to Dye, indicates that public policy regulates conflict within a society, organizes society to carry on conflict with other societies; distributes symbolic rewards, materials, and services to members of society; and extracts money. Consequently, public policies may regulate behavior, organize bureaucracies, distribute benefits, or extract taxes--singularly or all at once (Dye, 2005, p.1). This article considers policies that guide the various stages of educational facilities planning. Analogous to Dye's definition, policies regulate the behavior of the educational bureaucracy and distribute benefits and services, including the extracted taxes, to build schools. In particular, the emphasis in this commentary is on which policies describe and explain the divide between what the public wants its school buildings to be, what it pays for, and what it finally gets when construction is finished.

One conclusion from this review of planning activities is that stakeholders are rarely included in the development and design of schools in the United States. Another conclusion is that federal, state, and local governments have allowed for-profit business to dictate school design, regardless of whether it facilitates the curriculum or not. Frequently, school buildings from the for-profit sector, where stakeholders are ignored, result in simple, bland prototypes; they do not reflect community values, and their form does not follow functions to be achieved within the educational system.

INTRODUCTION TO THE PROBLEM

The economic stimulus package proposed for school infrastructure in 2009 required more strict guidelines for spending than prior policies. Serious questions have arisen from citizens and political leaders about the banking, insurance, and automobile worlds that took "bailout" money and then continued operations as usual – sometimes worse than that which led to the need for bailout in the first place. Taxpayers in the United States do not support new money being poured into failing business models. Neither should the public be content and allow old educational facilities planning methods to soak up federal bailout money for the educational infrastructure. The field of education is just as likely to continue to employ incorrect planning models as did the automobile, insurance, and banking industries, which initially avoided sound business models in favor of business as usual – policies that led to failure. Recommendations made in this article are intended to head off imprudent spending in educational facilities planning, design, and construction by paying attention to both the process and product in a multi-billion dollar business that has largely ignored teachers, students, stakeholders, and sound planning practices over the past 20 years.

Conducting research only in the United States, the researchers at the School Design and Planning Laboratory (SDPL, 2009) have learned to question many of the planning and building practices that have dominated recent planning and school construction activities. After reviewing policies from several states regarding the development of schools, it is safe to conclude, along with the SDPL research results, that the educational planning, design, architectural, and construction business in the United States operates under flawed policy, which allows bad decisions by school boards and state departments of education.

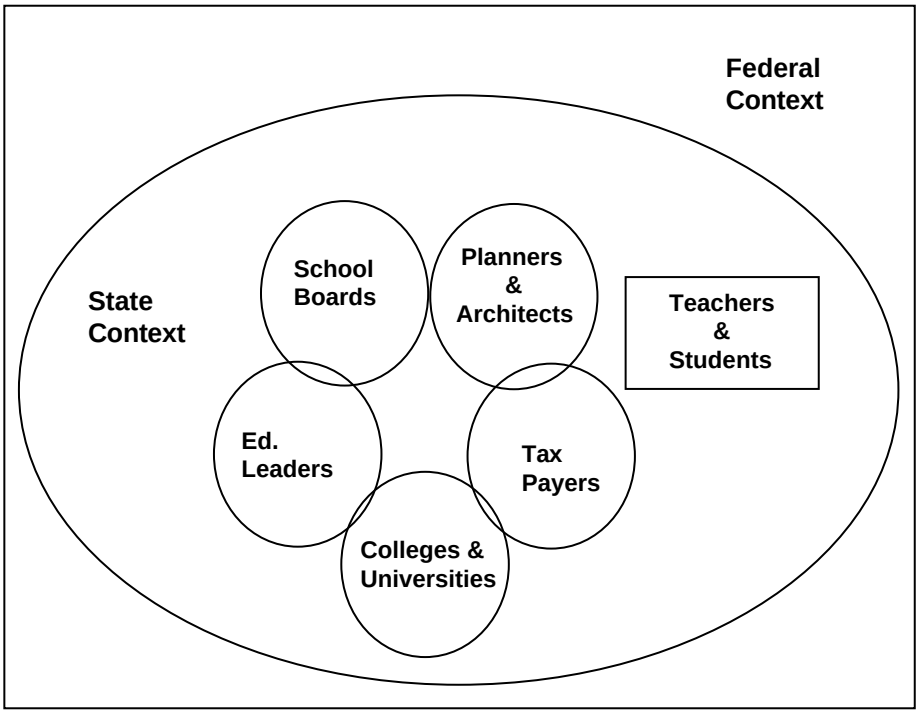
Looming large is the fact that school planning and design have been dominated by for-profit businesses operated by planning and architectural consulting firms, the majority of which are controlled and made up of white, upper middle-class males in the United States. This group has done limited data-based research, making it difficult to find credible evidence on solid educational facilities planning and design in the United States. Case studies and opinion appear to be the leading types of information

released to the public regarding educational facilities planning. After an opinion article is published, it is often cited as research – fiction masked as fact. Further, the ugly spiral of half truths spawned from the original published article, often moves beyond fiction to oxymoron status by authors labeling the half-truths as "best practices research." As a result, research on school facilities planning and design can get very fuzzy very quickly. Perhaps the best legitimate initial research that influenced school design in the late 1900's came from the field of environmental psychology, which produced several quantitative studies that may have been utilized by some schools and far fewer for-profit operations (see, for example, Sommer, 1969, 1983). A review of the few published works on the educational facilities planning process and research in that field may be found in Tanner and Lackney (2006). Other excellent publications on the process of educational facilities planning have been written by Greenman (1988), Sanoff (2000), Earthman (2000), and Olds (2001).

Given that the for-profit business sector has been paid by school boards to plan, design, and build schools, the blame for poor schools and failing infrastructure lies partially at the feet of educational leaders and school boards. Notwithstanding, the educational system and for-profit business share equally in the demise of quality school design leading to poor student achievement in the United States. Taxpayers who have supported bad educational policy on school facilities planning must also admit their share of blame. The educational system includes colleges and universities that educate and train school leaders. Very few colleges and universities offer courses or formal training in educational facilities planning and design. The process of how to design a school is ignored in the formal education of school teachers and leaders, so this aspect of the planning, design, and building process, by default, has been given over to the for-profit sector, which usually knows little about the school's philosophy, its curriculum, teaching and learning methods, or how the physical environment influences learning and behavior.

The general policy context for developing educational facilities in the United States includes the school boards, educational leaders, the colleges and universities, for-profit planning and architectural firms, and the taxpayers (Figure 1). School boards are policy-making bodies that influence the entire school culture. They are governed by local, state and national guidelines. Educational leaders work for the school board and carry out board policy; they may have some influence on board decisions. Planners and architects work for the board of education, and like educational leaders, may influence decisions. In fact, it is not unusual for the architect to influence educational decisions that should be made by educators – school design, for example. Colleges and universities rarely give educational leaders enough training to deal with educational facilities planning issues so, by default, the educational leaders give the job to architects or planners that are controlled by architects (existing policy in most states permits this activity). The taxpayers are included in the circle of influence because they, and educational leaders, have allowed a horrific planning process to evolve in the name of expediency, which includes prototype schools, little to no stakeholder participation in planning and design, and rapid, substandard construction processes. Too often teachers and students are totally ignored in the educational facility planning process, and relevant research is replaced by best practices, which may not be best practices at all. Figure 1 reveals the interactions described above. From the diagram, note that local school planning, design, and construction fall mostly under the gray areas of control provided by state departments of education, with some federal oversight. Local and state codes for construction are necessary, and must be followed regardless of the school's plan.

Figure 1: The Policy Making Context for Developing Educational Facilities



Few schools have been constructed to the satisfaction of educators. Some major complaints, backed up by research findings, are that schools often are not built to the scale of the student (age appropriate heights and dimensions), and students in these schools do not have adequate space for learning and circulation (Meek, 1995). Natural lighting is poor, or nonexistent in many classrooms, although such lighting has been shown to positively influence student productivity (Heschong Mahone Group, 1999; Tanner, 2009a).

One cause for the inadequate school facility is that the people who use the facility are, for the most part, ignored during the process of developing educational learning environments (Figure 1). This oversight may be caused by the perceived need to rush toward school construction, sanctioned by poor educational planning at the state and local levels, and ignorance about participatory processes and school design on the part of educational leaders and school boards. Often educational leaders and school boards have not exhibited knowledge or patience to utilize group process techniques needed to build schools. They most often ignore participatory design principles which include the discovery process so that everyone may "take part", going from awareness to understanding, taking understanding to the actual physical design based on priorities, and escalating to implementation – taking the process to what people want and how the building will look (Sanoff, 2000).

Thus, the lack of stakeholder participation is a major contributor to the building bad schools. All too often school boards ignore teachers, students, and parents, or allow only a cameo role suggested by the for-profit businesses that have taken over most of the school development in the United States. Dealing with stakeholders on a serious level takes up more time than the for-profit businesses and uneducated school leaders have been willing to expend.

SOME FACTS AND FICTION ABOUT THE EXPECTED PRODUCT *(STUDENT OUTCOMES*)

The SDPL (2009) has completed research that goes beyond case studies, best practices, and statistical relationships by identifying the effects of the school environment on student outcomes. Since 1997, the

SDPL's research agenda has been described as *The ABC's for Upgrading School Environments*, where we have continuously looked at the affective, behavioral, and cognitive dimensions of student learning and linked these factors, through sound statistical methods, to the physical environment of the school. Repeated studies at the University of Georgia have found significant relationships between the physical environment of the school and student outcomes such as achievement and behavior (Tanner, 2006, 2008, 2009a).

Throughout the United States, many students are crammed into deteriorating schools that need billions of dollars in repairs, renovations, or construction (National Center for Educational Statistics; 2000, 2003, 2007). If we follow the currently prevailing policies of planning and designing public schools in the United States, and if the needed change is attempted through these old policies on building and renovating schools, there is little hope that our county will ever come out of the educational slump plaguing most public schools. This is because one of the last research frontiers in education is the school facility and how it affects student learning and behavior. We are just beginning to discover how the school facility influences student learning. But, following the old policies on educational facilities development will only lead the educational system to implode under failed planning, design, and construction practices of recent years. Currently, there are quotes of *fiction, facts, and costs* being spread throughout the media:

Fiction

Parents, students, and teachers do not know what they want. However, architects and planners do know what facilities are best for teaching and learning, (although they can't site any defensible research).

Minimizing community input about school design and construction will save time. Parents, students, and teachers just get in the way of bringing the school in under cost and delay the time lines.

Smaller classes are best for student teaching and learning. Ignore the number of students per usable square foot.

Involving the community and stakeholders requires only one or two brief meetings. Lead clients to think that they had a part in developing the school. Group process requires too much time.

Windows in classrooms waste energy and money and cause distractions for students. By keeping students from looking through windows to the outside, their attention can be focused on the teacher. Schools without windows and natural light are less expensive to operate and more energy efficient.

Students perform just as well in a dull school as a fancy school; and the teacher-centered method of teaching is adequate (sitting in straight rows and listening to teachers lecture). The design of the school does not matter, so build the school as cheaply as possible and eliminate frills and aesthetics.

Facts

Well-designed classrooms influence how children learn and bring aesthetics to a traditionally dull atmosphere. This is partially true as we have hard evidence on certain design features, but the statistical data are thin regarding aesthetics, although we wish it were not (SDPL, 2009).

President Obama proposes to enhance schools by making the technology and the Internet available to all students. This may be one of the most important gifts students ever receive from the public school system. Our research on school design and after school programs supports the use of technology as an effective influence on student learning (Tanner, 2006).

There is a growing body of evidence showing that improving classrooms influences student performance positively. SDPL research supports this aspect of the President's policy agenda (SDPL, 2009).

Students attending crowded schools and classrooms have lower academic performance. This relates to the notion that "smaller is better and larger is worse," but smaller and crowding must be clarified (Wohlwill and van Vliet, 1985). Student population density, not whether the school is small or large, is one significant aspect of planning in need of explanation to policy making groups. We have no solid evidence based on hard-data research to prove that small schools are better or that large schools are bad (It is the wish of the author that we could prove that smaller schools are better, however). Swift (2000) found that students attending schools having more that 100 architectural square feet per student scored

significantly higher on standardized tests.

As emphasized above, there exists very limited hard evidence indicating that smaller class sizes or schools actually help to improve student outcomes across all socioeconomic (SES) classes. Achilles, Finn, and Bain (1998), in their classic study, found that smaller classes were helpful to children in inner-city schools. This statement may not apply to students of all SES classes, however. The SDPL has reported data showing that ample space and circulation patterns correlate with improved standardized test scores across all SES classes (Tanner, 2008).

Principals in primary and secondary schools note that deteriorating conditions interfere with learning (National Center for Educational Statistics, 2007). Power outlets are scarce in older schools, and may impede the use of technology.

Older schools frequently have mildew and mold in the walls and carpeted floors, due to leaking roofs. This triggers allergy and asthma problems, even when the floors are cleaned regularly.

Many hallways in schools across the United States are dark and narrow, not to mention crowded, facilitating behavior problems such as bullying and fighting. Freedom of movement is necessary to foster positive student outcomes.

The Cost

While there are many published cost estimates, no one knows exactly how much money is needed to restore broken schools and build new, adequate learning environments. By starting with a set of sound policies and procedures, not heretofore uniformly employed, we can make a positive difference in planning and constructing appropriate learning environments.

While simply estimates, the projected cost of upgrading schools ranges from $200 billion to $400 billion as reported by the National Education Association, the American Federation of Teachers, and the Council of Educational Facility Planners, International (Tanner, 2008). Local and state governments and private businesses must share these costs. The federal dollar, alone, will not solve the problem. In general, federal dollars account for only a small portion of construction and other school needs. State and local governments almost always spend a higher percentage on school construction than the federal agencies.

Federal agencies should consider supporting local school construction with low cost bonds. This would be a sound approach to get the school planning and construction jobs done according to better policy, especially if local governmental agencies are willing to change current policies and procedures.

School facilities planning, design, and construction may begin upon the release of federal financial stimulus monies. Yet, jumping to construction without serious planning is a waste of money and not even a short-term "fix."

A PROPOSED POLICY IMPLEMENTATION PROCESS FOR UPGRADING SCHOOLS

Non-profit educational organizations must take authority over for-profit organizations to demand that any new educational building, by necessity, accommodates the educational functions set forth by the relevant educational community. This is not going to be easy as there are too many players who think they know what is needed by educational institutions (see for example Figure 1). The for-profit organizations say, "Let us tell you what you need, because we can save you money, and we know because we do this for a living." The for-profit organizations often deliver dated educational specifications and a school design previously stored in a drawer or on a computer hard drive that will be presented to the community after going through perfunctory planning meetings, and at a reduced percentage of normal architectural charges. The non-profit educational organization is used to being told what to do by polished salespeople from the for-profit businesses. *So, educators are conditioned to say: "we get what we get and should be glad to get it; and of course, we saved money since we received a discount on the architectural and design fees."*

Table 1 provides suggestions to ensure that architectural form follows educational function – thus, letting the educational program dictate school design. Educational decision makers should demand that form to follow function in the facility planning process.

Table 1:
Develop an Educational Program that Dictates School Design – Form Follows Function

- In the pre-planning stages, demand that curriculum experts define current and future educational trends.
- Identify current and future teaching and learning styles that will be experienced in the new school facility.
- Know the current and expected demographics of the school.
- Review data-based research on how the educational environment influences student outcomes and be very cautious about best practices (Always ask: *whose* best practices and know if the practices may be generalized to your setting).
- Complete educational planning and concept design before employing an architect or design team. Therefore, the non-profit tells the for-profit organization what functions are to be accommodated by the design (form) of the school.
- Since architectural fees are in the range of 6% to 10% of the total cost for building a school, reduce the architect's load by shifting more activities into planning. Lower the architect's percentage and reduce the architects workload and responsibilities.
- Revise state and local policies governing architects, and give control of school design to qualified educational planners and decision makers.
- Set aside approximately 1% of the expected project cost for pre-planning and concept design at the educational organization's level, and allow no interference from the for-profit industry. Stay away from influence outside education in planning for school learning environments.

Through continuous use, revision, and work with students and school systems in applying various planning models (Earthman, 2009; Tanner & Lackney, 2006; Sanoff, 2000; Castaldi, 1994; Clay, Lake, & Tremain, 1989), the SDPL has developed and implemented a hybrid of paradigms labeled Focused Strategic Planning (FSP) (Tanner, 2009b). Perhaps this five-phase strategy could be employed to upgrade the educational facilities planning processes in the United States.

In applying the model, the problem is presented to stakeholders as follows: *Develop a facilities plan for a school of your choice.* The five phases are:

Phase I: Develop a focused mission statement for the educational facility. First, determine the number of students for which you are developing the facility. Next, study the organizational level (lower, middle, or upper school). Assuming familiarity with traditional strategic planning, and how to select, organize, and orient team members, *develop a mission statement that will complement the school program (its curriculum) and its context*. The mission will probably be a complementary part of the larger vision and mission already established by the school. The mission statement in the FSP process should focus on the physical environment.

Phase II: Construct "Surprise-Free" scenario statements about the educational facility. Assuming the trends and issues discovered in the environmental scans (a separate survey prior to FSP) are valid, *develop a list of assumptions about what the school should look like in 5-10-20 years*. For example, "Each student will be provided ample space for learning," and "The school population, within 10 years, will increase by X%."

Phase III: Develop design goals for the educational specifications. Review the results of Phases I

and II**.** Link the surprise-free scenario statements to *design goals for the educational specifications.* For example: "Allow at least 39 square feet for each student and teacher in classrooms to better implement the constructivist learning and teaching philosophy."

Phase IV: Advance from goals to concept design. *Sketch learning spaces* that include the design goals for the educational specifications developed in Phase III. Now, following Sanoff's (2000) participatory design principles, go from awareness to understanding and actually develop a physical design based on priorities. This activity reflects what the people want and shows how the building will look.

Phase V: *Translate the Concept Design into a Schematic Drawing*. Describe and explain to the stakeholders and governing board the relationships among the schematic drawing and design goals, addressing teaching and learning philosophy facilitated in the various spaces. Show how the educational function influences the physical design of the school.

Figure 2, depicts a model in which concept design or FSP fits into the typical policy on building or remodeling schools. The section of the flowchart depicted in figure 2 described as FSP or Concept Design is missing from planning models in many states studied by SDPL (Tanner, 2009a). This conceptualization is based on the ideas and materials presented in Table 1.

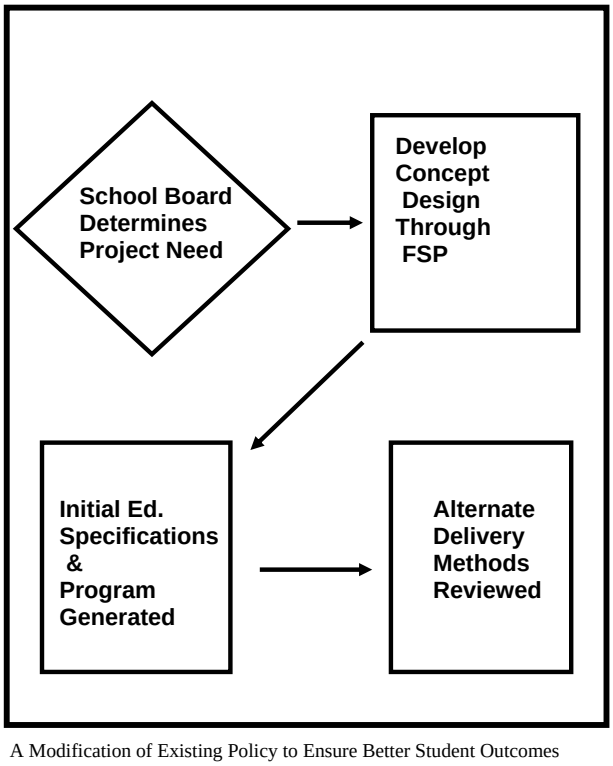


Figure 2. A Modification of Existing Policy to Ensure Better Student Outcomes

The FSP procedure encourages community participation, while minimizing duplication of planning efforts. Hopefully, teachers and students will become part of the planning and design teams funded by the 2009 U.S. economic stimulus package. This focused strategic planning procedure is a radical policy change for many school districts in the United States who have elected to build prototype schools and allowed for-profit organizations to dictate the type of school they build. The modification of the existing policy structure found in Figure 2 facilitates the ***change*** that President Obama endorsed!

REFERENCES

Achilles, C. M., Finn, J. D., & Bain, H. P. (1998). Using class size to reduce the equity gap. *Educational Leadership*, 55(4): 40-43.

Castaldi, B. (1994). *Educational facilities: Planning, modernizing, and management.* Boston: Allyn & Bacon.

Clay, K, Lake, S., & Tremain, K. (1989). *How to build a strategic plan*. Ventures for Public Awareness, P. O. Box 7140, San Carlos, CA 94070.

Dye, T. R. (2005). *Understanding public policy*. Upper Saddle River, NJ: Pearson – Prentice Hall.

Earthman, G. I. (2000). *Planning educational facilities for the next century*. Reston, VA: Association of School Business Officials, International.

Earthman, G. I. (2009). *Planning educational facilities: What educators need to know* (3rd Ed.). New York, NY: Rowman & Littlefield Education.

Greenman, J. (1988). *Caring spaces, learning places: Children's environments that work*. Redmond, WA: Exchange Press, Inc.

Heschong Mahone Group. (1999). *Daylighting in schools*. Fair Oaks, CA: Heschong Mahone Group.

Meek, A. (ed.) (1995). *Designing places for learning.* Alexandria, VA: Association for Supervision and Curriculum Development.

National Center for Educational Statistics. (2000). *Condition of America's public school facilities*: 1999 (NCES 2000-032). Washington, DC: U.S. Department of Education.

National Center for Educational Statistics. (2003). *Planning guide for maintaining school facilities*: 1999 (NCES 2000-032). Washington, DC: U.S. Department of Education. Retrieved January 24, 2009, from http://nces.ed.gov/pubs2003/maintenance/

National Center for Educational Statistics. (2007). *Public school principals report on their school facilities*. Washington, DC: U.S. Department of Education. Retrieved January 24, 2009, from http://nces.ed.gov/pubsearch/ pubsinfo.asp?pubid=2007007

Olds, A. R. (2001). *Child care design guide*. New York: McGraw-Hill.

Sanoff, H. (2000). *Community participation methods in design and planning*. New York: John Wiley & Sons.

SDPL. (2009). School Design and Planning Laboratory. The University of Georgia, http://www.coe.uga.edu/sdpl/sdpl.html

Sommer, R. (1969). *Personal space*, Prentice-Hall, Inc., Englewood Cliffs, NJ.

Sommer, R. (1983). *Social design*. Englewood Cliffs, NJ: Prentice-Hall.

Tanner, C. K., Lackney, J. A. (2006). *Educational facilities planning: Leadership, architecture, and management.* Boston: Allyn & Bacon.

Tanner, C. K. (2008). Explaining relationships among student outcomes and the school's physical environment. *Journal of Advanced Academics*, 19 (3), 444-471.

Tanner, C. K. (2009 a). Effects of school design on student outcomes. *Journal of Educational Administration*, 47(3), 376-394.

Tanner, C. K. (2009 b). Facilities planning: Charting your course. In Brown, M., and Levinson, M. (eds.), *Welcome to the jungle: A business officer's guide to independent school finance and operations.* Boulder, CO: National Business Officers Association Handbook, p. 37 – 45.