

CONCLUSIONS

The Process of Participation

This study indicates that an on-going assessment process with occupants, with the intent of identifying and creatively addressing environmental quality concerns, issues and problems, can be helpful in continuously improving the physical conditions of learning and teaching.

Where issues about managing school facilities are concerned, building providers' interests tend to dominate, or are privileged, over those of school occupants. For example, however laudable, goals of energy efficiency over human comfort on the part of the district to save scarce resources, tends to serve the providers' interests more so than others. The results are facilities biased towards the providers' priorities in which student, teacher and community needs are relegated in importance, or in some cases, absent entirely.

The development of an on-going assessment process with occupants can transform this situation so that occupant knowledge and values gain a rightful place. Both occupants and providers depend upon each other. To manage better facilities, particularly for occupants, there is a need to develop more awareness of each other's knowledge and experience. The key to integrating occupant and provider knowledge is sharing knowledge through social negotiation. Both parties must acknowledge first their interdependence and need for better understanding. A participatory assessment process is one tool to accomplish this goal.

An on-going process of environmental quality assessment, such as the one followed in this study, has the potential for supplying the tools necessary for educators to successfully resolve many such environmental concerns in an as yet unknown, creative and innovative way (See Appendix C for a complete description of the environmental assessment process followed in this study).

Environmental Quality Issues

This study found that environmental quality is most often perceived by occupants in the five schools as the provision of physical comfort and health, classroom adaptability, safety and security, building functionality and aesthetics and appearance.¹⁵

Physical comfort and health issues across schools are thermal comfort, air ventilation, and in some cases noise. Despite the fact that most teachers in all schools felt that the custodial staff and the maintenance staff are perceived as doing all they could do to address problems of thermal comfort and air ventilation, these problems persist. One explanation is that in all of these buildings, the mechanical systems are fast approaching the limit of their life. In addition, the original design of the mechanical systems most likely did not take into account the problems occupants are facing today. These problems are not unique to schools, many other building types built at the same time, during the first attempts at designing energy conscious buildings, are now experiencing similar problems. In addition to the frustration these systems bring, fenestration systems fail as well to provide the natural daylight and fresh air that occupants desire. This problem too is a result of

¹⁵See Appendix A for complete documentation of the all environmental qualities assessed in this study. Also see Appendix B for a complete listing of specific environmental concerns by school.

'sealing' the building to create more efficient, energy conserving buildings. Although these problems will be difficult to surmount financially, they urgently need to be addressed.

Classroom adaptability issues center around teachers' inability to control noise and distractions in open space instructional areas as well as an inability to accommodate cooperative learning activity centers in both open and self-contained classrooms. These problems are endemic in all open plan schools. Considering the central importance of the classroom as the primary place of educational instruction, there has been little systematic thought about how classrooms, open or self-contained, should be designed and arranged to accommodate cooperative learning instructional strategies.

Safety and security issues focus almost exclusively on problems of controlling unlawful entry into the school. There are more concerns over security issues than safety issues which school administrators feel are under their control. Security problems are perceived to be lessened by the installation of buzzer systems, however, the fears and concerns associated with the symbolism of security systems is not easily overcome. Security issues are connected ultimately with concerns over neighborhood safety and security which are clearly on the minds of students, teachers, parents and staff alike. The main safety issue concerns outdoor playground equipment and the state of the building grounds themselves. Play equipment is perceived as both unsafe and developmentally inappropriate. Again, addressing the problem of play equipment is stalled by budgetary limits but is an issue that needs to be addressed.

Building functionality issues are somewhat less of a concern than those mentioned above, but when functionality issues do arise they indicate problems with the match or fit between the ideals of the building layout and the realities of changing educational activities and practices. These problems are often systemic, as in the case of at least one school in the study. As some schools begin to move toward more community involvement, building functionality issues will continue to surface.

Aesthetics and appearance are more of an issue with respect to the building grounds than with school interiors. Many occupants of the schools are frustrated by the lack of control their custodial staff has over the upkeep of the building grounds. Much of the explanation for this problem focuses on a downsized staff, questions of responsibility, and problems with the community's lack of ownership of school grounds. On the other hand, occupants are very satisfied with the job the custodial staff performs within the building. The schools are perceived clean and orderly.

The remaining five environmental qualities identified in this study, personalization and ownership, places for social interaction, privacy, sensory stimulation and crowding/spaciousness are not perceived as being of primary concern for the schools in this study. However, some issues did emerge from the interviews and workshops.

Within the school, teachers feel that students have opportunities to express themselves and take ownership of their school. The importance of displaying student work inside and outside the classroom is a universal principal these schools advocate and practice. The real concern is that some in the community do not take ownership of the school grounds.

Although students are not perceived as having many opportunities for privacy, they do have some. Much of this problem stems from teachers not having classrooms that are adaptable enough to provide for private places within the classroom, although some teachers have found ways to provide for this need.

All teachers feel that their school provides ample sensory stimulation for students. They perceive their schools as being bright and cheerful as well as instructive. Displays of student work and other instructional materials on the surfaces of walls are tangible ways in which this perception is maintained.

Unexpectedly, only one school in the study was seen as being crowded. In most cases, due to lower enrollments, schools are spacious. Even with this fact, teachers do not feel as though they have any control over this environmental quality since it is determined more by district policy and school administrator decisions.

Educational Outcomes

This study found that high-priority environmental concerns are significantly correlated with percent student achievement improvement from 1993-1995. Schools with a high number of high priority environmental concerns tended to exhibit low percentages of student achievement improvement, while schools with a lower number of high priority environmental concerns tended to exhibit higher percentages of student achievement improvement. These findings are preliminary at best, but they do suggest a pattern that needs further research.

In addition to this finding, a number of specific environmental quality attributes are perceived by occupants to have an impact on several educational outcomes. Physical comfort and health was found to be the environmental quality with the most influence on educational outcomes. Physical comfort and health and classroom adaptability in particular have the greatest impact on Student Academic Performance as well as Teacher Instructional Performance. In addition, physical comfort and health, safety and security, and personalization and ownership are the environmental qualities that have the greatest impact on Student Social Development.

The fact that teachers think that physical comfort and health issues have an influence on educational outcomes is further evidence of the importance of addressing the concerns of this environmental quality. Physical comfort and health has the affect of influencing student behavior, attitudes and mood which can lead to less attention to their work. The same problems and effects of physical comfort and health can influence a student's social development under certain conditions: disruptive behavior is often the outcome of these influences.

Classroom adaptability, also high on the list of qualities impacting the educational process, is an environmental quality found to be of concern in this study. Most of the problems associated with open space are blamed on students' inability to focus on their work. Distractions from the movement and noise of other classes is the prime factor contributing to this low rating of classroom adaptability. In addition, teachers' performance suffers when he or she cannot use the classroom effectively to facilitate the learning process. This problem constitutes an additional impact on student performance.

Safety and security issues are seen as having the most impact on students' social development. Many of the problems associated with this outcome are focused on playground safety and low neighborhood quality: the outdoor play environments do not provide an opportunistic setting for rich and varied social interactions between children. The lack of ownership of their playground by the community also sends a negative message to children. In addition, children often bring many of their social problems into the school, affecting their ability to interact with their peers in structured learning settings.

Facility Management

This study found that facility management plays an important role in maintaining and improving environmental quality. Four out of the ten qualities identified were seen as being under the domain of facility management: physical comfort and health, safety and security, personalization and

ownership, and aesthetics and appearance. By maintaining these four environmental qualities, facility management is additionally seen as having a role as well in supporting educational activities, goals and outcomes.

JCI-managed schools fared better than match schools in the number of environmental concerns perceived by occupants to be facility management related. However, on the whole, all schools experienced problems that were perceived as under the influence of facility management, as well as under occupants' control.

The corollary of this finding is that educators feel they have, by implication, some measure of responsibility, influence and control over the six remaining environmental qualities. For instance, teachers feel that they can take some responsibility for addressing concerns over classroom adaptability, instill a sense of personalization and ownership within their students, take advantage of places that foster healthy social interaction, provide places for privacy for students within their classrooms, and maintain an appropriate level of sensory stimulation for their students.

Yet, paradoxically, some teachers lack adequate knowledge about how to effectively utilize, maintain and manage classroom space to support their instructional efforts, such as with cooperative learning strategies. Open instructional areas are perceived as being too distracting and noisy, while some self-contained classrooms are seen as too constraining.

In addition, although teachers do not have a strong sense of control over building functionality and crowding/spaciousness, they expect their school administrators to address these issues through educational policy.

Partnership between Facility Management & Education

It is difficult, if not impossible, to separate an activity from the environmental setting within which it occurs. The thermal, lighting and air quality comfort the facility provides, the cleanliness, orderliness and character a facility exudes, and the quality of spaces within the classroom, all can greatly affect what can and cannot be accomplished in a given facility.

Any school administrator is likely to have a vision of the ideal place for learning. The vision and the reality, however, often do not coincide. The challenge is to get the reality of the school congruent with the ideal vision of the place for learning.

It is the responsibility of the administrator to set standards for care and upkeep of facilities and resources. School facilities must be cleaned, protected, preventively maintained, operated, repaired, and environmentally regulated. It is at this level that many administrators begin their efforts to improve the quality of the learning environment.

However, there is growing pressure from educators that indicates administrators are not addressing any factors beyond the basic services mentioned. Educators insist that school facilities must be managed to support the educational program needs as well. Assessing the degree to which the school facility helps or hinders the educational activities contained within is a first step in the direction of attaining the vision.

From what has been learned in this study, the environmental qualities of classroom adaptability and building functionality are concerns neither educators nor facility management personnel have been able to appropriately address. Beyond the recognized reduction of classroom size to 25 to 30 students, beyond the standard and critical maintenance services of custodians, and beyond constant shuffling of desks and tables by classroom teachers, are more complex problems of facilities that simply do not effectively support the educational programs contained within them.

How can schools collectively address problems of managing open plan instructional areas with all the visual and acoustic distractions that accompany them? How can schools collectively address problems associated with effectively laying out both open space and self-contained classrooms for cooperative learning? How will schools interested in increasing the range of community services in schools accommodate these services adequately without adversely affecting their traditional educational program activities?

These are questions that require a collaborative effort that integrates the knowledge of educators and school administrators, facility managers, and community organizations and agencies. How can this be accomplished?

First, educators need to become more aware of the potentials and opportunities that the physical setting presents to them -- they must become environmentally competent. This awareness will not come about through in-service programs alone. Rather, actively working to find more appropriate ways to structure their setting for teaching and learning, through an environmental assessment process, can be a positive step forward.

At the same time, facility managers need to become more cognizant of the role the physical environment plays in supporting the educational process. Problems of classroom adaptability and building functionality can be solved through a core competency of space planning: a competency well established in other building types such as office facility management. Either Departments of Facilities must take the lead in providing this type of service, or local schools through their School Improvement Teams must develop or obtain this competency if they are to solve some of the intractable problems classroom teachers have lived with since educational philosophies first began their rapid change a full 30 years ago.

Finally, many of the more difficult emerging building functionality problems faced by several schools in this study concern themselves with connections to community. Although community involvement is at a low ebb at present, there are indications within these schools, and within Baltimore City Public Schools in general, as well as across this country, that the community school concept and community-school partnerships are emerging once again as a partial solution to the problems of urban school districts. These demands will place an even greater pressure on school buildings to expand their services and open up their space to outside community organizations and agencies. Clearly the community should, as a matter of course, be included in this on-going environmental assessment process.

In this way, by establishing a partnership between school facility manager, educators, and the community in the joint educational decision making process, new opportunities for improving the conditions of learning and teaching can begin to arise.