Facilities for 21st Century Learning

Implications for 21st Century Learning

Safety and Security

There is a high interest in maintaining an inviting and deinstitutionalized environment, while simultaneously providing a safe environment for students, staff, and the community who use the facility and adjacent support services. The organization of a building can have a major impact on student behavior and safety. Building security can be addressed in an active or a passive manner: active security is based on security systems; passive security is based on program design, building layout, and community participation. Schools should be based on passive concepts with applied active concepts where necessary.

If designers focus on the symptoms of the problem, they tend to focus on the active security procedures that can be implemented. If designers focus on the cause of the problem, they are likely to address most issues through passive or program and building layout solutions.

The problems and their causes are multi-dimensional: some issues can be more easily addressed in design than others. Causes can include, family problems, lack of sense of belonging, lack of identity, lack of communication, lack of accountability, lack of student/teacher relationships, and criminal activities by outsiders.

Since the greatest number of discipline problems in a school occur when students switch classes and travel from one end of the building to the other, reducing movement by having students spend the majority of their day in one section of the building should result in fewer discipline problems. Teams of teachers that are responsible for the students improve the student/teacher relationship, resulting in greater continuity and monitoring of behavior issues.

Organizing a building into general learning setting results in a number of changes which should reduce behavior problems:
• Grade level teacher preparation areas place adults in closer and more direct contact with students.
• Students have a greater sense of belonging and identity. For the majority of the day, their place is in the neighborhood and commons.
• School pride becomes more apparent.
• Block scheduling is commonly used in middle schools and also helps reduce pedestrian traffic within the building.

The glass wall into the administration reception/waiting area in the pictures to the right provides good visibility of the main entrance. It serves a dual purpose of being inviting and welcoming to visitors while allowing administrative staff to monitor access during school hours. Way-finding is crucial to a successful school facility. The front entrance and reception area should be immediately obvious to anyone approaching and entering the building. Similarly, glass can provide security and visibility if the right materials are used.
Passive Security Concepts

Building Layout

- Avoid blind spots, corners, and cubby holes (inside or outside).
- Locate administrative and teacher preparation areas to have good visual contact with major circulation and gathering areas (i.e., corridors, cafeteria, bus drop-off, parking).
- Develop spatial relationships in such a manner that there are natural transitions from one location to another.
- Locate toilets in close proximity to classrooms.
- Design toilets to balance the need for privacy with the ability to supervise.
- Locate areas likely to have significant community (after school) use close to parking and design these areas so they can be closed off from the rest of the building.
- Design wide, naturally lighted stairwells in multi-story buildings.
- Design open stairwells with exterior windows.
- Design the building so unused areas can be closed off.
- Provide covered entrances and exits.

This example illustrates a neighborhood approach. Locating teacher workrooms, commons areas, restrooms, and storage integral to the neighborhood reduces traffic and increases safety and security.
Building Materials
- Use durable wall surfaces that are easy to clean so graffiti can be removed.
- Use safe building materials.
- Incorporate pitched roofs which inhibit roof entry and are aesthetically pleasing.
- Limit the size of windows – use multiple smaller windows rather than one large window.
- Use safety glass or glass bricks where appropriate.
- Glaze or tint windows.
- Install non-slip floors at the point of entry.
- Provide handicapped accessible entrances.
- Provide a ventilation system adequate for the size of the building.
- Provide sound device warnings for doors other than main entrance.

Vehicular and Pedestrian Traffic
- Separate bus drop-off areas from other vehicular traffic (with one bus entry point).
- Separate and provide adequate staff, student, and community parking area, located in appropriate areas.
- Separate student (pedestrian) traffic flow from vehicular traffic flow.
- Separate the Kindergarten entry from the main school facility entry.
- Protect playfields from vehicular traffic and parking.
- Provide an additional exit specifically for sporting events (quick exits = less chaos/fights).

Uses of Technology/Active Systems
For instructional and administrative purposes, the school should have extensive technology systems.

These same infrastructures and technology components can be used to enhance building security.
- Provide phones in every instructional and support area.
- Provide panic buttons in all rooms.
- Provide a secure lobby area.
- Provide a building-wide all-call designed to be heard throughout the school and on the play fields.
- Provide motion or infrared detectors.
- Provide video cameras for security purposes; and provide more people with access to the security cameras.
- Provide smoke and heat detectors located throughout the building for central monitoring.
- Provide alternatives to keys for access control into the building, such as access control cards. These are plastic “swipe cards” and proximity cards, which can also be used as identification cards. The swipe card is placed in a machine, while the proximity card simply has to be placed close (usually 3 to 7 inches) to the reader to unlock a door. The cards are coded to allow entry to appropriate doors at selected times. Only one card is required for multiple entry points. Used in conjunction with the card is the controller, which monitors alarms, and the software, which is customized for the application (establishes parameters, maps input-output points, and enters phone numbers for the dial-up site). Other approaches include a battery-operated lock that requires a numerical code on a key-pad.

Landscaping, Playing and Practice Fields, Site, and Lighting
- Use tall trees and low shrubbery (less than 3 feet high) to deter hiding. Eliminate trees at the entrance.
- Use aesthetically-pleasing fencing around perimeter of the building. Avoid barbed wiring.
- Provide non-intrusive lighting of the entire area.
- Provide emergency lighting/power in hallways, stairwells, and rooms.
- Provide security lighting around building and parking lots with photo cell timer and on/off capacity.
- Provide efficient lighting for outdoor venues.
- Separate athletic fields and informal gathering areas.
- Locate athletic facilities away from the building.
- Recess the building on the site to avoid vehicular and pedestrian conflicts.

The image below is an example of using low shrubbery and tall trees as landscaping features that deter hiding.

Council Rock HS, Gilbert Architects, Richboro, PA