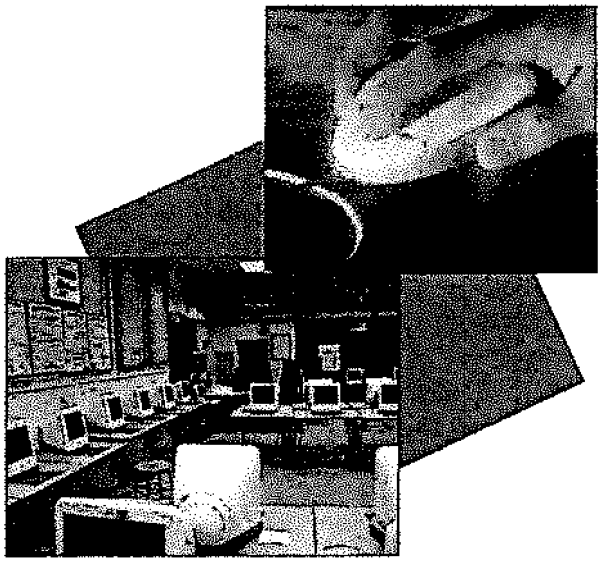


Technology

Today, technology is used extensively to help students learn basic and critical thinking skills. In the future, the applications and capabilities of educational and information management technology will increase dramatically. Today, the majority of jobs require at least some technology proficiency and as such, it is expected that students will leave school with the ability to work with and use technology.

The implementation of voice, video, and data throughout school facilities is becoming a standard in schools across the country. Appropriate and strategically designed and installed technology will greatly enhance the teaching and learning of basic skills and position a school to take advantage of technological developments in the future.

To take advantage of technology

- Comprehensive staff development programs and training
- Student access to technology applications
- Updated hardware and software in classrooms [which can also be computer labs], and Media Centers
- Wireless access points
- updated school wiring and internet access;
- Integration of technology into the academic content standards
- Home to school access
- Technical support personnel at the school level
- Security system that encourages use and protects the investment

All classrooms should be multi-use/multi-purpose with invisible technological support. There should be a seamless web of technology to support the classroom management between administration, teachers, students, and the home.

Research suggests that multi-sensory teaching is most effective in mastery of basic skills. Technology supports visual, auditory, and experiential learning; therefore, it is recommended that all instructional spaces have voice, video, and data accessibility. This access enhances the flexibility of the learning environment to respond positively to alterations in the use of space. The wiring and other infrastructure components should be the first priority since terminal devices can be added later; however, wireless networks should also be included. The facility should have surplus electrical power capacity and network wiring/bandwidth to permit expansion of technology.

It is important that all students demonstrate technology skills appropriate to their grade level. Students will be expected to possess technology skills, as defined and assessed through authentic learning opportunities and applicable technology.

Technology Components

Voice: Telephone and voice communications in every classroom and workspace to support internal and external communications. As voice and data are integrated, typical phone drops are replaced with normal network data drops.

Video: Video distribution in every classroom and throughout the building with interactive video capabilities to support whole and small group instruction, distance learning, and providing access to a wide range of internal and external resources.

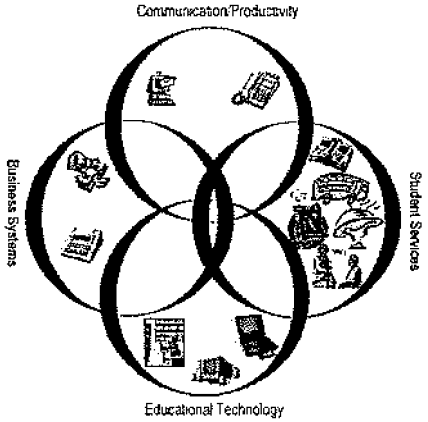
Data: Data retrieval capabilities in every classroom and throughout the building as well as network capabilities City-wide and to other external resources (i.e. Internet).

Today's schools are equipped to support management and instructional applications. Current voice, data, and video systems can provide leadership, instruction, data management, internet access, and student services which go far beyond the systems in schools that were constructed as recently as the late 1980s. Technology is becoming increasingly useful and appropriate to the student and the educator. As home and business worlds move into higher levels of technological applications, it is critical for schools to be equipped and play a leadership role in the integration of technology into the teaching, learning, and communication processes.

Applications of Technology

Technology has four primary applications within the school environment. These applications have the potential to have a positive impact on every aspect of the educational process found in school. The following table illustrates the four primary applications that interface with each other and some examples of educational applications in each area.

Communication/ Productivity: E-Mail, Word Processing, Database, Spreadsheets, Phone, Internet	**Student Services:** Schedules, Grades, Attendance, Counseling, Transportation, Food Services
Educational Technology: Media Center, Computer Applications, A/V Applications, Distance Learning, Internet	**Business Systems:** Accounting, Payroll, Inventory



Technology & the Learning Environment

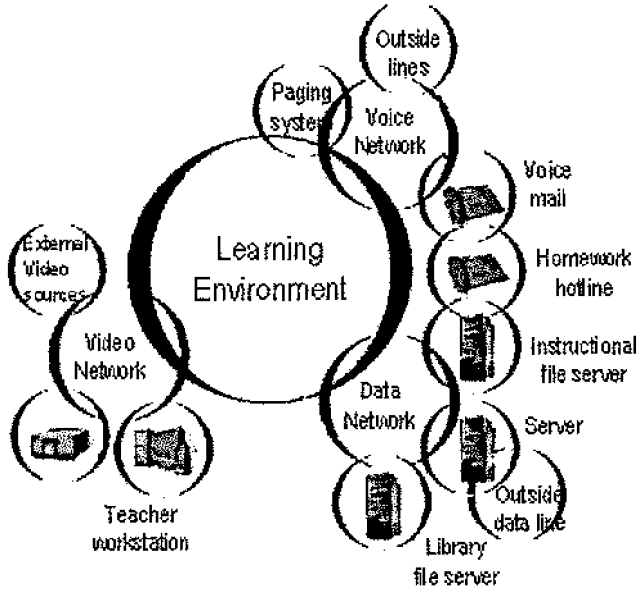
Technology greatly enhances the learning environment. Technology, in the typical classroom, can support multiple instructional designs.

Whole Group Instruction [20-30 students] – This includes the use of document readers, computer projectors, DVD players, flat screen monitors, LCD flat panels and various forms of computer display techniques.

Small Group Instruction [6-8 students] – This includes areas in the classroom and in shared common spaces, which a teacher or another resource person can work with groups of 6-8 students. The technology is essentially the same as whole group instruction technology, the only difference being the size of the groups.

Individualized Instruction [1-2 students] – This is primarily a computer-based instruction design where students interact with a computer workstation. As all forms of technology become more digitized, it is envisioned that these will be multi-media workstations that integrate voice, video, and data formats as well as having high-speed internet access. Technology will comply with accessibility for students with special needs that are mainstreamed in the classroom.

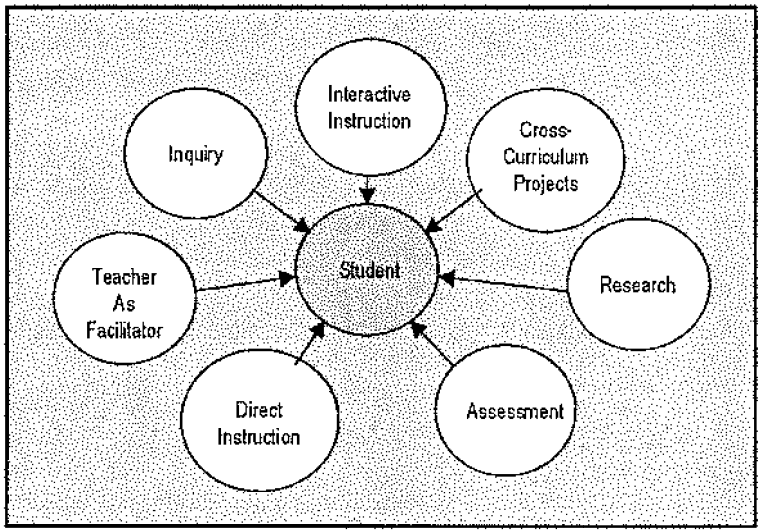
The diagram that follows represents typical technology applications found in schools today.



The items on the following pages are some of the technology items which should be taken into consideration when designing the building.

Classroom

It is recommended that all classrooms have voice, data, wireless internet, and video accessibility. This will enhance the flexibility of the learning environment to respond positively to alterations in the use of space. The wiring and other infrastructure components should be the first priority since terminal devices can be added later with the exception of wireless networking.



The following components should be included in each classroom:

- Teacher workstation with data drops
- Network wiring
- Data outlets for student laptops or work stations
- Wireless access
- If possible, audio classroom enhancements with volume control
- Student computer work stations or laptops
- Able to support document readers
- Ceiling mounted projector with data drop in ceiling
- Projection screen
- Intercom/PA system
- Sufficient data ports, electric outlets, and power supply to accommodate laptops, workstations, printers and other technology devices.

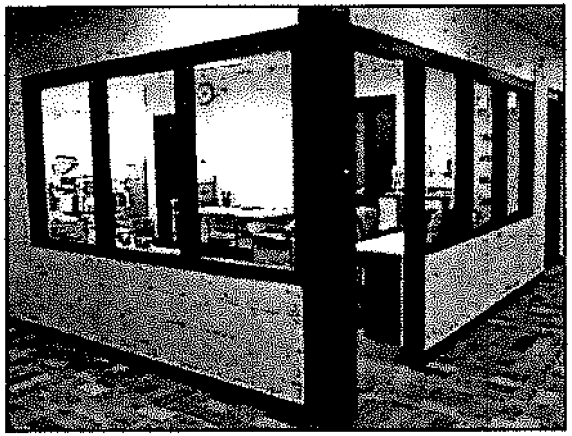
Careful attention should be given to furnishings, i.e., student desks, specialized or customized cabinetry, location of data ports, white boards, and monitors.

Alternative wireless configurations where all staff and students are issued a personal computer/multimedia device should also be considered.

Offices

Office areas have the following needs:

- Data drops
- Wireless access
- Sufficient electric power and outlets
- Staff workstations or laptops
- Phone jack
- PA system



(Photograph used for illustration purposes only)

Conference Areas

Conference areas should include:

- Data
- Phone jack
- Wireless access point
- Sufficient electric power and outlets
- Electric power availability [quad per drop]
- Portable computer projector
- Pull down projection screen

Cafeteria/Student Union

This space should have the following equipment:

- Video ports and large monitors that can be used for video displays of electronic bulletin boards
- Data drops in main cafeteria
- Wireless access
- Phone jacks
- PA system
- Audio system
- Large, electronically controlled screen
- The kitchen will likely have its own requirements.
    - Point of sale computers
    - Kitchen equipment

Gymnasium

The gymnasium should have the following equipment:

- Video ports and monitors that can be used for video displays of electronic bulletin boards
- Data outlets for athletic events
- Portable computer
- Phone jack
- PA system
- Audio system
- Centralized control panel for scoreboard and video

Technology Control Room

Some type of "punch down location" or "technology control room" will securely house Uninterruptible Power Supplies (UPS), communication servers, phone system, video system, network router, and network switches. In addition, this room will have additional cooling systems to maintain a consistent room temperature, 24 hours a day.

Furniture will consist of equipment racks, worktable, and monitor stand. All equipment must be located by ample electricity. A technology consultant will likely be needed to work out the technology specifications. The following is only a partial list of items which might be considered.

Wireless Access Points [APs]

The following locations contain the recommended number of wireless access points, all to be ceiling mounted:

- Public areas (media center, cafeteria, auditorium, gym) at least 2 APs)
- Computer labs – 1dedicated AP
- General classrooms – 1 AP per room
- Typical load – 30 users per AP