

FACILITIES FOR 21ST CENTURY LEARNING

Implications for 21st Century Learning

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 should increase dramatically. Today, the majority of jobs require at least some technological proficiency and as such, it is expected that students leave school with the ability to work with and use technology.

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

To take advantage of technology, schools need comprehensive staff development programs and training; student access to technology applications; updated hardware and software in computer labs, classrooms, 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; and a security system that protects and encourages use of equipment.

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 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 are expected to acquire 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.

Video: Video distribution in every Learning Studio and throughout the building with interactive video capabilities to support whole-group and small-group instruction and distance learning, 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 Internet network capabilities to other external resources.

Today's schools are equipped to support management and instructional applications. Current digital voice, data and video systems can provide leadership, instruction, data management, Internet access, and student services that go far beyond the systems in schools that were constructed as recently as the late 1990s. Technology is becoming increasingly useful and appropriate to the student and the educator. As home and business worlds move toward higher levels of technological applications, it is critical for schools to be adequately equipped and adopt 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. The four primary applications include:

1. Communication/Productivity: E-mail, Word Processing, Database, Spreadsheets, Phone, Homework, Web pages
2. Student Services: Schedules, Grades, Attendance, Counseling, Transportation, Food Services
3. Educational Technology: Media Centers, Computer Applications, A/V Applications, online learning
4. 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:

1. Whole Group Instruction (20-30 students). This includes the use of document readers, computer projectors, DVD players, flat screen monitors, smart boards, LCD flat panels and other forms of computer display techniques.
2. Small Group Instruction (six to eight students). This includes areas in the classroom and in shared common spaces, in which a teacher or another resource person can work with groups of students. The technology is essentially the same as whole group instruction technology, the only difference being the size of the groups.

3. Individualized Instruction (one to two students). This is primarily computer-based instruction with online courses in which students interact with a computer workstation. As all forms of technology become more and more digitized, it is envisioned that these are laptops that integrate voice, video, and data formats and have high speed internet access.

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



Learning Studio

It is recommended that all Learning Studios have voice, data, wireless internet, and video accessibility. This should enhance the flexibility of the learning environment to respond to alterations in the use of space. The following components should be included in each Learning Studios:

- Teacher workstation or laptop with data drops
- Data outlets for student laptops or work stations
- Wireless access
- If possible, audio classroom enhancements with volume control
- Student laptops or tablets
- Support for document readers
- Interactive white board with integrated projector and data drop
- Intercom/PA system
- Sufficient data ports, electric outlets, and power supply to accommodate laptops, workstations, printers and other technology devices
- Wall or ceiling mounted data port and outlets to support wireless router

Careful attention should be given to furnishings, i.e., student desks, specialized or customized cabinetry, location of data ports, white boards, and monitors. It is suggested that student furniture be tables and chairs and not individual desks.



Cafeteria

Technology in the cafeteria serves multiple purposes. Key pads or scanning devices should be used to allow students to enter identification confidentially. Technology can also be used to provide audio enhancement and also allow for visual presentation on one or multiple walls within the cafeteria.

Wireless Access Points (WAPs)

Wireless access points should be located in facilities that allow access to wireless technology without interruption. Consideration should be given to high traffic volume areas such as learning neighborhoods, information centers, and cafeterias. It is intended that access to technology is seamless and pervasive throughout the building.

Classroom audio enhancements

Audio enhancement is intended to improve the sound quality and provide noise reduction in the learning environment. This device must be mobile and adaptable for different instructors, be easy to use (seamless), and must be durable as it is used on a daily basis. Providing appropriate speakers and proper location should be considered when providing this tool.

Flat screen monitors

Flat screen monitors in the facility should be sized and mounted appropriately for the space that they are located. Consideration for quality of picture, life expectancy of monitor, glare, and access to power should be given.

Interactive white board

Interactive white board technology should be provided in all learning communities and strategically placed in the facility, i.e. information center, physical education spaces. The latest interactive white board technology has eliminated the need for wires and power sources. Many have alternate power sources and wireless or "G" technology, thus eliminating the need for wires and providing ultimate flexibility of location.

Document reader

Document readers should be provided within the learning community and other learning spaces as appropriate for the current curriculum. These devices generally are mobile and can be easily stored in lockable cabinets.