

Technology support is one of the crucial factors for the successful integration of electronic technologies in the classroom. Failure to plan and provide on-going technology support has doomed many ambitious educational technology efforts.

TECHNICAL SUPPORT: What is it and how do we provide it?

Bill Bridges

There's no picture on my monitor. My computer won't start. How do I make columns? The network's down. What computer should I buy? What's it cost? Where's my printer? Have you ever asked these questions or made these statements? If so, you were seeking technology support.

What is technology support? Technology support are the assets needed to resolve questions, accomplish planning, and provide availability of technology systems to end users. Technology support is not limited to repairs or help desk functions. All aspects of technology require support. The importance of this support is related to the importance placed on technology by the Board of Education, the administration, teachers, and staff. The key to insuring effective technology support is a technology leader within the district administration. The technology leader insures the technology awareness of the Superintendent and the Board so that technology support remains a high priority.

With a technology leader in place and a high priority placed on making effective technology support available, we must determine what technology support will be provided and by who. Technology hardware and software systems generally belong to one of three functions: education, education administration, and administration. The functions can be defined as:

Education—Systems used by the students and teachers for instruction and learning (i.e. student labs, library systems, classroom presentation systems.)

Education Administration—Systems used by teachers or administration to manage student data (i.e., grades, transcripts, student records, health records.)

Administration—Systems used by administration to conduct day-to-day business (i.e. payroll, financial, personnel records.)

If District technical support is only concerned with one of the three categories, priorities and focus are much easier to manage. However, covering all three priorities is much more complex. For our purposes, assume a worst case scenario—our technology leader will provide support in all three categories.

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Before defining an organization to provide technical support, we need to look at the various areas of support. From the District view point there are fourteen major categories. Each area has unique support responsibilities:

Repairs—The most straight forward area to address. This is usually the "broke, fix it" request. It fits into three classifications, hardware, software, and "I don't know." Hardware and software repair are easier problems. In most instances, the time it takes to make repairs is a question of where the system falls on the priority list and what support level the District is willing to provide. The "I don't know" problem is always harder to define. It may be a combination of software and hardware problems and not easily definable.

Help Desk Support—True help desk support is support provided over the telephone. Software support consists of "how to" and "what key to press" information. Hardware support relies heavily on good user observation of symptoms and system error messages. A good help desk needs knowledgeable help desk personnel, observant users, and District standards for hardware and software. Its impossible to know every software package or every hardware configuration.

Curriculum/Technology Integration—A fuzzy area for technical support. Questions in this area generally start with "I need to . . ." and fits one of three needs: awareness of capabilities, skills training, or appropriate/non-appropriate uses of technology in a curriculum. Supporting this area takes personnel with excellent educational credentials and extensive training in technology systems.

Technology Purchasing—A complex, essential area. Composed of many steps—procurement, receipt, asset tracking, setup, and installation. While many of these steps are assigned to other departments such as purchasing or accounts payable, technical support must maintain an overview. They must insure that technology purchases are compatible with District standards and obtained at education discounts. If technical support is not aware of the status of technology purchases, delays will be encountered in implementing those systems for the users.

Network Administration—Consists of performing minor maintenance functions for the network such as adding new users, removing old users, managing printers, and assigning work groups. Some network administration can become very technical. If it is beneficial for on-site administrators to undertake all administration functions, plan on several weeks of training and testing to qualify them as a Certified Network Administrator (CNA).

Network Supervision—The task of installing networks, managing operating system files and setting up hard disk storage volumes. In addition to CNA training, additional courses and tests must be passed to become a Certified Network Engineer (CNE). Support of these functions is best left to full time technicians. On-site personnel cannot usually find the time for either the training or the performance of these functions.

Network Design—Interpreting needs into network topologies, cabling, hardware, and network operating systems. Very complex issues usually the responsibility of CNEs. Network configurations are never stable. Personnel move and work stations added. Every time this happens, someone reviews the design of the existing network and determines how to expand. Network hardware and software have technical limits. To achieve acceptable levels of performance, additions to existing network systems require design work by technically qualified personnel.

Programming—Normally programming requests are made by Administration. They range from major changes in personnel, financial, or student administrative software systems to small databases to make work easier. If the District is fortunate and can use commercial software "out-of-the-box" for administrative purposes, this technical support function can be minimized.

Telecommunications—The current trend towards wide area networks (WANs) and on-line information makes treating telephone systems as technology systems more important. The introduction of voice mail makes every telephone line a potential data carrier and extension of a network. The emerging capability to transmit voice, video, and data over a single wire for video conferencing and Internet access requires that technical support be available for these systems.

Audio/Visual—The increasing use of centralized video distribution systems, networked media facilities, cable television, and TV or projector display of computer monitors has dragged audio/visual capabilities into the technology mix. Traditional A/V systems such as VCRs, projectors, and televisions are so integrated with computer technologies that they can no longer be treated as a separate area. The use of live video and video editing by students has made these systems critical to the education process and a necessary subject of technical support.

Network Cable—No longer can an electrician install cabling for computers. High performance copper wire, fiber optics and network medium interfaces have spawned an entire new field of technology. Network cabling operates with different standards and specifications than electrical systems. Many of the problems encountered in networks are the result of improper cable installation or breakdown after installation. Resolution of these problems requires highly skilled technical support personnel.

Computer Operations—A term usually applied to school districts which rely on mainframe or mid-range computer systems for "mission critical" applications. These systems require support to operate properly, run District or school reports, and insure the security of District data. With the coming of powerful PC systems, many functions can and have been downsized and made the responsibility of the users. However, the function of computer operations remains and is still a part of technology support for the District.

Information—Not the same as help desk support. Requests for information are questions such as "What computer or software should I buy" and "I need a network design." If these requests are not answered by technical support, everyone does their own "shopping" and occasionally gets it wrong. At best, there is a lot of time spent researching when it could be done faster with good technical support. Included in this area is the need for technical support administration; technology planning; advisory information to committees, groups, and buildings; and District technology oversight.

Technology Training—It can be argued that in school districts, this area belongs to staff development and is not a technical support issue. Technical support must work closely with staff development in this area, but training will be enhanced and more effective when made the responsibility of technical support. Changing technologies will be recognized sooner by the technical support group enabling them to modify training appropriately at an earlier stage in staff development. While technology training is most often thought of as skills training (i.e., word processing, spreadsheets), there are curriculum and teaching considerations which are also part of the concept. The two must be integrated in staff development to provide the greatest benefit to students.

There are additional topics to consider: priority, level, and type of support. Priority refers to who gets service first, level answers how fast support arrives, and type determines who provides the support. District decisions in these areas determine the size, composition, scope, and cost of the technical support organization.

Priorities generally relate to the functions of education, education administration, and administration. For an educational institution, the categories above are listed in the appropriate priority order. However, within the three functions there are various types of technology systems which affect students

to a greater or lesser degree. A better list of priorities might look like this:

- Exceptions
- School-wide Educational Networks
- Classroom Educational Networks
- Standalone Classroom Technology
- Building-wide Administrative Networks
- Standalone Administrative Technology
- Everything Else

Comments are needed to insure an understanding of these technical support priorities. There will always be exceptions. When there is a problem producing paychecks accurately and on time—**BELIEVE** that there will be an exception. The important thing about an exception is that there is a prescribed method for determining which items become exceptions and who makes that determination. Determinations should be made on a case basis to avoid "blanket" exceptions for a particular group or function. The use of the term networks refers equally to video retrieval systems, computer networks or distance learning networks. When establishing the priority system, provide written guidelines defining the terms.

The help desk is the only category of support not providing support based on priorities. By its nature, help desk support is first-come-first-served. However, one function of the help desk is to call the attention of other support categories to high priority problems. Therefore, they must be aware of priorities, able to identify high priority problems, and take timely steps to resolve them.

Levels of support are usually defined in terms of hours or days. It is important to define two milestones when specifying a level of technical support: the initial contact after a problem is reported and the time frame for completion. Several levels may be defined within a category based on variations required to effect resolution. An example: If an educational network requires hardware repair, the initial contact milestone may be one hour with a completion milestone of one day if parts are available and three days if parts must be ordered. Accounting for these variations requires a set of matrices by category, variations and milestones. If this sounds like a lot of work, it is. But, the decisions made during this process have the single greatest influence on technical support costs.

Another factor to consider in determining levels of support is the goals for each level. It is one thing to say that the initial contact for a school building network is one hour. It is another to say that the goal is to make 100 percent of the initial contacts for this level of support in one hour. Should you maintain a network supervisor for each network in the District just so this level of support can be met? A power outage throughout the city can cause this to happen. Reasonable goals for each level of service must be set based on cost. It will test your District's commitment to technical support to set high technical support goals.

Finally, you must decide what type of technical support will be provided to the district. General support types are:

On-site—Personnel assigned at each site with designated responsibilities for technical support.

In-house—A designated group of specialists with responsibilities throughout the District. Scope can range from one to all technical support areas.

Contract—A prepaid contract with a commercial technical support service specifying the equipment to be supported and the time frame of response.

Case-By-Case—Purchasing support at the time of a needed service.

No District survives on only one type of technical support. Each type has benefits, drawbacks, and associated costs.

With all these considerations, it is easy to see why districts let technical support grow randomly producing an organization which either does not provide the expected support or provides it at unacceptable costs. Where do we begin to design a

technical support organization? The best beginning is to inventory district technology assets. (Don't forget to include software and networks.) Next, assign assets to one of the three functions; education, education administration, or administration. Having done this, we can determine which areas of technical support are required and the scope of each. At this stage of reviewing technical support requirements, look at the future. Where is the district going and what support will be needed. For most Districts, failure to look at the future will cause the technical support organization to be incapable of supporting current needs much less the future needs.

So far we have identified the scope of support required. Now comes the actual decisions. What are the priorities, what level of technical support do we want for each and how are we going to provide it. Remember, everyone wants to be supported first, instantly, and at the lowest cost. Answers to these questions must be determined by each District individually.

There are no easy answers. A review of local commercial support sources will provide help in determining costs and perhaps even the level of support available. In the end, an organization should emerge which represents a balanced approach to technical support. Many districts try to separate educational and administrative technology support. In an integrated technology environment, technology systems form a continuum. Technology support provided from a single District group optimizes assets supports standardization.

The "final" organization has been determined. Now what do we do? Plan for review and change. The process of planning and review for technical support must be institutionalized. Every time we make significant changes to technology in the District, technical support must change. Without continuous review and restructuring of the technical support organization, it falls behind the need and affects the support technology provides for the District.