LUFKIN
Independent School District

TECHNOLOGY REVIEW

Conducted by SDSM, Inc. for the Legislative Budget Board

SEPTEMBER 2008

LEGISLATIVE BUDGET BOARD

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September 8, 2008

Mr. Roy Knight
Superintendent
Lufkin Independent School District

Dear Mr. Knight:

The attached report reviews the management and performance of the Lufkin Independent School District's (LISD) technology operations.

The report's recommendations will help Lufkin ISD improve its overall performance as it provides services to students, staff, and community members. The report also highlights model practices and programs being provided by LISD's technology operations.

The Legislative Budget Board engaged SDSM, Inc., to conduct and produce this review, with LBB staff working in a contract oversight role.

The report is available on the LBB website at http://www.lbb.state.tx.us.

Respectfully submitted,

John O'Brien
Director
Legislative Budget Board

cc: Mr. Andro Branch
        Mr. Stanley New
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LUFKIN INDEPENDENT SCHOOL DISTRICT
TECHNOLOGY

In April 2008 the Legislative Budget Board began a review of technology in the Lufkin Independent School District (LISD). The purpose of the review was to help the Legislative Budget Board gain an understanding of technology planning and usage in school districts across the state. LISD was one of three school districts selected for this review based on the size of the district and their School Technology and Readiness (STaR) Chart self assessment.

Understanding technology and developing computer skills are an important part of today's education and essential in the preparation of our children for a successful future. Almost every job in today's world—from automotive repair to open heart surgery—requires an understanding of computers. To provide this understanding and skill set, school districts must implement a broad curriculum that includes hardware, software, teacher training, and administrative support. State and federal law sets standards for technology education. Each school district decides how they will implement these directives.

GENERAL INFORMATION

LISD is located in Angelina County in east Texas, approximately 120 miles north of Houston and 166 miles southeast of Dallas. The city of Lufkin, the county seat of Angelina County, calls itself the "largest small city" in Texas and offers a variety of jobs, ranging from the educational area to medical services and retail shopping. The estimated population in 2004 was 36,830.

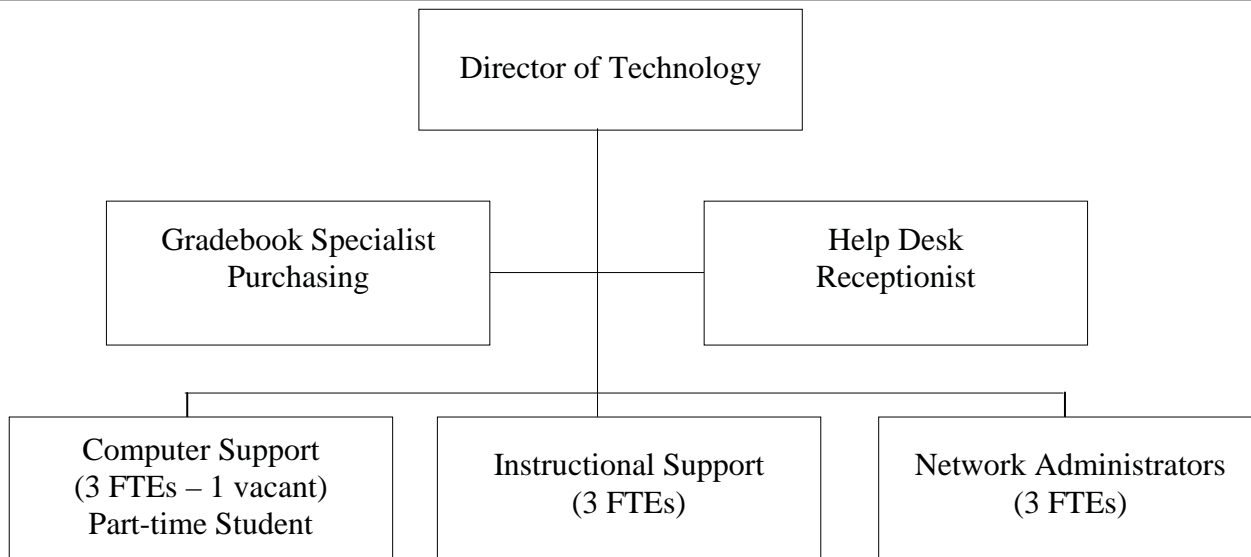In 2007–08, LISD had 8,557 students and 14 campuses: 11 elementary campuses, a middle school, a high school, and an alternative school. Thirty-six percent of the students are White, 30 percent are African American, and 32 percent are Hispanic. About one percent of the students are Asian/Pacific Islander. The district enrollment includes 64.3 percent economically disadvantaged students, above the state average of 55.2 percent for the same period. LISD has 1,328 employees, with 57 percent considered professional staff.

The district's 2007 Accountability Rating is Academically Acceptable. In 2006–07, the district had 13.9 students per teacher—compared to the state average of 14.5. LISD's teachers average 13.4 years of total teaching experience, with 9.8 years in the district. The turnover rate for teachers is 10.6 percent annually which is significantly below the state average of 15.6.

LISD has a separate information technology department headed by a Director of Technology who reports to the Assistant Superintendent for Instructional Services. The organization chart for the department is shown in **Exhibit 1**. At the time of the site visit the department had 12 full-time positions and one part-time student position. The director plans to add one additional instructional support position during the next budget year.

The Director of Technology has been with LISD for three years and has an electrical engineering background. The Technology Department is responsible for all of the district's infrastructure and hardware, all instructional software, and Microsoft© office applications. The Assistant Superintendent for Finance is responsible for administrative software such as the financial system and the Public Education Information

**EXHIBIT 1
LISD TECHNOLOGY DEPARTMENT
ORGANIZATION CHART**

SOURCE: LISD Technology Department, April 2008.

Management System (PEIMS) reporting. The PEIMS coordinator reports to the Assistant Superintendent for Instruction and monitors the attendance system.

The district's Technology budget is shown in **Exhibit 2.** The Director of Technology manages this budget, but the campus principals are responsible for technology purchases on their campuses. The decline in the Technology budget over the past three years is due to decreased grant funding.

The State of Texas has set expectations for use of technology in the classroom. In order to track progress toward the Texas Education Agency's (TEA) Long Range Plan for Technology 2006–20, TEA developed a campus survey tool called the STaR Chart. The STaR Chart is a self assessment completed by teachers in the key areas of Teaching and Learning; Educator Preparation and Development; Leadership, Administration, and Instructional Support; and Infrastructure for Technology that ranks campuses at one of four levels of progress: early technology, developing

technology, advanced technology, or target technology. LISD staff ranked their campuses differently based on the key area as shown on **Exhibit 3**. The ratings were primarily in the second or Developing Technology level in these four areas.

The district uses a leased 1GB Fiber Ethernet for its wide area network (WAN). A local telecommunications company provides a 1Gbps Ethernet connection to each campus at a moderate price. This company provides and supports all equipment up to the Ethernet connection to the school.

Each campus has a 1Gbps fiber serving as the backbone with 100Mb wiring to each PC for its local area network (LAN). Advanced switches are used that provide all the necessary protocol support for advanced networking that the district has in place or may install in the future such as VLANs (Virtual Local Area Networks) and QOS (Quality of Service) required for the district's current video

EXHIBIT 2
LISD DISTRICT TECHNOLOGY BUDGET
2005–06 THROUGH 2007–08

KEY AREA	2005–06	2006–07	2007–08
General Fund	$913,455	$922,158	$951,548
Fund 262 Title II, Part D, Subpart 1, Enhancing Education Through Technology	65,148	45,649	23,928
E-Rate*	628,935	350,833	200,777
Kurth Foundation (3-year local grant)	168,800		
TOTAL	**$1,776,338**	**$1,318,640**	**$1,176,253**

*E-Rate is the discount that schools and libraries receive through the Universal Service Fund that is used for the acquisition of telecommunication services.
SOURCE: LISD Technology Department, April 2008.

EXHIBIT 3
TEXAS CAMPUS STAR CHART SUMMARY
2006–07

KEY AREA	ELEMENTARY SCHOOLS (NUMBER OF SCHOOLS)	MIDDLE SCHOOL	HIGH SCHOOL
Teaching and Learning	Early Technology (1) Developing Technology (8) Advanced Technology (2)	Developing Technology	Developing Technology
Educator Preparation and Development	Early Technology (1) Developing Technology (8) Advanced Technology (2)	Developing Technology	Early Technology
Leadership, Administration, and Instructional Support	Early Technology (0) Developing Technology (10) Advanced Technology (1)	Developing Technology	Developing Technology
Infrastructure for Technology	Early Technology (0) Developing Technology (10) Advanced Technology (1)	Advanced Technology	Advanced Technology

SOURCE: Texas Education Agency Campus STaR Chart Summaries, 2006–07.

streaming and its planned implementation of VOIP (Voice Over IP).

The district has 70 servers that are used for various applications and storage services. The primary user storage is configured on a server cluster with an iSCSI SAN which provides local redundancy. Most of these servers are housed in the Technology Department Office. Each campus has a print server and an active directory global catalog server that is used for user authentication and policies. The finance system is housed on a separate computer in the Finance Office.

All 600 classrooms have direct connection to the internet. There is one computer for each teacher and one computer for every four students. In the past two years, the district has implemented a number of district-wide systems including: electronic attendance reporting, classroom management software (Pinnacle Gradebook™), a district web portal (School Fusion™), video streaming, and district-wide wireless (WiFi). The district also has curriculum software including Accelerated Reader™ and Graph Club™.

ACCOMPLISHMENTS

- **The district has consistent information technology (IT) standards for hardware, software, and infrastructure that provide an effective and efficient basis for technology integration in the classroom.**

- **The district's help desk addresses problems on a timely basis.**

RECOMMENDATIONS

- **Recommendation 1: Develop a multiple year fiscal spending plan that addresses the objectives identified in the district's Long Range Technology Plan.**

- **Recommendation 2: Expand technology integration in the district by increasing staff development opportunities, by establishing a Technology Users Group, and by adopting technology usage standards for teachers.**

- **Recommendation 3: Evaluate district policy regarding blocking of websites to ensure adequate access for class assignments.**

- **Recommendation 4: Develop a disaster recovery plan that includes offsite storage of backup tapes and planning for service restoration for mission critical services in case of a site disaster.**

- **Recommendation 5: Purchase and install a diesel generator system to provide backup in case of electrical failure.**

The five recommendations in the report have a total five-year fiscal impact of $108,000 in one time costs.

DETAILED ACCOMPLISHMENTS

TECHNOLOGY STANDARDS

The district has consistent information technology (IT) standards for hardware, software, and infrastructure that provide an effective and efficient basis for technology integration in the classroom. Written policies are in place on acceptable use of the internet, software use and purchases, and network management.

All hardware purchases are initiated in the Technology Department based on campus purchase requests and approved hardware standards. The approved hardware standards are bid quarterly to obtain the best prices and to ensure that current campus needs are addressed. The district hardware standards provide choices at different price points. The bid dated March 20, 2008 included the following:

- one basic workstation with 80GB hard drive, one GB RAM, CD read/write/DVD, integrated video, keyboard, optical scroll mouse, 17″ LCD monitor, Windows™ Vista™ and a five-year warranty;

- two LCD monitor upgrades (19″ and 21″);

- two laptops;

- three PDAs;

- seven printers;

- three projectors; and

- four Elmo visual presenters.

Software purchases are also controlled but not as strictly as hardware purchases, due to the difficulty in identifying software that is sometimes bundled in other purchases. Purchases over $1,000 are carefully reviewed not only at the campus but also by central instructional administrators. Even if

purchased outside of the approved process, software cannot be installed without IT staff approval.

Software licenses are carefully controlled and all software is installed by the IT staff. The end user has no installation rights on individual computers. Applications are installed electronically from the Technology Department Office based on a standard set of applications for that campus or grade level. This practice saves money as it significantly reduces the time and resources needed to keep end user desktops clean of unauthorized programs and working effectively. If a teacher wants a special application installed, IT staff installs it on a single machine and retains the installation disk.

Desktop security is provided through directory group policies and automated rules, which allow the district to centrally control user security and access. This is the core of the network and controls passwords and user names. IT staff provides specific access (security) to a user through the "group policy" in the directory.

The Technology Department also sets standards for technology installation. An example is the installation of ceiling mounted projectors. Campuses were not given discretion to decide how to install the projectors but did have input regarding location in the classroom, with a standard layout being established with the Director of Technology. IT standards for this technology included the requirement for wall drops with proper amps to ensure that the projector can be used effectively and safely.

The Director of Technology sees these consistent standards as the reason that the district is able to support more than 3,000 district computers using three full-time technicians and one part-time student technician. These standards also provide a stable technology environment for teachers in the classroom and frees IT staff to support new software implementations.

LISD HELP DESK

The district's help desk software allows users in the district other than students to create work order tickets in the system based on a user friendly process. The user also sets the priority of the problem. The system software identifies the location of the problem and assigns the ticket to the proper technician who operates based on the tickets. Technicians are not allowed to work on anything without a ticket to ensure that all problems are tracked and that users are served based on established priorities. If a part is needed to correct the problem, the system sends a status report to the teacher with anticipated completion date. The system counts the days a ticket is unresolved, giving the technician the impetus to complete the repair and stop the clock. Technicians also pass along issues that need training to the instructional technology specialists. The review team analyzed tickets for the most recent month and found that most tickets are addressed within 24 hours of assignment.

The Director of Technology runs reports on a periodic basis to monitor response time and staff performance. These reports provide information such as time-to-fix data that is used in the performance evaluation of staff members. The system can also track all activity related to a problem and all problems reported by an individual department or campus.

The district's help desk software helps IT staff respond quickly to reported problems, increasing the efficiency and effectiveness of the entire staff, and helps to demonstrate the department's real commitment to customer service. The system's reports provide a valuable management tool

to monitor performance by IT staff, gain an understanding of how technology is being used or not used on an individual basis, and maintain a history regarding problematic equipment.

DETAILED RECOMMENDATIONS

TECHNOLOGY ACQUISITION (REC. 1)

Develop a multiple year fiscal spending plan that addresses the objectives identified in the district's Long Range Technology Plan.

LISD has developed a comprehensive Long Range Technology Plan for 2008–11 that includes planned expenditures of $11,046,000 over three years but has not yet determined how this plan is to be completely funded. This plan was completed in March 2008 with input from a Technology Planning Committee that included central administrators, principals, assistant principals, teachers, librarians, and IT staff. The newly adopted plan builds upon the significant technology objectives that were accomplished in the district's previous Long Range Technology Plan (2006–08).

These accomplishments included the following:

- Improved the student-to-computer ratio to 3:1;

- Created and maintained a five-year replacement cycle for district computers;

- Placed wireless laptop carts on each elementary campus;

- Increased student connectivity by adding drops and upgrading infrastructure on 8 of the 12 elementary campuses and the alternative campus (ACE);

- Provided wireless connectivity on each campus;

- Provided video streaming on all campuses; and

- Made district forms and public data available online.

These accomplishments are especially significant given the limited technology budgets in the district and are the result of imaginative solutions developed by the Director of Technology with substantial support provided by LISD's board, superintendent, central administration, and principals. For example, the district was able to obtain surplus computers from NASA and has been able to secure very favorable terms on the leased fiber WAN from a local telecommunications company. This company supports all equipments up to the Ethernet connection to each school or district location. The objectives identified in the new plan expand these current accomplishments to all campuses, classrooms, and teachers.

The new plan is based on the following four required key components: Teaching and Learning; Educator Preparation and Development; Leadership, Administration and Support; and Infrastructure for Technology (**Exhibit 4**). Ninety-one percent of the planned expenditures are for technology infrastructure and include placing digital projectors in all core classrooms, improving the student-to-computer ratio to 1:1, and purchasing additional wireless laptop carts on each campus. The Teaching and Learning component (1.8 percent) includes planned items for online library catalogs, student email inboxes, and individual teacher websites. The Educator Preparation and Development component (0.6 percent) includes numerous staff training opportunities and the development of a technology training plan. The Leadership, Administration and Support component (6.4 percent) includes continued funding of the

EXHIBIT 4
LISD LONG RANGE TECHNOLOGY PLAN 2008–11
PLANNED EXPENDITURES BY COMPONENT

COMPONENT	BUDGET	PERCENT
Teaching and Learning	$197,000	1.8%
Educator Preparation and Development	64,000	0.6%
Leadership, Administration, and Support	710,000	6.4%
Infrastructure for Technology	10,075,000	91.2%
TOTAL	**$11,046,000**	**100.0%**

SOURCE: LISD Long Range Technology Plan, 2008–11.

three instructional specialists and online course management software among other items.

Exhibit 5 summarizes the budgeted expenditures by type of expenditure and funding source. Approximately 75 percent of the funding for this multiple year plan is to be addressed by local or other resources. However, the district has not yet identified the resources needed to accomplish the objectives in the plan. The local or General Fund budget for the LISD Technology Department for 2007–08 is $951,548, which is approximately 26 percent of the planned local/other budget for each year in the Long Range Technology Plan. The Technology Department budget does not include all resources as the district funds

many of its computer purchases through its campus budgets based on needs identified by the individual principals. These additional funds are at the discretion of the principals and may be allocated to address other needs in the school.

The district will not be able to accomplish the objectives identified in the plan unless it identifies the necessary funding. Many of the current accomplishments have been completed with limited funding; however, the district cannot move to the next level of expanded technology integration identified in the new plan without the commitment of sustained funding for multiple years.

EXHIBIT 5
LISD LONG RANGE TECHNOLOGY PLAN 2008–11
PLANNED EXPENDITURES BY TYPE OF EXPENDITURE AND FUNDING SOURCE

TYPE OF EXPENDITURE	2008–09	2009–10	2010–11	TOTAL	SOURCE OF FUNDING
Staff Development	$30,274	$30,274	$30,274	$90,822	34% Title IID 66% Local/Other
Telecommunications	180,000	180,000	180,000	540,000	80% E-Rate 20% Local
Materials and Supplies	30,000	30,000	30,000	90,000	100% Local
Equipment	3,371,726	3,371,726	3,371,726	10,115,178	18% TAF 5% E-Rate 77% Local/Other
Maintenance	60,000	60,000	60,000	180,000	100% Local
Miscellaneous Expenses	10,000	10,000	10,000	30,000	100% Local
TOTAL	**$3,682,000**	**$3,682,000**	**$3,682,000**	**$11,046,000**	

SOURCE: LISD Long Range Technology Plan, 2008–11.

Student expectations regarding technology rise as students become more proficient and accomplished users. The computers must be new enough and have enough capacity in terms of memory and speed to be able to run the latest educational software programs. Computers must be available for student use outside of the regular class period.

When asked about the adequacy of district technology, student focus group participants, a group of technology knowledgeable high school students, stated that school software is adequate for "old school" class projects because the projects are very simple. Existing hardware and software installed on computers outside of the Career and Technology Education classes and computer labs are often not adequate for their needs. College student interns in the district have better personal software than the school software. As an example, the student participants mentioned MicroSoft WorkBench™, an enhanced version of Word™ that is used in college classes. LISD students do not have access to this software, and the students felt that they might not be prepared when they get to college.

Students indicated that they do not have enough time in class to complete the projects and that access to computers outside the classroom is often too limited. For example, the high school library has some new computers, but you must have permission based on specific class assignments to use the newer computers. The center section of the library has computers that are generally accessible, but the technology is old. Students can also go to English class before and after school to use computers. Hours are 8:00 AM to 4:40 PM, but school hours are 8:15 AM to 4:30 PM, so student use is limited. Most student focus group participants indicated that if a student tries hard

enough and is dedicated enough, they can get access to adequate technology, but it is a challenge. This task is especially true for students who have extracurricular activities or jobs after school.

TEA has established targets for student technology access. TEA's Long Range Plan for Technology 2006–20 recommends a technology equipment target for a student-to-computer ratio of 1:1 by the year 2010, which is included in LISD's latest Long Range Technology Plan. The target assumes on-demand access to computers for every student with the best available technologies. The district faces significant challenges as it needs both to expand technology across the district and also upgrade existing technology to meet this standard.

LISD should develop a multiple year fiscal plan that addresses the objectives identified in the district's Long Range Technology Plan. The plan should include a prioritization of objectives that helps ensure adequate student access to technology, including the infrastructure and support needed to maintain a secure and stable technology environment. The plan should address the state's long range technology objectives such as a student-to-computer ratio of 1:1. The plan should identify all sources of funding including funds in individual school budgets and any additional grant resources.

The fiscal plan should be specific and identify costs that are continuing costs to maintain the current level of technology in the district and costs that are needed to expand technology. **Exhibit 6** provides an example of how this information might be presented.

The development of a fiscal spending plan can be accomplished with existing resources. The annual cost of implementing the plan will be determined

EXHIBIT 6
LISD FISCAL SPENDING PLAN FOR TECHNOLOGY BUDGET
EXAMPLE

LRTP CATEGORY: INFRASTRUCTURE FOR TECHNOLOGY	BUDGET AMOUNT	FUNDING SOURCE
Continuing Budget Items by Strategy		
Continue to provide LANs at every location connected by district Gigabit speed WAN.		
Leased Lines	$XX,XXX	Current Technology Department Budget 80% E-Rate
Maintenance	$X,XXX	Current Technology Department Budget
TOTAL	**$XX,XXX**	
Expansion Budget Items by Strategy		
Upgrade infrastructure on the Brookhollow campus.		
Equipment	$XX,XXX	Additional Local Funding
Installation Cost (in-house)	$X,XXX	Current Technology Department Budget
Ongoing maintenance	$XXX	Current Technology Department Budget
TOTAL	**$XX,XXX**	
Upgrade the internet firewall.		
Software Purchase	$X,XXX	Additional Local Funding
Installation Cost (by vendor)	$X,XXX	Additional Local Funding
Ongoing maintenance	$XXX	Current Technology Department Budget
TOTAL	**$XX,XXX**	
Upgrade the existing wireless network to implement wireless security and user access control.		
Software Purchase	$XX,XXX	Additional Local Funding
Installation Cost (by vendor)	$X,XXX	Additional Local Funding
Ongoing maintenance	$XXX	Current Technology Department Budget
TOTAL	**$XX,XXX**	
Update the current digital phone system to a Voice over IP (Internet Protocol) system.	$XXX,XXX	Additional Local Funding
Software Purchase	$XX,XXX	Additional Local Funding
Installation Cost (by vendor)	$X,XXX	Additional Local Funding
On-going maintenance	$XXX	Current Technology Department Budget
TOTAL	**$XX,XXX**	
COMPONENT TOTAL	**$X,XXX,XXX**	
Summary by Funding Source		
Current Technology Department Budget – E-Rate	$XX,XXX	
Current Technology Department Budget – Local Funds	$XXX,XXX	
Additional Local Funding	$XXX,XXX	
SUMMARY TOTAL	**$X,XXX,XXX**	

SOURCE: LBB Review Team, June 2008.

by the district administration and board's ability to identify appropriate resources.

DISTRICT USE OF TECHNOLOGY (REC. 2)

Expand technology integration in the district by increasing staff development opportunities, by establishing a Technology Users Group, and by adopting technology usage standards for teachers.

LISD has accomplished much in the last three years in terms of technology integration and now needs to take the necessary steps to ensure effective use of technology in each classroom and department across the district. The district now has wireless capability on every campus, has installed teaching tools such as projectors in many classrooms, and provides significant amounts of IT staff development on a very practical level in small groups and one-on-one support on individual campuses.

Technology integration is not always consistent across the district and is, in part, an inevitable result of the fast growth of technology in the district. This situation is also due to the need to phase technology acquisitions based on budget limitations. However, part of the inconsistency appears to be due to a reluctance by some administrators to embrace the initiatives themselves or to ensure that all staff have access and use current technology. The district's Long Range Technology Plan for 2008–11, if funded, will address the budget issue. The district should also address the lack of consistency across campuses.

An excellent example is the very successful implementation of the web portal which became operational in December 2008. At the time of the review team's site visit in April 2008, the Director of Technology and IT staff estimated that 80 percent of district teachers had active web pages. The

web portal takes nightly exports from the system and updates the website. This system supports individual teacher web pages, lesson plans, student discussion, and online forms. Teachers use a single password for all of the different applications. The district's goal is a seamless integration providing timely and useful information for students, teachers, and parents.

While there are concerns about having hard copies of information/notices available for those who cannot afford a home computer, the Director of Technology noted that the campuses in Lufkin's less affluent neighborhoods are driving the process. Parents use the library and other public places to access the information. The Director of Technology reported parents telling him: "I saw my baby on the web, and I loved it. I told the grandparents so they can go to the library and see him too."

The success of this initiative is significant, but central administrators and IT staff point to the high school as one campus in the district where some teachers lag behind the rest in implementing the district's technology initiatives. The size of the high school, the number of teachers, and the departmental focus may impact the ability of the school to embrace technology. Central administrators indicated that high school departments have different levels of readiness and that some teachers in the high school are reluctant to post lesson plans on their web page due to the amount of work involved and a concern that parents will become more demanding as they become more knowledgeable. Other teachers are content to use older equipment even though students in elementary schools have access to better equipment. There is a balance to be achieved between teacher independence and meeting the technology expectations of today's students and parents.

The district's finance system is a distinct contrast to the current IT initiatives being implemented in the district. The district currently uses a financial software system that was installed in the 1990s and runs on an older computer located in the Finance Department. The system has limited functionality, relying on green screens rather than the drop down menus of current systems.

The district has been successful to date in implementing technology integration by marketing innovation to early adopters, individuals who are more knowledgeable and open to change. This technique is a proven method to improve not only technology but also to change the culture of an organization. The district has been successful because it recognizes how change should be introduced and provides practical support during the implementation using the instructional specialists. The district is now at the point where it needs to evaluate how to include remaining staff that may be unwilling or unable to adapt.

There are a number of other opportunities for improvement where the district could expand on existing activities. LISD has a district Technology Planning Committee that includes central administrators, principals, instructional technology specialists, and teachers. The Director of Technology plans to include students on the committee in the future. The current purpose of the committee is to develop the Long Range Technology Plan. The Technology Planning Committee meets two to three times a year within a two-month time frame. The Director of Technology wants to expand the focus of this committee to assume a meaningful planning function beyond the drafting of a technology plan document to meet E-rate requirements. The committee could also focus on identifying grant opportunities. In addition, there

is no technology users group in the district that could be used to perform part of this role, serve as an effective communications mechanism, or help develop expectations for technology integration for all teachers and other users. Technology user groups usually consist of representative teachers from each campus who are knowledgeable about technology and often viewed as leaders in this area by their peers as well as central and campus administrators who are also knowledgeable about technology.

The IT instructional specialists provide a variety of staff development opportunities, but teachers do not normally receive CPE training for this smaller, alternative training on application specific issues. It is up to teachers to individually apply for the credit.

The Technology Department provides written manuals for different applications and training to district staff. Examples include manuals on security cameras, web portal, and merging documents. All IT staff development opportunities include a handout. The department's goal is to move from separate handouts to online guides. These documents are not organized and available online.

The district faces a number of challenges in moving to the next level in its use of technology. The ability of the district to build on its significant accomplishments through consistent policies and effective staff development is perhaps even more important than the district's planned technology acquisitions.

LISD should expand technology integration in the district by increasing staff development opportunities, by establishing a Technology Users Group, and by adopting technology usage standards for teachers.

The district should establish a Technology Users Group composed of teachers and campus administrators who are knowledgeable in technology and who have successfully integrated technology into their teaching and instructional curriculums. This group should meet at least quarterly to provide input regarding IT planning and acquisitions, teacher technology standards, and to help resolve problems.

LISD should use input from this group as well as others to develop technology usage standards for teachers that are part of the teacher's annual evaluation. These standards should exceed basic competencies such as the ability to use simple software programs such as PowerPoint. Instead, these standards should address technology integration levels of progress identified in the state's current STaR Chart assessment such as the regular weekly use of technology in the classroom and the use of web-based lessons. Once these standards are established, the district should identify and provide staff development opportunities that support the adopted standards.

STUDENT INTERNET ACCESS (REC.3)

Evaluate district policy regarding blocking of websites to ensure adequate access for class assignments.

Student focus group participants indicated that district blocking software and district policies result in internet access that is too limited, interfering with the completion of class assignments. This limited access is particularly difficult for students that do not have access to the internet in their homes. An internet filter and and other blocking software are used to manage internet usage and content.

Examples of limiting access to students include the following:

- Unable to look at college websites with pages on their sports programs because the software filter views these pages as entertainment;

- Could not research the internet for information on topics such as death penalties and sex education, even though these subjects were assigned project topics; and

- Unable to download images due to filter software or the downloaded images were too small to be used. An example was given of the student who developed the website for the robotics team who was unable to download a picture of a robotic arm from the website. The student eventually got the Director of Technology to log on to get the picture.

Texas Education Code 32.201-202 requires a public school that provides a computer used for internet access to implement an internet safety policy. School districts typically choose to filter or block sites with subject areas that contain the following types of materials:

- Adult/sexually explicit;

- Criminal skills;

- Drugs, alcohol, and tobacco;

- Gambling;

- Games;

- Glamour and intimate apparel;

- Hosting sites;

- Personals and dating;

- Photo searches;

- Streaming media;

- Violence; and

- Weapons.

It is important to keep these safeguards in place but also to allow students, especially older students, access to materials that are deemed appropriate for their age and the instructional curriculum.

Student participants acknowledged that some students would abuse wider internet access but indicated that the number would be small and that the students who abused the rules could be held accountable rather than punishing all students by limiting access needed for course work. While some LISD administrators indicated a willingness to provide more open access, other administrators expressed concerns regarding possible student's abuse of the privilege and parent's desires for student safety.

The district should evaluate current policies and procedures regarding blocking of websites and limits on the downloading of images to ensure that students have adequate access for class assignments while still helping to ensure that access to inappropriate material is not available.

DISASTER PLANNING (REC. 4)

Develop a disaster recovery plan that includes offsite storage of backup tapes and planning for service restoration for mission critical services in case of a site disaster.

LISD lacks a comprehensive disaster recovery plan that would allow the district to maintain operations in the event of a catastrophe. Interviews with district administrators indicate there is no formal plan in place which would ensure the district could support the network and continue both its business and educational operations in the event of server outages or a significant site disaster such as a flood or fire. The Director of Technology stated that the IT staff has the knowledge and experience

to address server failures but that there is no plan to address larger scale server failures or a site disaster.

Currently, the district relies on disk-to-disk (D2D) technology as its primary backup process. Backup tapes are only rotated to the onsite vault every 7–10 days based on how quickly the tapes reach capacity. The D2D server is located in a rack adjacent to the servers that it backs up. Tapes are stored in a cardboard box inside the vault, and there is no offsite storage. The Director of Technology is in the process of developing a plan to provide offsite storage for the district at either a local college or a distant LISD campus in the district. At the time of the site visit in April 2008, there were no fiscal plans or formal agreements to facilitate offsite storage.

The lack of a formal disaster recovery plan combined with the current data backup process places LISD in the position where the district would not be able to operate essential business and instructional functions in case of a disaster. The primary objective of a disaster recovery plan is to protect a school district if all or part of its operations and technology services become unusable. Planning minimizes the disruption of operations and ensures some level of organizational stability and orderly recovery after a disaster.

The National Center for Education Statistics "Safeguarding Your Technology" states that essential elements in a formal disaster recovery plan include:

- Develop a complete list of critical activities performed within the district;

- Identify which systems and staff are necessary to perform the functions;

- List key personnel for each function, and their responsibilities;

- Create an inventory of all technology assets including hardware, software, data, documentation, and supplies that correctly identify the location with sufficient information to document loss for insurance recovery;

- Define actions to be taken when a pending disaster is projected;

- Identify actions taken to restore critical functions;

- Keep the plan simple but effective; and

- Keep the plan components in an accessible location that can be accessed in the event of an emergency.

LISD should develop a formal disaster recovery plan and include redundant backup of key systems for added security. The plan should contain the key elements to protect the district's interest. Once developed, technology staff should annually review the plan to ensure that any changes in staff, activities, or systems are incorporated into the plan. The district server for Finance and PEIMS is located at the Administration building, and backups are maintained by PEIMS staff. These backups should also be included in the overall plan for data protection and integrity.

The disaster recovery plan should also include the addition of redundant backup located offsite from the district's current server room. At a minimum the district's existing 1Gbps WAN can be used to backup data to a distant LISD campus. This solution would require an additional server for Disk-to-Disk backups. The current storage capacities of the district would require a strategy to perform a complete backup locally and then move the backup server to a remote location. Incremental

daily backups or data synchronization could then be performed within a reasonable time.

Approximate costs for an additional storage area network (SAN) with 15x750GB storage capacity would be a one time cost of $28,000. The existing infrastructure and network can be used to support offsite data storage without any additional cost.

GENERATOR BACKUP POWER (REC. 5)
Purchase and install a diesel generator system to provide backup in case of electrical failure.

LISD does not have adequate electrical backup to continue operations in case of an extended electrical failure. The current system relies on minimal uninterruptible power supply (UPS) configurations to provide 15–25 minutes of backup support to the servers in the server room, located in the Technology Department. These existing 70 servers cover all systems in the district except for the financial system that is housed in a separate server in the Administration building.

Lufkin ISD is located in an area susceptible to extended power outages due to storms. Given the growing size of the data center and the district's increasing reliance on automated systems, generator backup is essential to ensure continued operations. These technology operations not only support administrative and instructional functions such as attendance and grade reporting, but they also support security functions such as the storage of video from the security cameras.

LISD should conduct a site survey to determine the exact power requirements and purchase a diesel generator that would allow the Technology Department to continue operations in the face of an extended electrical shortage. The district should also develop a plan to ensure operations including prioritization of system support, if needed, and

the assignment of specific staff to operate the generator during the shut down. Technology staff should periodically test the generator as specified in the manufacturer's instructions and annually review the plan to see that any changes in staff, activities, or systems are updated. The plan should also address the district server for Finance that is located at the Administration building.

The estimated cost for a 150kw diesel generator with transfer switch is $80,000. A site study needed to determine the exact power requirements is included in the estimated cost.

FISCAL IMPACT

RECOMMENDATION	2009–10	2010–11	2011–12	2012–13	2013–14	5–YEAR (COSTS) OR SAVINGS	ONE-TIME (COSTS) OR SAVINGS
1. Develop a multiple year fiscal spending plan that addresses the objectives identified in the district's Long Range Technology Plan.	$0	$0	$0	$0	$0	$0	$0
2. Expand technology integration in the district by increasing staff development opportunities, by establishing a Technology Users Group, and by adopting technology usage standards for teachers.	$0	$0	$0	$0	$0	$0	$0
3. Evaluate district policy regarding blocking of websites to ensure adequate access for class assignments.	$0	$0	$0	$0	$0	$0	$0
4. Develop a disaster recovery plan that includes offsite storage of backup tapes and planning for service restoration for mission critical services in case of a site disaster.	$0	$0	$0	$0	$0	$0	($28,000)
5. Purchase and install a diesel generator system to provide backup in case of electrical failure.	$0	$0	$0	$0	$0	$0	($80,000)
TOTAL REPORT	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**($108,000)**