FCMAT
FISCAL CRISIS & MANAGEMENT ASSISTANCE TEAM
CSIS California School Information Services

Perris Elementary School District

Technology Review

August 22, 2012

Joel D. Montero
Chief Executive Officer

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Vincent Ponce, Superintendent
Perris Elementary School District
143 E. 1st Street
Perris, CA 92570

Dear Superintendent Ponce:

In April 2012, the Perris Elementary School District and the Fiscal Crisis and Management Assistance Team (FCMAT) entered into an amended agreement to provide a review of the district's technology programs and services. Specifically, the agreement states that FCMAT will perform the following:

1. Review the district's organizational structure for delivery of technology support services and make recommendations for improvement.
2. Review the district's staffing for delivery of technology support services and make recommendations for improvement.
3. Review the district's delivery of instructional technology support services and make recommendations for improvement.
4. Review the district's delivery of administrative technology support services and make recommendations for improvement.

This final report contains the study team's findings and recommendations. FCMAT appreciates the opportunity to serve you and extends thanks to all the staff of the Perris Elementary School District for their cooperation and assistance during fieldwork.

Sincerely,

Joel D. Montero
Chief Executive Officer

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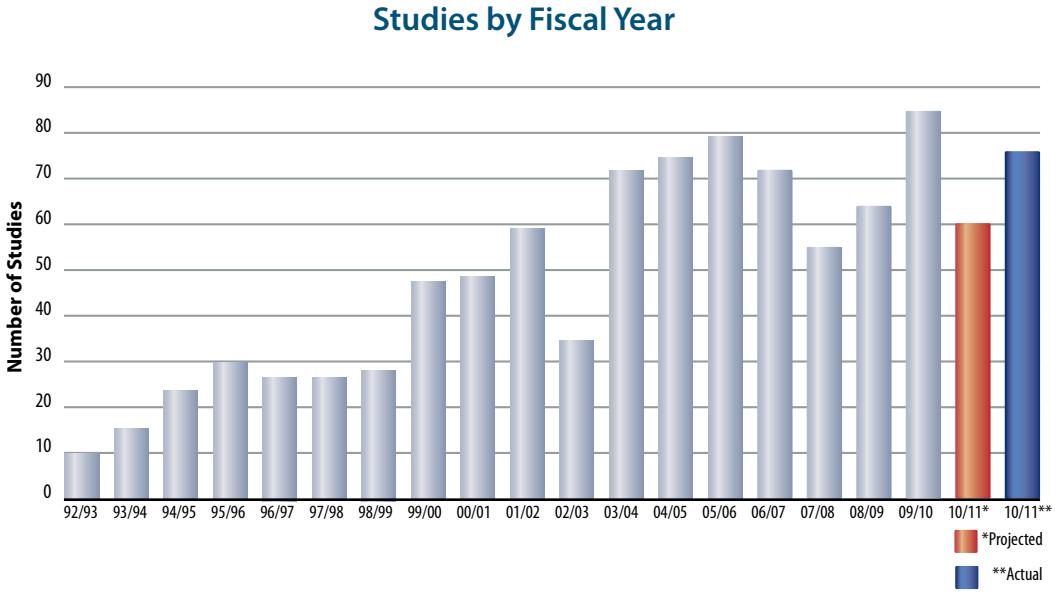
About FCMAT

FCMAT's primary mission is to assist California's local K-14 educational agencies to identify, prevent, and resolve financial and data management challenges. FCMAT provides fiscal and data management assistance, professional development training, product development and other related school business and data services. FCMAT's fiscal and management assistance services are used not just to help avert fiscal crisis, but to promote sound financial practices and efficient operations. FCMAT's data management services are used to help local educational agencies (LEAs) meet state reporting responsibilities, improve data quality, and share information.

FCMAT may be requested to provide fiscal crisis or management assistance by a school district, charter school, community college, county office of education, the state Superintendent of Public Instruction, or the Legislature.

When a request or assignment is received, FCMAT assembles a study team that works closely with the local education agency to define the scope of work, conduct on-site fieldwork and provide a written report with findings and recommendations to help resolve issues, overcome challenges and plan for the future.



FCMAT also develops and provides numerous publications, software tools, workshops and professional development opportunities to help local educational agencies operate more effectively and fulfill their fiscal oversight and data management responsibilities. The California School Information Services (CSIS) arm of FCMAT assists the California Department of Education with the implementation of the California Longitudinal Pupil Achievement Data System (CALPADS) and also maintains DataGate, the FCMAT/CSIS software LEAs use for CSIS services. FCMAT was created by Assembly Bill 1200 in 1992 to assist LEAs to meet and sustain their financial obligations. Assembly Bill 107 in 1997 charged FCMAT with responsibility for CSIS and its statewide data management work. Assembly Bill 1115 in 1999 codified CSIS' mission.

AB 1200 is also a statewide plan for county office of education and school districts to work together locally to improve fiscal procedures and accountability standards. Assembly Bill 2756 (2004) provides specific responsibilities to FCMAT with regard to districts that have received emergency state loans.

In January 2006, SB 430 (charter schools) and AB 1366 (community colleges) became law and expanded FCMAT's services to those types of LEAs.

Since 1992, FCMAT has been engaged to perform nearly 850 reviews for LEAs, including school districts, county offices of education, charter schools and community colleges. The Kern County Superintendent of Schools is the administrative agent for FCMAT. The team is led by Joel D. Montero, Chief Executive Officer, with funding derived through appropriations in the state budget and a modest fee schedule for charges to requesting agencies.

Introduction

Background

Incorporated in 1911, the city of Perris in western Riverside County has a population of 68,386. The area experienced 89% growth from 2000 to 2010, and 37% of the population was under the age of 18 in 2010.

The Perris Elementary School District serves 5,815 students in kindergarten through grade 7 at six K-6 traditional schools, one K-6 magnet school, and a K-7 charter school. The charter school will expand to serve students in grades K-8 in 2012-13. In addition, the district operates a state preschool that serves 315 three- and four-year olds.

Ninety-one percent of the students are eligible for free or reduced-price meals. The district employs 296.26 certificated and 185.85 classified full-time equivalent (FTE) staff and reported an annual budget for all funds of $53 million in 2010-11.

In accordance with a 1991 joint community facilities agreement between the district and Perris Union High School District, approximately $12.1 million of Mello-Roos Community Facilities District special tax bonds are available for district facility projects. The district designated $2.1 million for technology projects.

In November 2006, the district passed a $25 million general obligation bond to renovate facilities, add classrooms and upgrade technology. The district has not set priorities for how the $17 million remaining from this bond will be used for projects.

Study Guidelines

In March of 2012, the Perris Elementary School District requested that FCMAT conduct a review of the district's delivery of technology. The study agreement specifies that FCMAT will perform the following:

1. Review the district's organizational structure for delivery of technology support services and make recommendations for improvement.
2. Review the district's staffing for delivery of technology support services and make recommendations for improvement.
3. Review the district's delivery of instructional technology support services and make recommendations for improvement.
4. Review the district's delivery of administrative technology support services and make recommendations for improvement.

A FCMAT study team visited the district and conducted interviews with staff on April 23, 2012. During this visit, study team members also toured Innovative Horizons Charter School, Park Avenue Elementary and the district's technology services department at the district office.

During FCMAT's visit, the study team collected and reviewed documents needed to assess the district's staffing and organizational structure and the roles and responsibilities of its technology staff. Documents reviewed and discussed in interviews included but were not limited to the

district's education plan, technology plan, system information, operational policy and procedures application, and board policies and administrative regulations.

FCMAT interviewed staff members throughout the school district from as many areas of service as time would permit to ensure the inclusion of perspectives from a broad and representative range of staff including classified, certificated and management employees.

Priority Ranking of Recommendations

To help the district plan effectively, each recommendation in this report has been given one of the following levels of priority:

- ● High Priority – Indicates issues that should be addressed as soon possible because they are critical to long-term success, or are issues that increase risk or liability.
- ◒ Medium Priority – Indicates components that are important to operations or functions but can be placed slightly lower in a priority queue.
- ○ Low Priority – Although important, these items carry less risk or are less critical to long-term success.

Study Team

The study team was composed of the following members:

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FCMAT Management Analyst
Bakersfield, CA

Andrew Schwab*
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Berryessa Union School District
San Jose, CA

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Paso Robles Joint Unified School District
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FCMAT Technical Writer
Bakersfield, CA

*As members of this study team, these consultants were not representing their respective employers but were working solely as independent contractors for FCMAT.

Executive Summary

For the past decade, the Perris Elementary School District focused on implementing and maintaining basic technology services throughout the district. Nine years ago teachers did not have e-mail, and technology in the classroom was very limited. Technology was a necessity only for administrative staff. Technology staffing levels were proportional to the limited need. The district had no employees assigned to technology; instead, it contracted with one company for on-site support and with other entities for hosted application services.

More recently, the district has embraced technology and has taken significant steps to integrate it in the curriculum. The district's governing board supports emerging technologies and has approved funding for many projects to increase technology in classrooms. District administrators believe in embracing technology to help close the achievement gap and recruit families into the Perris community and schools. To this end, the district opened the Railway School of Math, Science and Technology as a magnet school and the Innovative Horizons Charter School to offer programs that more directly integrate technology with student goals and achievement. In addition, the district has started implementing technology in all schools. Most schools have computer labs and schedule time for each class to use them. To support the expanded use of technology, the district hired a technology manager and contracts with a part-time technology consultant.

The district wants to increase its use of technology in the classroom to develop technology-enhanced educational programs. With staffing changes occurring in the technology department, the district has the opportunity to evaluate the technology program and consider a new direction.

The district maintains a $350,000 unrestricted reserve in the general fund and at least $2.1 million from bond measures for technology that has not been prioritized for specific projects. The district will need to identify and prioritize projects appropriate for these funding sources to achieve the greatest results while operating within financial constraints.

Technology Plan and Policies

An effective technology plan guides technology to support meaningful, engaged learning and specifies how it will be funded and supported. Although a technology plan serves as a road map for three to five years, it must be evaluated and updated regularly. The district's technology committee is given this responsibility but has met only twice in the past year. The committee should meet quarterly to evaluate and adjust the current technology plan and develop the next plan, due for approval in a year. Subsequently, the technology plan should be updated to address professional development, age-appropriate instruction for online behavior, software applications for student assessment, integration of technology in the classroom and the districtwide wireless project.

Instructional Technology

Emerging technology has stimulated potential and desire for instructional technology tools. The district wants to increase the use of technology in the classroom, but projects are difficult to implement successfully if technology staff are not included throughout the process. To implement software and hardware, the district should discuss the project with technology staff to identify constraints. In addition, the district should consider the professional development needs of both instructional and technology staff. A lack of sufficient training for either of these staff groups can cause a project to fail. Technology staff need training in implementation and support, while instructional staff need to understand how to use technology effectively and the expected outcomes.

The amount and quality of technology available varies by school. The district should evaluate the technology resources available at each school. Although instructional programs at the charter and magnet schools may require different technology, a minimum level of technology should be available to all students at all schools. In addition, the district should evaluate the success of existing technology and if it is not meeting goals, correct deficiencies by providing additional professional development or other measures.

Systems and Applications

The district's financial system, student information system, student assessment system and communication systems are functional. However, the district should provide professional development to resolve issues staff have identified in the student assessment system, student information system, financial system and website development application. In addition, the technology committee should develop criteria for and evaluate the effectiveness of the student assessment item bank and e-mail system. An item bank is a repository of test items that belong to a testing program and the information pertaining to those items.

The technology work order application is underused, and technology staff are not using it to collect data and evaluate equipment failures, repeated support requests that could indicate the need for professional development, service request counts that may indicate staffing needs, and other information to help determine service trends and manage technology services more effectively.

Few school site staff have the ability to enter requests into the work order system, and district office staff request service and resolve issues by e-mail or telephone rather than using the work order application. In addition, media center clerks and technology committee teacher representatives receive and resolve local support requests by phone or e-mail. The district should revise the work order submission process to ensure that the application is used for all requests, and assign requests to school or district technology staff as appropriate.

Technology Security

The district has invested significant resources to implement its current technology infrastructure. The most basic protection for network equipment and systems is physical security, which includes limiting access to equipment and maintaining a proper operating environment to prevent equipment failure. The district's data center is unsecured and shares an environment control system with an office that is used by district staff. The environment control system is set for the staff's comfort but is not appropriate for optimal equipment performance. The district should develop a plan to provide a secure, climate-controlled data center to safeguard district technology assets. In addition, the district should relocate servers at the school sites to the data center.

Directory Services

To sustain operations with a small technology staff, the directory services system has been arranged simply to require little management and support. This meets the goal of efficient management, but the solution hinders the district from effectively implementing other necessary tools. The district will need to balance efficiency and effectiveness as it changes and implements technology solutions.

Staff and student technology users are separated into three large groups for account management: students, teachers and other staff. Each group shares an assigned username and password. This eliminates the need to create and delete accounts for individual students and staff. However, it

prevents the district from properly managing file storage, security policies and other networked resources. The lack of a file storage system secured by individual usernames and passwords puts the district at risk of inadvertently releasing student records when it is saved to Universal Serial Bus (USB) drives or other unsecure devices. In addition, the lack of individual user names means that the district may be unable to limit inappropriate internet use and associate it with the responsible individual. The district should implement a directory services scheme to provide staff and students with unique usernames and passwords, then reconfigure file storage servers, security policies and content filtering policies to minimize its liability.

Staffing and Organization

The district's number of technology staff is not sufficient to support the desire to increase the integration of technology into the classroom over the next five years. The technology manager spends approximately 75% of his time on low-level technical support issues and the remainder of his time resolving high-level technical issues. This leaves no time to plan, guide or lead the district's vision to expand instructional technology.

FCMAT's analysis indicates that the district should develop a technology department led by a technology director who reports to the superintendent. Department staffing should consist of the director, a technical support specialist II and a technical support specialist I. The two support specialist positions would be responsible for low-level technical support. The technical support specialist II would also be responsible for high-level technical issues. Sample job descriptions are provided in Appendix B.

In addition to the expanded technology department, the district should develop a teacher on special assignment (TOSA) position as indicated in its technology plan. The position would focus on supporting the successful integration of technology into the classroom and planning professional development for instructional staff.

Documentation and Procedures

The district will need to review and revise technology procedures to include the new expanded role of the expanded technology department. The district will also need to develop and maintain documentation to help manage technology resources. Procedures and documentation are important guides for a team whose members share responsibility for safeguarding technology assets and maintaining technically complex systems.

District technology purchases are not reviewed or approved by the technology manager. The district should adjust its procurement procedure to include the technology manager's authorization for all technology purchases. This will help ensure that all technology purchases are compatible, aligned with the district's technology goals and have sufficient support.

The district tracks the number of computers by classroom and iPad/iPod serial number, but this is not a functional inventory listing that allows for technology planning. The district also lacks an equipment replacement plan and disaster recovery plan. The district should develop and maintain separate inventories of licensed software, computers and peripherals, and networking hardware to aid in replacement and upgrade planning. A technology replacement plan sets priorities for equipment replacement and ensures that equipment is kept within acceptable standards, minimizing classroom and office interruptions. Developing a disaster recovery plan will enable the district to resume basic operations quickly by recovering vital systems in the case of a disaster.

Findings and Recommendations

Technology Plan and Policies

To realize the benefits of technology, school districts need a plan that integrates technology into instructional programs. An effective plan guides technology to support meaningful, engaged learning and specifies how it will be funded and supported. A particular school district may have additional planning requirements depending on its programs. For example, E-Rate, a federal funding program that helps schools and libraries obtain affordable telecommunications and Internet access, requires all E-Rate funded projects to support goals and objectives in the technology plan. E-Rate also requires a professional development component in the plan to ensure that members of the staff know how to use technology to improve the educational experience.

A plan guides technology implementation over three to five years. Rapid developments in technology require that the plan's goals and objectives be treated as a living document and reviewed periodically for continued relevance and direction. It is a best practice for a technology committee of educators, parents, technology staff and other involved parties to have an important role in developing and maintaining the technology plan and to provide guidance to develop the plan's goals and objectives. Once the plan is developed, the technology committee monitors progress, updates the plan and creates addenda to record any changes between plan rewrites.

The district approved a technology plan for July 1, 2010 - June 30, 2013 to meet state and federal funding requirements during this period. Although the plan lists specific technology projects and funding sources over a three-year period, it does not provide direction for the use of funding from two separate bond measures or the unrestricted general fund technology reserve of $350,000. Identifying and prioritizing eligible projects for these funding sources will allow the district to achieve the greatest results while operating within financial constraints. In addition, the technology committee has met only twice in the past year to evaluate the progress and update the plan, although the plan indicates that the committee will meet quarterly. The district does not use the plan when it develops the annual technology budget, and the plan does not reference E-Rate projects developed after its initial implementation. For example, the plan discusses adding wireless access points on mobile carts, but not the districtwide wireless E-Rate project currently underway.

The district's technology plan includes a professional development component in accordance with the requirements for E-Rate funding. However, based on interviews, professional development is insufficient to effectively integrate technology with instruction. Instructional professional development will be discussed in detail in the Instructional Technology section of this report.

The Children's Internet Protection Act (CIPA) is a federal law enacted by Congress in 2000 to address concerns about access to offensive Internet content on school and library computers. A school or library will not receive E-Rate program discounts unless it certifies that it is enforcing an Internet safety policy that includes filtering or blocking technology. CIPA compliance is also mandatory for educational technology grants such as Enhancing Education Through Technology (EETT) and future grants such as Achievement Through Technology and Innovation (ATTAIN).

Effective July 1, 2012, the Federal Communications Commission (FCC) 11-125 requires all who apply for E-Rate discounts on anything more than telecommunications services to have Internet safety policies that "include monitoring the online activities of minors and must provide for

educating minors about appropriate online behavior, including interacting with other individuals on social networking websites and in chat rooms and cyber bullying awareness and response."*

The district's Board Policy 6163.4 contains language as required by CIPA and the new FCC requirements, including language supporting age-appropriate instruction in safe and appropriate behavior on social networking sites, chat rooms, and other Internet services. However, the district's technology plan does not comply with the new components of the CIPA law, which took effect July 1, 2012.

*FCC 11-125 (http://hraunfoss.fcc.gov/edocs_public/attachment/FCC-11-125A1.pdf). See also 47 Code of Federal Regulations (CFR) section 54.520(c)(1)(i) (http://www.gpo.gov/fdsys/pkg/CFR-2011-title47-vol3/pdf/CFR-2011-title47-vol3-sec54-520.pdf)

Recommendations

The district should:

1. Schedule and hold quarterly technology committee meetings to discuss the status of technology objectives within the district, periodically amend the technology plan in accordance with district goals, and start developing the next technology plan to ensure it is certified prior to June 30, 2013. ●
2. Identify and prioritize technology projects to be funded from bond measures and the technology reserve. ●
3. Ensure that the technology plan or an addendum to it adequately addresses current and future E-Rate technology projects, and general obligation and Mello-Roos Community Facilities District special tax bond projects. ●
4. Ensure that the technology plan includes a complete, guiding strategy for integrating technology in the classroom and identifying funding sources. ●
5. Use the technology plan to help develop the district's annual technology budget. ●
6. Seek input from interested and involved parties and revise the professional development component of the technology plan to effectively support technology integration in the classroom. Involved parties should include staff, the technology committee, district leadership, students and community members. ●
7. Explore and implement new professional development resources and methods to effectively provide teachers with support for integrating technology into the classroom. ◒
8. Update the technology plan to ensure continued CIPA compliance, including language that supports age-appropriate instruction in safe and appropriate behavior on social networking sites, chat rooms, and other Internet services. Support this language with an action plan that includes timelines and a monitoring and evaluation process. ●

Instructional Technology

Successful implementation of educational technology requires collaboration among administrators, the technology department and other affected parties from the beginning. Failing to involve the technology department in purchasing decisions and planning increases the likelihood that the project will not be completed on time, within budget and meet the desired objectives. Actively involving the technology department in planning provides a more complete analysis of the project. The technology department can provide information on how well new software or hardware will function with the current technology, help determine any costs associated with improvements needed to support the additional technology, and the cost of professional development for technical staff. Technology staff can also research and provide an analysis of ongoing costs such as support and equipment replacement.

The district is considering implementing a districtwide online student assessment process, a project that could succeed or fail based on the capacity of the existing technology infrastructure. The district began piloting the program in three classrooms at the Innovative Horizons Charter School late in the 2011-12 school year. However, it had not discussed this project with the technology manager at the time of FCMAT's fieldwork. Discussing the project with the technology manager would enable the technology manager to conduct a proper review of the district's current resources and supporting infrastructure and would thus improve the chances of success.

The technology manager does not currently review all technology purchases. Having a technology manager or chief technology officer review all such purchases is an industry best practice and would help ensure that equipment, software and other items are selected with the district's current technology resources in mind.

Although the district's technology plan includes proficiency guidelines for each grade level, teachers find that their students have varying levels of technical competence depending on which teacher they had the previous year. Teachers indicated that students have inconsistent learning opportunities because of a lack of standardization in technology.

The availability of technology varies widely from school to school and classroom to classroom. Because of student demographics and standardized test performance, some schools have more funding and resources. As a result, schools make independent technology purchasing decisions based on local priorities and resources that can have a broader impact on the district's overall academic performance. One teacher commented that he brought his personal equipment to the classroom because little equipment was available for students. The district's technology plan references the National Educational Technology Standards for Students (NETS•S) and includes a matrix showing the technology proficiency standard and NETS•S skills for each grade level. However, the district is not ensuring that all students have the required access to technology to learn these skills or that the skills are taught. Districtwide consistency in students' technology skills requires equitable access to technology and the integration of technology skills into the curriculum.

Recommendations

The district should:

1. Discuss the districtwide online assessment process with the technology manager before approving the project. ◒
2. Implement a process for all technology purchases to be reviewed and approved by the technology manager. ●
3. Develop accountability measures to ensure all students are taught grade level technology skills as identified in the technology plan. ◒
4. Ensure that appropriate technology skills are taught to all students at each grade level and that all students have access to sufficient technology to learn and apply these skills. ●

Hardware

The district's schools manage technology equipment purchases. This practice has created inequities between schools. For example, some schools have mobile or stationary device labs of computers, iPods, iPads, or netbooks, and other schools have no device labs. A lack of technology resources at schools constrains the instructional program and the ability of teachers to meet goals and objectives as stated in the technology plan.

Schools with stationary or mobile labs do not have enough devices for all students in a class to participate. Teachers indicated that 20 to 21 devices are usually available but classes are larger than this, especially in the higher grades.

A virtual workstation is an individual workstation that has its operating system and applications on a remote server. This configuration reduces costs because resources can be shared and allocated by one high-powered workstation. Two computer labs have been upgraded to virtual workstations using the nComputing, virtualization system. Each high-powered workstation supports approximately 10 student virtual workstations. Expanding virtualization would increase efficiency and cost effectiveness.

Schools with mobile labs have schedules for moving the carts containing the labs between classrooms. However, teachers indicated that the schedules are not always followed because the condition of the devices is not reliable. For example, devices may not be fully charged, keys may be missing from keyboards or software updates may not be current. Sometimes classroom time is spent trying to repair the equipment so it can be used, or teachers forgo using the equipment because there is no time to fix it. The district lacks a process and checklist for checking in equipment on mobile carts, training in the proper use of mobile equipment, and periodic review of equipment by technology department staff. Implementing these could help detect and prevent equipment problems.

Recommendations

The district should:

1. Develop a hardware purchasing plan that ensures equitable access to technology for all students district wide before expanding technology in particular schools. ●

2. Evaluate the number of technology lab devices available and adjust based on class sizes and learning objectives. ○
3. Consider expanding virtualization of computer workstations in technology labs. ○
4. Develop and implement a checklist for staff to follow when storing and preparing devices on mobile carts for the next scheduled class. The checklist should include instructions for reporting equipment problems. ●
5. Develop and implement teacher training in the proper use of mobile carts, including device charging procedures. ●
6. Ensure that technology department staff periodically review the status of mobile lab equipment to evaluate its condition. ○

Software

Although the district recently standardized districtwide use of the report card component of its Zangle student information system, it has not done the same for a grade book application. Teachers individually select and use the grade book application of their choice, including Microsoft Excel and Engrade.

The lack of a standard application can hinder the quality of support because support staff must know about many different programs instead of focusing their knowledge on one. In addition, grade information is not readily available to parents and district administrators in a consistent manner because it resides in multiple locations, either on individual computers or the web.

An ideal grade book program would be standard for all elementary grades, integrated with the standard report card system, and provide parents with easy online access to their children's information. A best practice is to use the student information system (SIS) as master source of student data and records. The district's School Loop website application and Zangle SIS contain grade book components that can be shared with parents.

The district manages computer lab devices by restoring the system to a saved point in time upon reboot with a product called Deep Freeze. Deep Freeze is an efficient support product for lab environments because the software resets connected computers to a consistent functioning state. Some media center clerks expressed frustration with the Deep Freeze program because it reverses operating system and antivirus program updates, causing a constant update cycle and disrupting instructional time.

Deep Freeze systems need to be unlocked periodically to apply security and program updates, but some media center clerks were not familiar with the procedure for this, and there was no documentation to guide them.

Both antivirus software and operating system updates are applied on individual computers, sometimes manually. A central update server, such as a Windows Software Update Server (WSUS), can streamline the update process by managing the lab updates and minimizing the need to update the computers individually. The district should setup an update management server to ensure labs are updated with the current security updates.

Recommendations

The district should:

1. Have the technology committee review grade book applications, including Zangle, to determine which best meets the district's needs, and recommend a single application as the district standard. ◯
2. Ensure that the technology staff create a document to guide media center clerks in maintaining lab computers that use Deep Freeze, including unlocking Deep Freeze to apply updates. ◯
3. Research and implement a central update management server for lab equipment. ◯

Professional Development

It can be easy to overlook basic skills when discussing technology training needs. The district recently provided a laptop computer and a document camera for each classroom. Interviews indicated there was not sufficient professional development when these were distributed. Although most teachers are now successfully using the document cameras and laptops, interviews revealed that there is still some need for training in basic skills including saving files to a flash drive, changing the printer toner, and changing light bulbs on projectors and document cameras. This type of training would better prepare instructional staff to use technology effectively and integrate it into the curriculum.

Installing new technology without considering professional development training and support can hinder the success of a technology project or even cause it to fail. For example, teachers in many of the district's schools are using interactive whiteboard technology to increase engagement with students through interaction, multimedia and dynamic content. Several teachers have the Mimio interactive whiteboard solutions in their classrooms, but few received the training needed to use it effectively. The Mimio solution includes MimioStudio software that allows teachers to create lesson content and share it with other teachers, but little training has been provided. One teacher stated, "We have the tools, we just have to figure out how to use them." Principals and technology committee teacher representatives at schools indicated that they want to provide additional training so the interactive whiteboards can be more widely used as an effective instructional tool.

Teachers do not fully use tablet devices in some of the classrooms at Innovative Horizons Charter School. Some teachers did not have lesson plans or activities to integrate the devices into the curriculum, and instead allowed students to use the devices for unguided Internet access. Teachers want to use new technology but are not receiving guidance to integrate instructional strategies into the curriculum. Providing teachers with the professional development they need is crucial to any successful instructional technology implementation and helps ensure integration with the curriculum.

It is also important to link technology investments to student activity and academic performance. It is beneficial to spend time communicating with teachers about the expectations for the technology. For example, will it help struggling readers? Or, will it help streamline data collection? It helps teachers to know the purpose before they commit to learning and using new technology. Comprehensive professional development plans are vital to help staff members who are hesitant

to try new technology. A best practice is to develop a project specific professional development plan before purchasing technology.

The level of technical expertise varies greatly among the district's instructional staff. Effective professional development training will help bridge this gap, providing training to all staff and ensuring consistent learning opportunities for students. However, because professional development is typically for large groups, if participants are not at similar skill levels it is difficult for a trainer to provide optimum learning opportunities for all participants.

When skill levels vary, it can be more effective to provide targeted trainings to small groups of participants who have approximately the same skill level. Some schools, such as Good Hope Elementary, already have teachers training other teachers. If personnel within the district have the expertise, this approach can be an excellent way to implement small group training while minimizing costs for outside providers.

School principals suggested developing cross-school professional development teams to improve technology collaboration between schools in the district. Once the schools have a minimum level of consistent technology in each classroom, cross-school professional development teams can help build a unified community districtwide, encouraging teachers to share their experiences, tips and skills with each other. Tools such as My Big Campus, Google Groups, YouTube, Twitter, blogs, and wikis can be used to minimize travel and encourage regular collaboration.

Education technology has experienced rapid growth and change over the last few years. Netbooks, iPads and electronic textbooks have significantly affected instructional delivery methods. During such periods of rapid growth, school agencies typically experiment with different ways to manage and implement new technologies. It is important for districts to be aware of trends in other school agencies. Organizations such as Computer Using Educators (CUE) or California Educational Technology Professionals Association (CETPA) provide collaboration, networking and professional development opportunities for staff, including teachers, administrators and technical staff. It is important to include representation from all three of these groups to develop effective technology-enhanced educational programs that will function within the district's infrastructure and resources. The district's teachers and administration participate in CUE but its technology staff do not, and the district does not participate in CETPA.

Recommendations

The district should:

1. Provide basic technology skills training as needed. ●
2. Provide additional training for teachers in use of the Mimio hardware and MimioStudio software. ○
3. Assess professional development needs and ensure that professional development is considered as an essential component of any educational technology projects. ◒
4. Create a professional development plan for each technology implementation to help ensure its success by communicating objectives and providing the training teachers need. ●
5. Review and revise its professional development plan to provide small, group trainings in a variety of educational technology topics. ◒

6. Adopt a collaboration method and encourage teachers to build local community by sharing best practices, tips and techniques among the schools. ◒

7. Encourage teachers, administrators and technology staff to participate in professional development organizations such as CUE and CETPA to increase exposure to education technology trends and the integration of technology into classroom instruction. ◒

Systems and Applications

Student Information System and Financial System

The Riverside County Office of Education (COE) hosts Zangle, the district's student information system (SIS), and Galaxy, the district's financial system. Galaxy is used for financial management and reporting including finance, budget, human resource and position control functions.

Zangle is used to manage student data including attendance, report cards, standardized test scores and credentialing information reportable to the state through the California Longitudinal Pupil Achievement Data System (CALPADS). Zangle's developer has provided limited support for the past few years and was recently acquired by another SIS provider. Riverside COE staff upload state test scores into the SIS for the district. The district's attendance clerk administers CALPADS from the SIS. The district's CALPADS certifications are on schedule, and the statewide student identifier (SSID) maintenance and student anomalies are processed in a timely manner.

The human resources department operates multiple systems to manage district personnel and credentialing data. Galaxy is the primary system for position control information, and Zangle is the primary system for credentialing information. Staff also use locally developed databases in software such as FileMaker Pro to search personnel data and to create reports because they are more familiar with this software. This has led to questionable search results and conflicting information in reports.

It would benefit the district for the short term to assess its needs, identify a single main system to maintain all information that is now duplicated, verify and correct the information, and adjust procedures to ensure that the system remains free from error. The system could then be used to correct errors in the other systems and eliminate the use of FileMaker Pro. For the long term, working with the Riverside COE to research connecting the systems and automatically transferring data regularly would be a best practice solution.

Riverside COE's support for the Zangle and Galaxy systems is limited because it supports a large number of school districts spread over a large geographic area. Most support is provided by e-mail or through user group meetings. District staff indicated that they need more professional development training to become comfortable with the search and reporting functions in the Zangle and Galaxy systems, which would eliminate the need for the FileMaker Pro program.

Many districts offer parents and students access to student information online, such as classroom news, attendance, class assignments, report cards, standardized testing results and behavioral incidents. The district does not provide this information to parents online; however, the ability to do so is available through Zangle ParentConnect. Increasing communication between home and school and providing information to parents encourages family participation in students' academic achievement and empowers parents.

Recommendations

The district should:

1. Identify a main system for the duplicate information now in the Zangle and Galaxy systems, and verify and correct the information in the main system. Adjust data entry procedures to ensure that the primary system remains free from error and that other systems are updated from the main system. ●

2. Work with the Riverside COE to research connecting the Galaxy and Zangle systems to eliminate data conflicts and duplications between the systems. ◒

3. Contact the Riverside COE and request professional development training in use of the Zangle and Galaxy systems to streamline district processes and make more efficient use of staff time. ◒

4. Contact the Riverside COE to further research and consider implementing Zangle ParentConnect. If it is implemented, provide sufficient professional development to teachers, administrators and technical staff to make it successful. ◒

Student Assessment System

The primary purpose of classroom and large-scale assessment systems is to improve student learning. A student assessment system (SAS) allows a district to monitor the progress of individual students, classes, grades, schools or the entire district toward its learning goals. This feedback helps teachers identify students that may require additional instructional services. Second, it allows teachers to collaborate to improve their craft. For example, if students in one class show strong understanding of a particular standard, another teacher may be interested in the method used to help his/her students.

Student assessment systems have a bank of standards-based test questions, software that builds tests with bubble-sheet or online scoring, and analysis capability to generate analytical reports from scores. School districts select the system's test bank. The district uses the hosted online version of the Online Assessment Reporting System (OARS) and the Key Data Systems' Identifying Needs: Standards Proficiency Exams for California Teachers (INSPECT) test bank.

All teachers of core subjects use OARS to administer district assessments in math and language arts. Approximately 50% of teachers use the system to build individual or collaborative assessments, but administrators would like to see this capability used more. Teachers of the same grade level collaborate across school sites; one teacher goes online and develops the collaborative assessment test for a grade level.

A difference of opinion regarding the vocabulary in the test bank is one barrier to expanding the use of the student assessment system. Some staff feel that the vocabulary is dissimilar from that on the California Standards Test (CST) and therefore does not work well with the curriculum. However, this belief is not widely accepted; other staff identified differences in vocabulary increases students' critical thinking skills instead of allowing them to rely on memorization. It would benefit the district to have and use criteria based on district priorities when selecting a test bank.

Another barrier to expanding use of the student assessment system is the difficulty teachers have preparing testing materials and processing test results. Although some teachers use limited lab time to take assessments online, others wait for the school office staff to print bubble answer sheets and scan test results. School site administrators and teachers expressed a desire to evaluate other options that would allow teachers to print their own tests and scan the results via webcam or scanner technology. Doing so would make instant analysis possible, allowing students and teachers to focus their work immediately based on the results and thus improving instruction.

Recommendations

The district should:

1. Evaluate the student assessment system and its test bank system to determine if they meet the district's needs, and make changes if necessary. Consider having district curriculum staff and a technology committee do the following:
   - Develop criteria for selecting test bank items, based on the district's priorities.
   - Evaluate the current OARS system and INSPECT test bank to determine if they meet the district's needs. ◒
2. Research options to provide scanning of test answer sheets in the classroom using webcams or electronic scanners. ◒
3. Provide additional professional development for teachers to become comfortable printing and scanning in the classroom. ◒

Communication Systems and Applications

One of the benefits of advanced telecommunications in schools is the ability to improve communication between the school and student's households. The Internet, e-mail and telephone systems improve school-to-home communication far beyond the traditional weekly newsletter or the occasional attendance-related telephone call.

The district uses Google Gmail, an Internet cloud-based system, for e-mail and calendar functions. Internet cloud-based e-mail solutions are new to education and place e-mail and data on a remote internet-connected server rather than on a local server.

Staff are not satisfied with the current state of the e-mail system; they stated that Gmail is difficult to use. For example, Gmail defaults to listing e-mails by conversation, grouping e-mails by title, and displaying only the most current e-mail, instead of providing a simple e-mail list. Although it is easy to change the settings to turn off conversation view, staff must know how to identify it as the issue and how to change it.

Hosted solutions such as Gmail also change local support requirements. For example, passwords are not integrated between systems, requiring users to create passwords and log in separately to the network and e-mail. If a staff member or student forgets their password, the technology staff must reset the password in multiple locations. Cloud-based systems can reduce equipment and software licensing costs. Locally hosted e-mail systems provide more local control but can be costly and require additional staff to monitor system servers. However, locally hosted systems offer features that make it easy to manage accounts and distribute mail to groups of people. For example, staff and student accounts can be automatically generated when network accounts are created and thus can be modified or deleted without difficulty. E-mail systems such as Microsoft Exchange and Novell GroupWise are commonly used in school districts.

The district's website contains information for the community, such as district news, the district calendar, contact information and links to individual school websites. School websites have a consistent layout, but the content varies. The district lacks guidelines for a standard classroom website, and the school websites do not link to teachers' websites. Schools and teachers are responsible for developing their own websites.

The district provides School Loop, a free hosted website solution, for its district, school and classroom websites. Principals and teachers indicated that School Loop is not user-friendly. Some teachers have developed websites independently of the district's, which places the district at increased risk. For example, a district can be held liable for violating the federal Family Educational Rights and Privacy Act (FERPA) if names, pictures or other student information is posted on a website inappropriately. Many districts that use teacher and classroom websites have succeeded in creating a uniform look for information such as a teacher biography, classroom information and syllabus, calendar of events, classroom documents and useful links.

Effective standards for website development encourage teachers to develop a website, provide a recommended classroom format and require all websites be hosted through authorized vendors. Districts with effective and often-visited websites also work to inform parents that information about their student's classroom is available via the district's website.

Recommendations

The district should:

1. Ensure that a technology committee develops criteria and evaluates the e-mail system. If it is found to be sufficient, provide additional professional development to increase familiarity with and effective use of the system. If it found to be insufficient, develop a comprehensive plan to change systems, including a plan for data migration. ○
2. Develop standards for classroom websites and communicate the standards to staff. Communicate to parents that classroom information is available on the district's website. ◒
3. Provide additional professional development opportunities for staff to become more familiar with School Loop. ◒

Work Order Application and Support Systems

The district's technology work order process is not efficient and does not generate information needed to manage technology. Technology committee teacher representatives and media center clerks at the schools provide basic computer troubleshooting services for teachers, mobile labs, Apple device carts and stationary labs but do not have access to enter work orders. Instead, school secretaries are authorized to submit work orders to escalate technology issues to district technology staff. This is intended to limit the number of technology work orders submitted due to limited technology staffing. However, the technology committee teacher representatives and media center clerks are better able to understand and explain technical issues and information needed for work orders.

District office staff do not use the online work order system and instead rely on e-mail or a telephone call directly to the technology manager. This can hamper efficiency and record-keeping. Many teachers and staff indicated that they would like more access to the online work order system for faster response and work order tracking.

Best practice is for a district to require all technical issues go through a help desk system to automatically generate a log of issues. The information in the help desk can be used to determine professional development, equipment, and technology staffing needs. Under this system, all staff

would submit work orders and the tickets would automatically or manually route to the correct site staff for resolution. If the site staff were unable to resolve the issue, they would document the actions taken and escalate the problem to district technology staff.

The technology department does not have a web presence to offer technology tools or assistance to site staff. Advances in technology have created opportunities for improved delivery, management and evaluation of instructional support. Successful school district technology programs have learned to embrace new technologies to distribute information to site staff. Many districts have developed question-and-answer sheets, technical help, online tutorials and collaborative social media sites to encourage online dialog between technology support staff and teachers. These technologies also allow technology-related policies and procedures to be made accessible on a department website for staff to reference easily.

Recommendations

The district should:

1. Require all requests for technology support to be submitted through the work order system. ●
2. Allow staff to enter work orders directly. ●
3. Use the information generated by the work order system to better plan ongoing technology support. ◒
4. Develop a plan to improve and increase its technology department's web presence to provide technical assistance tools, online tutorials and technology policies and procedures. ○

Technology Security

The district has operated with a minimally staffed technology department as it has expanded the role and function of technology in all district operations. Network services have been adequate to provide Internet, file sharing and application services. Reliable Internet access is especially important because the district has adopted hosted solutions, such as Gmail, Zangle and Galaxy. However, the district's technology security is insufficient and causes excessive increased liability for software vulnerabilities, data leaks, and rapidly spreading viruses.

Physical Security

Physical security is the most basic protection for network equipment and systems. This includes limiting physical access and having the ability to manage temperature and humidity. Technology equipment is costly to replace. Replacing equipment unexpectedly may result in extended down time for vital network services, such as e-mail, SIS, Galaxy and classroom Internet access.

The district's data center is located at the district office in an unsecure room that has no door, a vulnerable window, partitioned walls that do not reach the ceiling, and an exterior door adjacent to the room. Almost all equipment in use is mounted in racks, except for a few unsecured systems that are placed on top of other equipment. The district's supply of crucial spare equipment to enable quick replacement of broken devices during a system disaster is also located in an unsecured manner in the data center. The data center also shares its heating and cooling system and controls with a section of the district office where staff work daily.

The data center contains all equipment vital to district operations, including servers and equipment that connects classrooms and the district office to the Internet. As indicated above, the district's Internet connection is especially important because of the reliance on the hosted applications, including the student information system (SIS) and financial system.

Standard and best industry practices include controlling and securing all entry points to a data center and limiting access (usually authorized by the superintendent) to prevent theft and accidents that could incapacitate the network. This includes securing doors and windows, and providing dedicated environmental controls to control temperature and humidity and prevent overheating and loss.

Normal operation of equipment generates heat that must be controlled to prevent equipment failure. The American Society of Heating, Refrigerating and Air-Conditioning Engineers' (ASHRAE) 2008 *Thermal Guidelines for Data Processing Environments* white paper states that data communications equipment should be maintained between 68 and 77 degrees Fahrenheit, depending on altitude, humidity and other relevant factors. The appropriate temperature may make office staff uncomfortable.

FCMAT visited the main wiring closets (known as the main distribution frames or MDFs) at Innovative Horizons Charter School and Park Avenue Elementary School. Park Avenue Elementary School and Perris Elementary School are on adjacent properties and share an MDF. Both MDFs were clean and unobstructed, although older cabling and systems had not been removed. However, in addition to the telephone and data equipment, the MDF at Park Elementary School contained electrical equipment, which transmits electromagnetic interference (EMI) that can cause harm ranging from simple degradation of data to total data loss.

Both MDFs visited have dedicated environment control systems. However, Park Avenue Elementary School's MDF had metal screening on its exterior wall that allowed outside air and

contaminants to enter. Similar to a data center, school MDFs contain vital equipment that connects classrooms to the Internet and web-based applications and thus need to be protected from the elements, dust and pests.

The district has individual file servers at school sites. This arrangement requires additional labor and cost to maintain. The file server at Park Avenue Elementary School is stored between two desks in an office area accessed through the library. Staff indicated that staff members are assigned to work in this office area, though FCMAT saw no staff there during its visit. It is best practice to limit access to major networked resources, such as servers, to technical staff to prevent accidental events that may incapacitate the resource. It is easier to consolidate servers in one secure location than to secure locations at every school site.

As an alternative to locating servers at every school site, the district could take advantage of virtualization technology, which uses specially designed software to convert one physical server into multiple virtual servers. Each virtual server acts like a unique physical file server. Server virtualization requires less equipment, but the equipment is of a higher standard than individual non-virtualized servers. Virtualization usually results in savings by reducing labor and replacement costs.

Internet access is improving in classrooms. Currently, the schools have a 100 megabits per second (Mbps) to 1 gigabit per second (Gbps) fiber-optic network connections to each classroom. During the summer of 2012, the district's wireless system will be upgraded to a centrally-managed system. As the role of technology continues to expand, the ability to prioritize and secure network resources will become increasingly important.

The use of virtual local area networks (VLANs) helps identify groups and track network traffic to allocate network resources as necessary. For example, the district has installed two VoIP phone systems and plans to implement more. These systems use the local area network (LAN) to communicate between phones and with voice gateways to outside telephone lines. If VoIP traffic is not given priority over other network traffic, the quality of the call can be degraded to the point of it being unusable. In addition, configuring student workstations to one VLAN can allow the district to maintain security by preventing student workstations from accessing staff network resources. A proper VLAN design allows network traffic to be segmented and network policies applied to select VLANs. An equipment management VLAN can be used to monitor and maintain the networking equipment, including monitoring equipment health and mitigating virus outbreaks.

Recommendations

The district should:

1. Evaluate the current data center and MDF locations and develop a plan to provide secure and climate-controlled data center and MDF environments for equipment at the district office and school sites. If a current location is not viable, begin planning to relocate to a more suitable location. ●
2. Separate electrical equipment from voice and data equipment whenever possible. ○
3. Develop a plan and relocate all file servers from sites to the district office data center. Consider consolidating and virtualizing servers to minimize the amount of equipment needed. ◒

4. Evaluate network traffic and develop a VLAN design that allows it to set priorities and secure network resources. At a minimum, create VLANs for staff, students, VoIP and equipment management. ●

Network User Accounts and Services

The district's enterprise network is a peer-to-peer workgroup network with no unique user authentication. Network accounts are set up simply to minimize support requests, in line with the school district's minimal technology staffing level. Teachers share a single logon and password to gain access to networked resources, assign security policies and access file storage. Students and other staff groups are set up similarly.

This setup creates file sharing and security problems. Teachers have read and write access to other teachers' files, and students have read and write access to other students' files. Staff and students are also encouraged to store data on USB solid state drives (commonly known as jump drives or flash drives), and are sometimes provided with these drives. When student information is kept on local workstations and drives such as this, the district is at increased risk because student data is not securely stored.

There are many legal and ethical reasons to improve protection of student data. As mentioned previously, FERPA protects the privacy of student education records. In addition, Education Code Section 49073-49079.7 states that a school district is not authorized to permit access to pupil records without parental consent. Unintentionally releasing student data because of unsecured file storage practices could violate both statues and create many hours of work to remedy the situation.

It is not evident that the district is complying with the requirements of the Children's Internet Protection Act (CIPA) to monitor individual student Internet traffic because students do not have unique authentications for network access. To comply with CIPA, the district must be able to track, monitor and report Internet activity. This can be accomplished by integrating a content filtering server with a directory server to identify an individual's Internet activity.

Recommendations

The district should:

1. Develop a plan to upgrade the current work-group and peer-to-peer network access structure to an enterprise domain structure that gives each user a unique username, account and password. ●
2. Reconfigure its file servers to integrate them with the network user accounts to provide secure, centralized secure storage, and educate users regarding safe storage of student data to minimize risk. ●
3. Ensure that it can track, monitor and report Internet activity by configuring its network so that users have unique authentication with the directory server and content filtering server. ●

Staffing and Organization

The district's technology plan was approved in 2010 and provides for hiring a teacher on special assignment (TOSA) for technology integration support as funding allows. Funding for a full-time TOSA may still be an issue, but teachers and administrators indicated that the need for one still exists. Possible solutions to meet teachers' need for help integrating technology with instruction include providing release time to teachers who demonstrate exceptional technology skills to allow them to share with other teachers, and holding technology workshops that focus on technology integration.

The district wants to increase integration of technology in the classroom over the next five years; however, the district's technology staffing is not sufficient to support a districtwide increase, even with many technical support responsibilities given to staff outside the technology department.

The technology department currently consists of a technology manager and a part-time consultant. The technology manager stated that he spends more than 75% of his time on low-level technical support issues and does not have time to engage in the higher level strategy or planning required to improve and expand the district's technology integration. School site technology committee teacher representatives and media center clerks provide supplemental computer support to users, while other key systems such as the SIS and phone systems are supported by other departments or third parties.

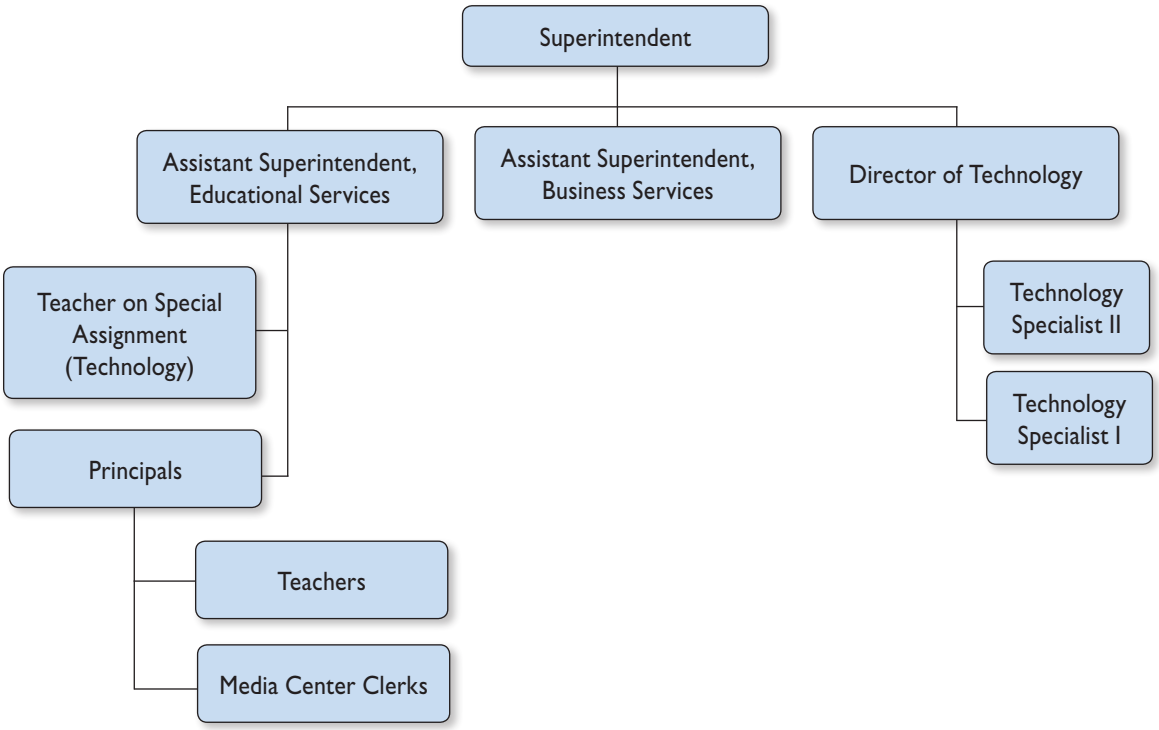
The district needs a technology department that is capable of addressing several issues that the current technology manager has not had the time for, including reducing or eliminating instances in which duplicate data is stored and used across systems; developing procedures for mobile lab maintenance and support; reconfiguring the network file storage; creating accounts and security to ensure safe and stable access; and engaging in discussions about future technology needs.

The future proposed staffing indicated in the table below would help provide adequate support for increased technology integration.

Current	Future Proposed
Technology Manager (working)	Technology Director (working)
Part-time consultant	Technical Support Specialist II
Technology committee teacher representatives	Teacher on Special Assignment (TOSA)
N/A	Technical Support Specialist I

The proposed positions are listed above in order of priority. On the following page is a sample proposed organizational chart of relevant positions (also included in Appendix A).

Proposed Organizational Chart



The district's technology manager is leaving the district, which presents an opportunity to replace this position with a technology director position. There are notable differences between manager and director positions. Specifically a manager position manages staff, work flow and department resources, typically reports to either the assistant superintendent of educational services or business services, and has a limited role in leading the district's technology. Because it lacks other technology staff, the district has a working manager position that directly performs the department's work.

A director level position has greater responsibilities, including seeking input from stakeholders and providing guidance and leadership to improve the district's technology. The director continues to perform management duties but also works with the superintendent, assistant superintendents and principals to lead business and educational technology. A director can be expected to develop and manage the technology budget, lead the technology committee, and assist in other district processes to manage technology resources. In the district's case, it would be normal to expect the technology director to continue providing some low-level and high-level technical support until other positions are filled. However, significant ongoing technical support responsibilities will limit the technology director's focus and ability to lead technology in the district.

A technical support specialist II position would eliminate the need for the district to contract with an outside consultant for technical support. The technical support specialist II typically has the knowledge and experience to perform high-level technical support, acting as the network and server administrator. The position also typically assists with low-level technical support issues, allowing the technology director to focus on planning and strategy development.

In the short term, multiple teachers with release time could fill the TOSA position as indicated above. However, as the amount of technology and the number of teachers needing assistance

increase, the district will need to create and fill a full-time TOSA position to help assist instructional staff integrate technology with instruction.

Hiring a technical support specialist I would allow the technical support specialist II to focus more on high-level technical support and the technology director to focus fully on planning and meeting the district's strategic needs.

Appendix B contains sample job descriptions for the director of technology, technical support specialist II and technical support specialist I positions. These samples provide information regarding necessary education, experience, knowledge, skills and abilities only. Before adopting new or revised job descriptions, the district should ensure the descriptions meet all legal requirements.

Recommendations

The district should:

1. Consider replacing the working technology manager position with a working technology director position. ●
2. After hiring a technology director, consider replacing the part-time consultant with a full-time technical support specialist II position. ●
3. Consider creating and filling a full-time TOSA position when funding allows. ◒
4. Consider providing release time for multiple teachers with technical skills to help teachers integrate technology with instruction until a full- time TOSA position can be implemented. ●

5 Consider creating and filling a technical support specialist I position. ○

Documentation and Procedures

As the technology department evolves, the district will need to develop documents and procedures to effectively manage resources. The challenge is to provide the most functional, flexible technology solutions at the lowest cost. A thorough record and active management of the technology inventory is essential for planning and support and to help manage resources, comply with licensing requirements and other regulations, and manage security.

Documented procedures help technology staff improve the quality of work and reduce errors and omissions, and enable new technology staff to perform complex tasks quickly and effectively. Preparing procedures and plans in advance is essential to protect technology resources and workflow. A technology procurement process, equipment replacement plan and disaster recovery plan are essential to providing excellent technology services.

Inventory and Network Documentation

The district does not maintain an inventory of its software licenses. A software inventory tracks all licensed software including operating system, word processing, spreadsheet, database, and educational applications. An accurate inventory increases licensing compliance, improves the accuracy of budget forecasting and reduces legal risks. In addition, the technology committee can use the software inventory to make decisions about software use.

The district does not maintain an inventory of computers and peripheral hardware, which would help it track all equipment other than networking equipment. This type of inventory typically tracks computers, iPads, iPods, printers, scanners, servers, document cameras, interactive whiteboards and digital cameras and other such equipment, and includes computer specifications such as processor speed, memory and disk space. These records allow a district to assess operational capability, including classroom equipment's capability to operate multimedia applications. An accurate hardware inventory also helps a district plan for technology replacement and installation.

The district does not keep track of or inventory its networking equipment. This type of inventory includes all equipment required to provide network services such as wireless access points, switches, routers and firewalls, and like a hardware inventory it is integral to equipment replacement planning. An effective networking equipment inventory will include information such as the make, model, vendor and location, and its network configuration information such as the Internet Protocol (IP) address and applicable VLAN information. It will also include the availability of spare equipment that can be used for emergency replacement in case of equipment failure.

The district also lacks a network diagram that documents the layout of the network and equipment dependencies. A network diagram allows technology staff to identify at a glance which equipment to evaluate when a problem arises. With the networking equipment inventory, it helps technicians determine and resolve network issues faster, increasing efficiency and decreasing downtime. The network diagram can also help non-technical people understand the network design to aid in decision-making and in planning for equipment replacement.

The district does not use a technology inventory and network discovery software program to develop inventory lists. Manual compilation and reconciliation of technology assets is labor-intensive and error-prone. A central technology inventory and network discovery software program can automate this process. This type of software scans all computers and network

devices and generates a complete report about hardware and software on remote machines, and can help inventory networking equipment and build network diagrams. Many central inventory and automatic discovery software tools, such as Lansweeper and Network Inventory Advisor, are available at little or no cost.

Recommendations

The district should:

1. Create and maintain separate inventories of licensed software and computer and peripheral hardware. ○
2. Develop and maintain a separate networking equipment inventory and network diagram. ◒
3. Research and implement a centralized technology inventory and network discovery tool. ●

Technology Procurement

The district's technology purchases do not require the approval of technology staff. School sites make purchases without discussing compatibility, network resources, ongoing support costs or professional development needs with the technology staff. When these factors are not considered, purchases and projects may not achieve the desired results. A technology procurement procedure that includes review by technology department management staff can support technology objectives and reduce technology costs by ensuring that technology purchases meet the district's standards and are compatible with other technology.

Procurement procedures may vary slightly depending on a district's operating structure. One method is to have staff initiate technology purchase requests through a work order system, then have the technology staff initiate a purchase requisition. Another method is to route all technology purchase requisitions to the technology director for approval prior to issuing a purchase order.

Recommendations

The district should:

1. Develop a procurement procedure that includes technology department management staff approval for all technology purchases. ●

Equipment Replacement Plan

The district does not have a structured plan to replace equipment. An equipment replacement plan helps ensure that computer, telecommunication, network and classroom technology equipment meet acceptable standards, and that sufficient computing resources are available in computer labs, classrooms and offices. Failing to plan for aging technology leaves a district vulnerable to equipment failure and excessive maintenance costs.

A typical plan might specify replacement of desktop computers every five years and laptop computers every four years. A district's technology committee and business office can help provide the information needed to set reasonable replacement schedules.

In difficult economic times, a district can benefit from developing alternative funding sources, creating a financial reserve for equipment replacement, researching ways to replace aging technology with new and lower cost technologies, including consolidating devices and transitioning to mobile technologies. For example, funding from a 15% surcharge on every purchased computer or mobile device, as program restrictions allow, can be combined with electronic waste recycling event proceeds and other fundraising efforts to replace computers and mobile devices on a schedule determined by the district. The industry standard is to shorten the replacement cycle due to rapid improvements in technology and the lower cost of hardware.

Recommendations

The district should:

1. Develop a technology replacement plan to ensure that sufficient computing resources are available throughout the district. ◒
2. Develop alternative funding sources and create a replacement reserve. ○
3. Replace aging technology with cost-effective emerging technology. ◒

Disaster Recovery Plan

The district backs up crucial data with a hosted backup service using a Barracuda system. This is crucial to protecting the district's data in the event of a natural disaster or other emergency that causes downtime.

In addition to ensuring that data is recoverable, an effective disaster recovery plan helps a technology department maintain, resume and recover systems to continue district and school operations. To develop a disaster recovery plan, it is necessary to determine which systems are vital and develop a list that prioritizes recovery efforts in case of disaster.

For example, because the district's SIS and financial systems are both vital and are both hosted outside of the district, the priority in a disaster would be to recover the Internet access needed to use these resources. The amount of time required to recover from equipment or data loss is just as important as backup recovery. Regular testing and independent auditing of the disaster recovery plan is important.

It is best practice to conduct both functional and full-scale testing that covers all portions of the disaster recovery plan at least once per year. This includes test objectives, scripts, schedules and subsequent review of test results.

Recommendations

The district should:

1. Develop a disaster recovery plan in case of data and/or equipment loss. ◒
2. Perform functional and full-scale testing of the disaster recovery plan no less than once per year. ◒

Appendices

Appendix A

Sample Organizational Charts

Appendix B

Sample Job Descriptions

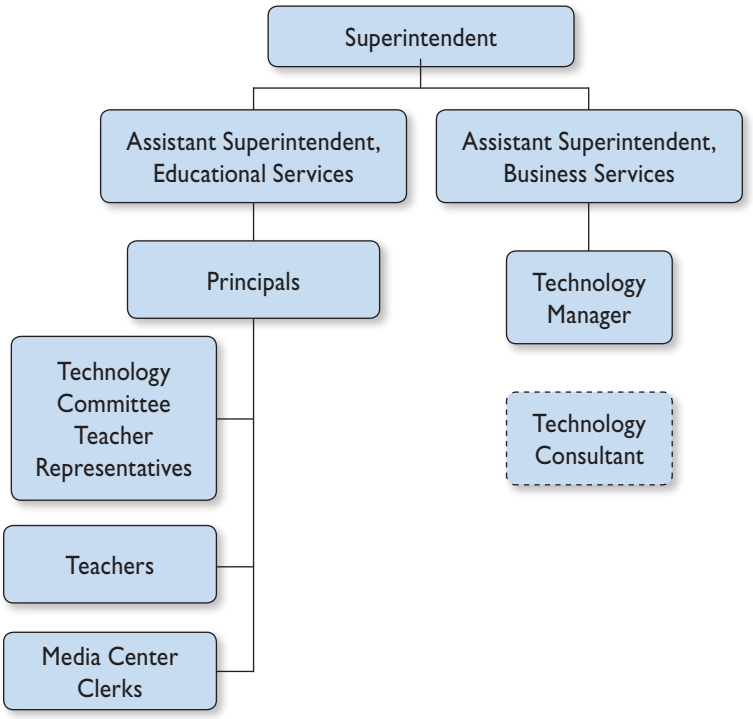
Appendix C

Study Agreement

Appendix A

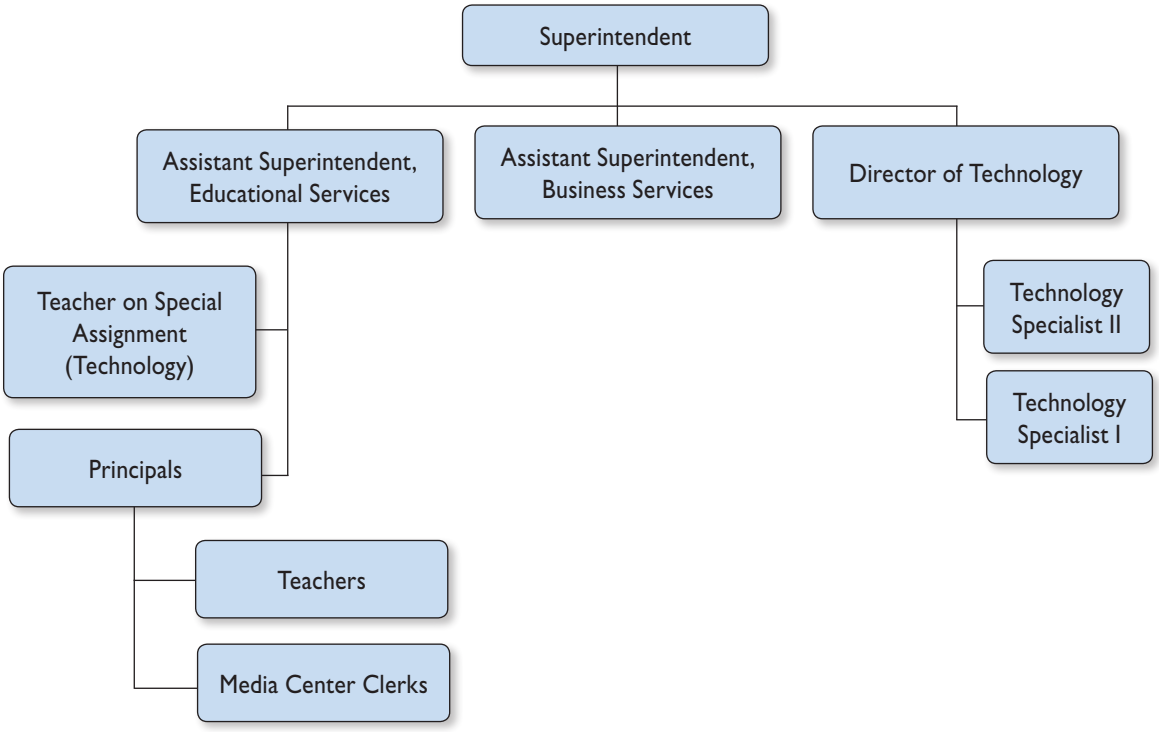
Sample Organizational Charts*

Current Technology Organization



*Organizational charts only contain positions addressed in the report.

Proposed Future Organization



*Organizational charts only contain positions addressed in the report.

Appendix B

Sample Job Descriptions

Technology Director

Technical Support Specialist II

Technical Support Specialist I

These samples provide information regarding necessary education, experience, knowledge, skills and abilities only. Before adopting new or revised job descriptions, the district should ensure the descriptions meet all legal requirements.

Director, Information and Technology Services
Sample Job Description

DESCRIPTION:

Under the general direction of the Superintendent, assumes primary management responsibility for the Information and Technology Services Department (ITS); ensures efficient delivery of information services and technology resources for users district-wide; provides network and server system support when necessary and performs other essential job-related work as required. The fundamental objective of this position is to ensure that technology efforts are consistent with the overriding objective of the district. This is a hands-on technology management position.

REPRESENTATIVE DUTIES:

The following are examples of duties related to this position:

1. Plans, organizes, leads, directs, develops, and monitors all aspects of the ITS Department.
2. Directs, supervises, coordinates, leads, supports and formally evaluates the performance and effectiveness of ITS Department employees;
3. Directs and facilitates ongoing districtwide needs assessment and development of technology implementation plan to ensure delivery of efficient and effective day-to-day and ongoing information system and technology services districtwide.
4. Oversees, develops, and implements the district plan for information systems and technology. Sets policy for the purchase and repair of computers, peripherals, and audiovisual equipment.
5. Directs, facilitates, and monitors information system implementation efforts to ensure that the Department keeps pace with day-to-day and future needs. Assures compliance with graduation requirements. Guides and assists departments and sites in the development of appropriate educational technology implementation and curriculum.
6. Maintains frequent group and one-on-one communication and works in a collaborative manner with department directors and other administrators and professionals districtwide to facilitate decision making and problem solving in the area of computers and technology services and assessment.
7. Oversees progress toward objectives relating to migration and other project management efforts.
8. Oversees the management of the interconnection of operating systems, desktop computer applications, network protocols, and mainframe applications.
9. Reviews, monitors, and facilitates negotiations with vendors and agencies to provide cost-effective resources in terms of day-to-day demands and longer term goals and objectives.
10. Complies with applicable state, local, and federal rules, regulations, and laws, as well as the policies and procedures of the district.
11. Establishes and maintains effective working relationships with a variety of groups,

including teachers, students, administrators, coworkers, vendors, consultants, and others as required.

12. Demonstrates and models safe, prudent, and healthful work behaviors and practices; identifies and works toward the elimination of unsafe or unhealthful work area conditions.
13. Supports the district's LAN, WAN and Wireless networks and servers to ensure service availability and user accessibility.
14. Performs other essential job-related work as required.

QUALIFICATIONS

Education and Experience

A Bachelor's degree in Business Administration, Management Information Systems, Computer Science or related field, or the equivalent work-related experience.

Five years of progressively responsible experience in the operations and support of computer information systems, network design, telecommunication systems, maintenance, system analysis and troubleshooting of information technology hardware and software in an education setting or similar sized organization. Three years of management experience.

Certifications, such as MCSA (Microsoft Certified Systems Administrator), CCNA (Cisco Certified Network Associate), preferred

KNOWLEDGE, SKILLS, AND ABILITIES
Typical qualifying knowledge, skills, and abilities would include:

Knowledge, skills, and abilities in the area of information systems and technology resources; principles, practices, and languages used in communication oriented computer systems and programming; the capabilities, capacities, and limitations of computers and peripheral equipment; comparative equipment, planning, and cost control; principles and practices of accounting, statistics, and school district organization, activities, and requirements; principles of administration, human resource administration, departmental budgeting, supervision, and training.

TECHNICAL SUPPORT SPECIALIST II
Sample Job Description

DESCRIPTION:

Under general supervision, serve as a senior technical resource to install, troubleshoot, and maintain District information technology systems, respond to and resolve problems and train staff on the use of equipment and software. This is a customer service position requiring both strong technical skills and excellent communication abilities.

REPRESENTATIVE DUTIES:

- Build and deploy software images and application packages utilizing enterprise deployment tools.
- Work with vendors as needed for support and repair of district systems.
- Troubleshoot and resolve system wide problems and conduct detailed failure analysis and implement improvements to increase system uptime and performance.
- Troubleshoot networking, hardware and software problems on servers, desktops, laptops, netbooks, smartphones, tablets and other devices; maintain systems, cables, and peripheral devices.
- Troubleshoot intermediate and advanced network issues relating to device access to the Local Area Network (LAN), Wide Area Network (WAN) and Internet; monitor access to network resources and network performance.
- Assist department staff and users in resolving issues related to services provided by the technology department.
- Train department staff and users on proper use of the systems, the network and software applications.
- Maintain records and logs related to the installation, configuration and inventory of equipment and software.
- Maintain current knowledge of technological advances and industry trends by attending conferences, in-services, workshops and training by the District and outside sources.
- Install, configure and maintain Directory Services, Print Services, Network Services and other services related to providing Internet and network access to users.

- Research, recommend and complete requisitions for technical product purchases.
- Participate in the district's IT planning and design processes.
- Other duties as assigned.

KNOWLEDGE AND ABILITIES:

KNOWLEDGE OF:
Desktop Management and Imaging solutions
Server Operating Systems
Microsoft Group Policy, Active Directory, DNS, DHCP and DNS Services
Wide Area Network protocols and routing
Microcomputers and network systems.
Hardware and software configurations.
Stand alone and network operating systems.
Basic network management.
Inventory and documentation practices.
Network cabling.
Organizational skills.
General technical terminology.
Basic arithmetic.

Current methods, practices and procedures involving the use of the computer technology and related equipment.

ABILITY TO:
Quickly learn new systems
Perform advanced configuration of desktops and servers
Monitor computer systems and networks for performance and capacity planning needs
Learn and effectively use hardware and software specific to District needs.
Read, interpret and apply technical information from publications, manuals and other documentation.
Train or assist in providing training to end users.
Troubleshoot hardware, software and advanced network problems.
Work independently with minimum supervision.
Communicate effectively both orally and in writing.
Establish and maintain cooperative and effective working relationships with others.

EDUCATION AND EXPERIENCE:

Associate Degree in a computer related field and five years network and system administration experience in an education environment.

LICENSES or Certificate:

Valid California driver's license

Must hold two or more of the following certifications:

- A+ Certification
- CompTIA Network+ Certification
- Microsoft Certified Professional (MCP)
- Microsoft Certified Systems Administrator (MCSA)
- Microsoft Certified IT Professional (MCITP)
- Microsoft Certified Systems Engineer (MCSE)
- Certified Cisco Network Associate (CCNA)
- Certified Cisco Network Professional (CCNP)

TECHNICAL SUPPORT SPECIALIST I
Sample Job Description

DESCRIPTION:

Under general supervision, serve as a technical resource to install, troubleshoot, and maintain hardware and software on District computer systems, respond to problems and train staff on the use of equipment and software. This is a customer service position requiring both strong technical skills and excellent communication abilities.

REPRESENTATIVE DUTIES:

- Install, configure and maintain a variety of multi-vendor hardware and software in network and stand alone environments.
- Troubleshoot network problems involving printing, network user accounts, application access, device communication, and resource utilization.
- Troubleshoot networking, hardware and software problems on desktops, laptops, netbooks, smartphones, tablets and other devices; maintain systems, cables, and peripheral devices.
- Troubleshoot basic network issues relating to device access to the Local Area Network (LAN); assign user access to network resources.
- Assist users in resolving issues related to services provided by the technology department.
- Train users on proper use of the systems, the network and software applications.
- Maintain a hardware and software inventory as assigned; assist in maintaining inventory of network equipment, parts and supplies.
- Maintain current knowledge of technological advances and industry trends by attending conferences, in-services, workshops and training by the District and outside sources.
- Install and maintain Internet and wireless network access.
- Research, recommend and complete requisitions for technical product purchases.
- Assist in the installation or repair of network cabling and hardware.
- Other duties as assigned.

KNOWLEDGE AND ABILITIES:

KNOWLEDGE OF:
Microcomputers and network systems.
Hardware and software configurations.
Stand alone and network operating systems.
Basic network management.
Inventory and documentation practices.
Network cabling.
Organizational skills.
General technical terminology.
Basic arithmetic.

Current methods, practices and procedures involving the use of the computer technology and related equipment.

ABILITY TO:
Learn and effectively use hardware and software specific to District needs.
Train or assist in providing training to end users.
Troubleshoot hardware, software and basic network problems.
Work independently with minimum supervision.
Communicate effectively both orally and in writing.
Establish and maintain cooperative and effective working relationships with others.

EDUCATION AND EXPERIENCE:

Graduation from high school and two years PC hardware and software experience in a network environment.

LICENSES or Certificate:

Valid California driver's license

Must hold one or more of the following certifications:

- A+ Certification
- CompTIA Network+ Certification
- Microsoft Certified Professional (MCP)
- Microsoft Certified Systems Administrator (MCSA)
- Certified Cisco Network Associate (CCNA)

Appendix C

Study Agreement

FCMAT
FISCAL CRISIS & MANAGEMENT ASSISTANCE TEAM
CSIS California School Information Services

FISCAL CRISIS & MANAGEMENT ASSISTANCE TEAM
STUDY AGREEMENT
AMENDED APRIL 20, 2012

The FISCAL CRISIS AND MANAGEMENT ASSISTANCE TEAM (FCMAT), hereinafter referred to as the Team, and the Perris Elementary School District, hereinafter referred to as the District, mutually agree as follows:

1. BASIS OF AGREEMENT

The Team provides a variety of services to school districts and county offices of education upon request. The District has requested that the Team provide for the assignment of professionals to study specific aspects of the Perris Elementary School District operations. These professionals may include staff of the Team, County Offices of Education, the California State Department of Education, school districts, or private contractors. All work shall be performed in accordance with the terms and conditions of this Agreement.

In keeping with the provisions of AB1200, the County Superintendent will be notified of this agreement between the District and FCMAT and will receive a copy of the final report. The final report will be published on the FCMAT website.

2. SCOPE OF THE WORK

A. Scope and Objectives of the Study

The scope and objectives of this study are to:

1. Review the District's organizational structure for delivery of technology support services and make recommendations for improvement.

2. Review the District's staffing for delivery of technology support services and make recommendations for improvement.

2.1 AMENDED SCOPE OF THE WORK, APRIL 20, 2012

1. Review the District's organizational structure for delivery of technology support services and make recommendations for improvement.

2. Review the District's staffing for delivery of technology support services and make recommendations for improvement.

3. Review the District's delivery of instructional technology support services and make recommendations for improvement.

4. Review the District's delivery of administrative technology support services and make recommendations for improvement.

B. Services and Products to be Provided

Orientation Meeting - The Team will conduct an orientation session at the District to brief District management and supervisory personnel on the procedures of the Team and on the purpose and schedule of the study.

On-site Review - The Team will conduct an on-site review at the District office and at school sites if necessary.

1. Exit Report - The Team will hold an exit meeting at the conclusion of the on-site review to inform the District of significant findings and recommendations to that point.

2. Exit Letter - The Team will issue an exit letter approximately 10 days after the exit meeting detailing significant findings and recommendations to date and memorializing the topics discussed in the exit meeting.

3. Draft Reports - Electronic copies of a preliminary draft report will be delivered to the District administration for review and comment.

4. Final Report - Electronic copies of the final study report will be delivered to the District administration following completion of the review. Written copies are available by contacting the FCMAT office.

5. Follow-Up Support – Six months after the completion of the study, FCMAT will return to the District, if requested, to confirm the District's progress in implementing the recommendations included in the report, at no cost. Status of the recommendations will be documented to the District in a FCMAT Management Letter.

3. PROJECT PERSONNEL

The study team will be supervised by Anthony L. Bridges, CFE, Deputy Executive Officer, Fiscal Crisis and Management Assistance Team, Kern County Superintendent of Schools Office. The study team may also include:

A. Andrea Alvarado ***FCMAT Management Analyst***

B. Andrew Prestage	***FCMAT Management Analyst***
C. To Be Determined	***FCMAT Technology Consultant***

Other equally qualified consultants will be substituted in the event one of the above noted individuals is unable to participate in the study.

4. PROJECT COSTS

The cost for studies requested pursuant to E.C. 42127.8(d)(1) shall be:

A. $500.00 per day for each Team Member while on site, conducting fieldwork at other locations, preparing and presenting reports, or participating in meetings.

B. All out-of-pocket expenses, including travel, meals, lodging, etc. The District will be invoiced at actual costs, with 50% of the estimated cost due following the completion of the on-site review and the remaining amount due upon acceptance of the final report by the District.

Based on the elements noted in section 2 A, the total cost of the study is estimated at $7,500.

C. Any change to the scope will affect the estimate of total cost.

4.1 AMENDED PROJECT COSTS

Due to changes to the scope of work, the total cost of the study is amended to $9,500.

Payments for FCMAT services are payable to Kern County Superintendent of Schools - Administrative Agent.

5. RESPONSIBILITIES OF THE DISTRICT

A. The District will provide office and conference room space while on-site reviews are in progress.

B. The District will provide the following (if requested):

1. A map of the local area
2. Existing policies, regulations and prior reports addressing the study request
3. Current or proposed organizational charts
4. Current and two (2) prior years' audit reports
5. Any documents requested on a supplemental listing
6. Any documents requested on the supplemental listing should be provided

to FCMAT in electronic format when possible.

7. Documents that are only available in hard copy should be scanned by the district and sent to FCMAT in an electronic format.
8. All documents should be provided in advance of field work and any delay in the receipt of the requested documentation may affect the start date of the project.

C. The District Administration will review a preliminary draft copy of the study. Any comments regarding the accuracy of the data presented in the report or the practicability of the recommendations will be reviewed with the Team prior to completion of the final report.

Pursuant to EC 45125.1(c), representatives of FCMAT will have limited contact with pupils. The District shall take appropriate steps to comply with EC 45125.1(c).

6. PROJECT SCHEDULE

The following schedule outlines the planned completion dates for key study milestones:

Orientation:	***to be determined***
Staff Interviews:	***to be determined***
Exit Interviews:	***to be determined***
Preliminary Report Submitted:	***to be determined***
Final Report Submitted:	***to be determined***
Board Presentation:	***to be determined***
Follow-Up Support:	***If requested***

7. CONTACT PERSON

Name of contact person: Julian Malotti, IT Manager

Telephone: (951) 657-3118 x16 FAX: _____

E-Mail: julian@perris.k12.ca.us

_____

Vincent Ponce, Superintendent — Date
Perris Elementary School District

March 15, 2012

Anthony L. Bridges, CFE — Date
Deputy Executive Officer
Fiscal Crisis and Management Assistance Team

APPROVAL OF AMENDMENT DATED APRIL 20, 2012

4/23/12

Vincent Ponce, Superintendent — Date
Perris Elementary School District

April 20, 2012

Anthony L. Bridges, CFE — Date
Deputy Executive Officer
Fiscal Crisis and Management Assistance Team

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