

# **Cypress School District**

Technology Review August 22, 2011

> Joel D. Montero Chief Executive Officer



#### Fiscal Crisis & Management Assistance Team



### **CSIS** California School Information Services

August 22, 2011

Beverley M. Hempstead, Superintendent Cypress School District 9470 Moody Street Cypress, CA 90630

Dear Superintendent Hempstead:

In May 2011, the Cypress School District and the Fiscal Crisis and Management Assistance Team (FCMAT) entered into an agreement to provide a review of the district's technology services.

Specifically, the agreement states that FCMAT will perform the following:

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

This final report contains the study team's findings and recommendations.

FCMAT appreciates the opportunity to serve the Cypress School District and extends thanks to all the staff of the district for their cooperation and assistance during fieldwork.

Sincerely,

Joel D. Montero Chief Executive Officer Fiscal Crisis & Management Assistance Team

### FCMAT

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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.



## **Studies by Fiscal Year**

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.

#### ABOUT FCMAT

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

Cypress School District is a small suburban elementary district serving approximately 3,952 students grades K-6 in six elementary schools. The district's vision for educational technology is to ensure that students are prepared to be lifelong learners in an information-based, interactive society. To meet this goal, the district will continue to develop and expand teaching and learning strategies by maximizing the use of technology in its schools. High levels of technology resources will serve as the foundation to help achieve the district's instructional goals and support student mastery of the California state content and performance standards.

The district is implementing technology projects that will have major effects throughout the organization and provide a significant opportunity to make procedural, operational and functional changes in the way technology functions to meet ongoing academic challenges.

In May 2011, the district entered into a study agreement with the Fiscal Crisis and Management Assistance Team (FCMAT) for a technology review. The review's objectives are to provide a detailed report that analyzes the district's current technology issues and technology use and that provides recommendations regarding the organization and staffing of the district's technical services, assessment and evaluation, and educational technology departments.

The study agreement specifically requests that FCMAT perform the following:

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

## **Study Team**

The study team was composed of the following members:

Andrew Prestage FCMAT Management Analyst Bakersfield, CA Stephen Carr\* Chief Technology Officer Ventura County Office of Education Camarillo, CA

Steve Thornton\* Director of Technology Menifee Unified School District Menifee, CA John Lotze 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.

## **Study Guidelines**

FCMAT conducted interviews in June 2011 at the Cypress School District administrative offices. FCMAT completed the information discovery for this assessment through a two-day series of interviews with the superintendent, assistant superintendent, technology staff, teachers, and school staff. Documentation regarding the district's educational plan, systems information, and application and operating software and compliance information were reviewed and discussed as part of the interview process. The district's 2011-14 technology plan provided information about the district's vision for technology.

The report is divided into the following sections that cover the major areas of technology planning, management, and support. Each section also includes recommendations that management can use to prioritize projects.

- I. Executive Summary
- II. Organizational Structure
- III. Technology Support
- IV. Instructional Technology
- V. Administrative Technology Services
- VI. Network Infrastructure and Performance

## **Executive Summary**

To realize the benefits of technology, schools must develop a technology department that can plan for integrating technology into the curriculum and improve the district's academic program. The Cypress School District's technology department is positioned to successfully deliver technology to the classroom and has a goal of expanding and improving technology support services. However, the district is struggling to keep pace with a rapidly increasing demand for technical support for technology in schools and district offices. Staff are enthusiastic about the prospect of meeting the technology demands but are challenged with limited personnel, lack of technical leadership and reduced financial resources.

The district's technology services department performs a wide range of technology-related duties and functions but was not originally designed to fully support instructional technology and lacks capacity in this increasingly demanding area.

The department's staffing would normally be adequate to support the district's needs but has been impeded by budget reductions, deficiencies in leadership, a large volume of fast-paced projects as the result of bond funding, a lack of vision, insufficient organization of workflow, and a lack of both professional development and communication. The department reports to the district's administrative director of educational services, who has many other responsibilities and is not an information technology specialist. The district should create and fill a technology director position to provide for dedicated management and leadership of this department.

The district's educational technology team meets monthly to evaluate progress in implementing the district's technology plan. However, the district lacks an overarching vision for technology.

Two technology support technicians are assigned to schools but often conduct repairs at the technology office rather than at school sites. Staff report inconsistent technology support, long delays and a lack of clarity regarding resolutions. Technology support staff should work at school sites on a regular schedule and be accountable to site administrators for work performed. In addition, remote desktop control software should be used widely, including by teachers and staff outside the technology department who have technology support roles.

Technology users receive little professional development regarding technology. A more systematic implementation, support and training plan is needed for all technology implemented.

The technology department's intention is to provide and support reliable technologies; however, users perceive the department as seeking reasons to deny new ideas and requests. The district should form a technology steering committee composed of both technology staff and users to foster better communication and understanding and resolve issues. The district should also allow all computer users to request support directly rather than limiting this function to administrators, technology lead teachers and secretaries.

The district has no structured districtwide processes for reviewing, approving or standardizing educational software. The district needs such a process to ensure successful implementation, support and training. The district has not analyzed its technology plan to determine specific technology needs, and educational software standards are not discussed at meetings. The district should establish a committee under the leadership of the technology director to regularly discuss the integration of technology into the curriculum.

The district implemented a new student information system (SIS) in 2009-10 and has transitioned successfully to it, but there is some confusion regarding whether it is to serve as the

#### EXECUTIVE SUMMARY

district's assessment system. The district needs a separate, complete assessment system that interfaces with the SIS.

Answers to questions regarding SIS use are provided by the SIS department leader rather than by the SIS analysts, and this has resulted in miscommunication. The analysts should provide answers to such inquiries. The district hosts its own website and all updates are done by one staff member. The district should pursue a hosted website solution that allows a variety of staff to update content.

Teachers and administrators expressed frustration that some educational sites are blocked by the district's internet filter. This is not uncommon but the district should implement a process for teachers to request access to specific sites.

The district does not use enterprise tools to manage its network hardware and infrastructure, and its internet bandwidth is not sufficient to meet known future instructional and administrative technology needs. Staff have requested wireless access and modernization projects provide for this, but the district has not yet established this connectivity. The district should use professional tools to manage its network, contract for a complete audit of its network infrastructure, and work to increase the bandwidth of its network and internet connections, including wireless connections, to meet future needs. The district should also develop a policy regarding the use of mobile devices on its wireless networks.

## **Organizational Structure**

School district technology departments must support three areas of technology: administrative or business systems; classroom and instructional technology; and data management or assessment and accountability.

Support for administrative and business systems includes the network and infrastructure, servers, hardware and system software needed to maintain functional administrative, financial and student information systems. Support for these systems is divided between hardware and systems software. Technicians usually specialize in a specific system and hardware.

The district's technology services department consists of a full-time lead technician, two full-time computer technicians and a two-hour per day clerical staff position. The department currently reports to the administrative director of educational services, whose other responsibilities include special education, categorical programs, curriculum and instruction, the district's student information system, and special projects.

The technology services department is responsible for maintaining the district's servers and other services including, but not limited to, the following:

- E-mail; file and print services
- Web presence
- Help desk
- Specialized applications
- Network components and access
- Desktop computers
- Laptops
- Network printers and other peripherals
- SMART boards
- Pupil response systems
- Projectors and document cameras
- Voice over Internet protocol (VoIP) telephone systems, including configuring extensions and voicemail accounts
- Bells, clocks and paging systems
- Technology purchasing
- Energy management system
- Closed-circuit TV security system
- Setting technology standards
- · Audio-visual support, including sound system setup for meetings and events

- E-Rate
- Modernization planning and implementation for facilities

From its inception, the technology services department was assigned to support network infrastructure, administrative technology and hardware systems. As the district has implemented instructional, accountability and assessment technology, it has usually purchased equipment and software in a centralized manner; however, school sites and some departments research, order, purchase and sometimes install equipment and software without consulting or coordinating with the technology department. This is inconsistent with district policies and has resulted in software products that are incompatible with existing equipment and technology that staff cannot maintain.

The department's current staffing level would ordinarily be adequate to support this six-site, 4,000-student school district, but success has been impeded by deficiencies in leadership, including the absence of a clear technology support vision; unsupportable project volume and implementation pacing; insufficient organization of department roles and workflow; insufficient professional development for users; and a lack of communication between the technology support department and the users it serves.

The administrative director of educational services position, to which the technology services department reports, is not an information technology specialist and has numerous other critical and strategic educational responsibilities unrelated or only peripherally-related to integrating technology into curriculum and providing adequate technology resources to support district operations. As such, leadership in the delivery of technology services and its successful integration into the curriculum and into district operations is fragmented and less than optimal.

The district's current organizational structure has been sufficient to support technology in the past; however, integrating hardware and software changes into the classroom now require a more technical focus to meet the state's demanding academic requirements. The technology services department's staffing and staff skill sets are also not optimized to meet the district's technology needs and goals. The district has a significant opportunity to upgrade its technology services department to help create efficiencies that will streamline services to schools and departments while maintaining a consistent high quality of service.

Below is the district's current administrative organizational chart, followed by a proposed new organizational chart that includes a new director of technology position.

Cypress School District Current Administrative Organizational Chart



Cypress School District Proposed Administrative Organizational Chart



Although many school districts organize their technology departments differently, most technology departments report to a position at the assistant superintendent or administrative level. The organizational structure normally includes a senior position such as director of technology (also known as the chief technology officer), which supervises department staff and requires at least a bachelor's degree in computer science or a related field.

Chief technology officers (CTOs) are district technology leaders who are responsible for technology that is both increasingly complex and increasingly integrated into daily instructional and administrative functions. CTOs are known by many titles, including chief information officer and technology director.

Having such a position would enable the district to better maintain a vision for technology and increase support for instructional technology, including support for teachers, teachers on special assignment (TOSAs), and lead technology teachers. The district would also benefit from having this position be responsible for coordinating with other district administrators, serving as

#### ORGANIZATIONAL STRUCTURE

a liaison to the bond committee, managing the technology department budget, and evaluating technology staff. The proposed position should identify the specific competencies and knowledge needed to be a viable CTO.

## **Recommendations**

The district should:

- 1. Create a new position titled Director of Technology, the role of which be to set and maintain technology vision; work with teachers to integrate technology into the curriculum; coordinate with other district administrators; act as a liaison to the bond committee; manage the technology department budget; and evaluate technology staff.
- 2. Keep the technology services department within the instructional services division, while reporting to the administrative director of educational services.

## **Technology Support**

Technology services department staff are appropriately focused on system security, equipment and software standardization and the sustainability of all technology implementations. Each school has a technology lab with 35 computers, and all classrooms have teacher computers connected to SMART boards (interactive whiteboards) that enable classroom teachers to regularly integrate technology into their educational program. Students and teachers have Internet access in their classrooms; connections to the district's wide area network (WAN) are made using T-1 lines and one category 5 cable drop in each classroom that has not yet been modernized (more in modernized classrooms). According to the 2008 California School Technology Survey and district information regarding recent modernization, the district has a districtwide studentto-computer ratio of approximately 10:1 for newer computers (less than four years old).

The district's educational technology team meets monthly to evaluate progress in achieving the goals of the district's education technology plan. The current state of the district's infrastructure is evaluated and purchase recommendations are made in accordance with this plan.

However, the district lacks an overarching vision for its technology services department. Best practices include developing such a vision in close concert with the district's larger educational vision and ensuring that it can be articulated easily by technology staff and users.

## **Project Volume and Pacing**

The volume and number of technology projects scheduled is overwhelming given the limited number of technology personnel. Many scheduled projects are directly related to facilities modernization projects funded by the district's general obligation bond. Other projects are operational necessities such as desktop computer maintenance and reimaging, software upgrades, directory cleanup and server patching. It is not possible for the existing staff to complete all the projects and provide adequate technology support to users.

### **Roles and Workflow**

Two technology support technicians are assigned to provide technology support to the schools. This level of staffing has been in place for several years, during which time the number of computers has doubled and the district passed a general obligation bond to modernize schools.

The bond initiative has added significantly to the existing technology infrastructure, including the deployment of SMART boards, pupil response systems and document cameras at all modernized school sites. The SMART boards have proven to be particularly burdensome, with one of the two technicians now reportedly spending 80% of their time maintaining, repairing and deploying these devices.

Site staff report inconsistent support from the technology services department, long delays responding at times, and a lack of clarity when a problem has been resolved. Computer repairs are often conducted at the district technology office instead of on site. The department lacks a production client reimaging system and makes limited use of remote desktop control systems. Security updates are downloaded from the Internet and systems are reimaged manually, which are slow processes. Technology services staff conduct device troubleshooting and repair to the component level, which can reduce equipment replacement costs but requires a significant amount of time.

#### TECHNOLOGY SUPPORT

Reassigning technicians to provide more regular support at the school sites would help improve effectiveness, ensure that limited support resources are used optimally, and increase trust and partnership between technology support services and the school sites.

In addition, the use of a remote desktop control system by a wide variety of staff who have technology support roles could extend the district's capacity to provide timely support to users and encourage users to support one another and share best practices.

### **Professional Development for Users**

The district's technology users receive little professional development in the area of technology. Effective professional development can help reduce the need for technology support. Systematically planning and implementing professional development for every new software or hardware deployment is a best practice. Effective models of professional development make full use of the various resources available across different district departments and from vendors. Professional development regarding technology can be combined with professional development for curriculum and instruction and other departments to take full advantages of limited resources.

The district provides a stipend for certificated staff who serves as their school's technology lead teacher. At some schools the position and stipend are shared by two certificated staff. The technology lead teachers provide first-level technology support on campus, submit support tickets to the technology services department for issues they can't resolve, and may also help their colleagues become more proficient users of classroom technologies.

Technology lead teachers are not always the most proficient technology users; sometimes they are assigned based on their willingness to serve, without regard to their specific skills. The focus of the position is in the provision of initial technical support.

### Communication

There is a consistent difference between the technology services department's intentions and how its efforts are perceived by many users, including teachers, principals, secretaries and others. Technology support focuses on ensuring that it can provide and support reliable and sustainable technologies. However, the perception among users is that the department looks for reasons to deny new ideas and requests. Thus, regardless of whether the perception is accurate, innovation is discouraged.

This perception may be attributed to the fact that there are too many support requests for the technology services staff to manage effectively. Response times currently range from a few hours to a week for most issues.

Because instructional technology was not a focus of the technology services department when it was formed or historically, support services staff sometimes lack the vocabulary and techniques to discuss curriculum issues related to technology and interact successfully with teachers and other school staff. Additional professional development training could help increase skills in this area.

Forming a technology steering committee composed of both technology staff and technology users is an effective industry-standard practice that can help alleviate these communication issues and reduce misunderstandings. Such committees typically develop vision and mission statements that help guide the technology department's actions and help to encourage positive working relationships between technology staff and technology users. Such statements can also express and foster an understanding that educational technologies have become so extensive that it is not possible for the technology department to support all possible technologies, even though they may have value.

The committee can also help determine which technologies should be supported, which should be allowed but not supported, and which should be avoided because their costs outweigh their benefits. Rather than denying a request to support a particular technology out of hand, technology department leaders could meet with the technology steering committee to determine the impact that implementing a new idea might have on existing initiatives and decide together whether the environment supports its incorporation now, later or not at all. For example, the district may not be ready to deploy and support tablet devices for staff and students districtwide, but it may be ready to allow selected special education staff to receive training so that they can support the installation and use of iPads in specific classroom environments. In this case, the role of technology support could be limited to inventorying the devices and ensuring that staff have appropriate access to wireless network resources.

Administrators, technology lead teachers and secretaries are the only staff authorized to contact the technology services department to request support. A more effective practice would be to allow any computer user to call the help desk for remote desktop support and just-in-time professional development, use a technology knowledgebase for self-help, or submit a support ticket via e-mail. This approach gives users a voice and allows for direct feedback regarding a possible resolution while collecting more accurate data that can be used to analyze support trends, track persistent equipment failures, determine professional development needs, and discover what systemic adjustments may lead to greater efficiency and higher quality of service.

## Recommendations

The district should:

- 1. Engage technology services staff to work with representatives of the district's technology users to form a standing technology steering committee whose initial task will be to develop a fully articulated technology support vision and mission statement that will guide the department's actions, encourage positive working relationships, and help foster a better understanding of which technologies are feasible and which are not.
- 2. Review bond project goals in light of available technical and professional development capacity, and consider extending or adjusting some goals, such as the implementation of a pupil response systems and SMART boards.
- 3. Consider outsourcing to a qualified consultant or contractor any one-time system upgrade projects that are initially time-consuming but that offer immediate benefits in terms of system reliability, availability and efficacy. Examples include Active Directory domain upgrades, switch configuration changes to accommodate VoIP integration, CCTV server installation, and wireless controller configuration.
- 4. Reassign the lead technician and site computer technicians to accomplish the following:
  - a. Ensure that so that one full-time equivalent position (FTE) serves as in-office help desk technician providing telephone and remote desktop

support, second-level support to site technicians, support of district office operations, asset management and project coordination.

- b. Ensure that two FTEs serve as school site technicians, with three school sites assigned sites each FTE. Site technicians should report to and work at each of their three sites at least once each week and should rely on remote desktop access software to provide virtual support to all of their sites throughout the work week. Technicians should report to the school secretary or administrator at the beginning and end of their shift, provide the school site administration with an open ticket summary at the beginning of the day, and seek guidance from the school secretary or administrator regarding their immediate support priorities.
- 5. Encourage all technology users to contact technology support services directly rather than relying on technology lead teachers, administrators or secretaries.
- 6. Ensure that technology services staff avoid component-level troubleshooting and repair, and instead outsource warranty repair over the first four years of equipment life followed by module-level troubleshooting and repairs of nonwarranted devices that have sufficient value to the district.
- 7. Invest in a computer reimaging system such as Altiris, LANDesk, K-Box, Fog, Ghost or a similar solution to quickly refresh desktop system configurations to avoid time-consuming troubleshooting, slow security updates downloaded from the Internet and manual system reimaging.
- 8. Install a free remote desktop control agent such as one of the many virtual network computing (VNC) packages, and encourage the use of this powerful tool by all technology support providers both within and outside the technology services department, including the following:
  - TOSAs
  - Lead technology teachers
  - Student information system (SIS) data analysts
  - User experts
  - Other users who assist their colleagues in the area of technology
- 9. Abandon the current technology lead teacher program and instead select a teacher on each campus who can model instructional strategies and approaches to integrating technology into the curriculum and who is given release time to work with colleagues to build and execute technology-enriched lessons.

These special teachers should be provided with tools and increased network access to enable them to more effectively support their colleagues. They should neither provide technical support nor have any role in managing their colleagues' technology support needs. Their sole focus should be in the development of technology integration through direct assistance and modeling best practices.

10. Provide professional development training for technology services staff to help them increase their knowledge of curriculum issues and educational technology and thus improve interactions with teachers and other school staff.

## Instructional Technology

The district's 2011-14 technology plan, staff interviews and other documentation indicate that the district is having difficulty keeping pace with the rapidly increasing demand for technology support both in its schools and at its district office. Budget reductions over the past few years and a lack of staff in the technology department have resulted in unacceptably low levels of service.

The district has no structured districtwide processes for reviewing, approving or standardizing educational software. A wide variety of software is used throughout the district; however, choices need to be limited or prioritized to ensure successful implementation, technical support and staff development for these applications. The district has no structured plan for providing ongoing professional development regarding classroom technologies or software, including existing SMART boards and interactive response systems. Models for staff development related to technology vary depending on available time and resources, but it has become a common practice in the industry to dedicate 25% of any new technology budget to professional development.

The district's technology plan has not been developed or analyzed to determine the hardware needs of each site, and the district has not established baseline standards for hardware and software for schools, classrooms and computer labs. The district also does not have formal policies regarding instructional and administrative software.

The district has not consistently held meetings to coordinate educational software standards. Meetings are held but often consist of discussions of technical issues at the sites or district office or as a result of the aggressive facilities modernization schedule. Rarely have meetings included representation from all involved parties with open discussion of how technology should be incorporated into the curriculum. A best practice is, under the leadership of a technology director, to form a committee that includes teachers, administrators and technology department staff to regularly discuss and establish standards for software that can be supported by the department, integrated into curriculum and adhere to legal licensing. Initially, monthly meetings would be a best practice, then quarterly meetings once standards have been established. Communicating the results of these meetings and the software curriculum and standards to the school sites during regular site staff meetings and posting them on the district's website would improve communication, understanding and adherence to standards.

Funds from its successful bond initiative have allowed the district to add some significant hardware and infrastructure over the past two years. Because of the aggressive time line and coordination with the modernization schedule, the district has not been able to ensure that all teachers have received adequate training on the use of the SMART boards or interactive response systems.

The SMART boards have been installed in all classrooms that have been modernized, and approximately 20 classroom sets of student response systems are in place. Although 70 percent of the district's teachers regularly use the SMART boards, they are typically used for teacher-led classroom projection lessons. Only five to 10 percent of the teachers are taking full advantage of the interactive capabilities of the technology. Much of the research related to interactive white boards indicates that student achievement gains occur when the teacher and the students are interacting directly with the technology. There is a place for using the boards for direct instruction; however, when the students are interacting with the lessons by touching the boards or using the response systems, the likelihood of achievement gains is significantly increased. For this change to occur, teachers need to have sustainable professional development. Some best practices include a peer coaching arrangement in which a teacher is released one day per week to work directly with other teachers in classrooms. The focus is typically to build capacity at each

#### INSTRUCTIONAL TECHNOLOGY

site to have a teacher who both knows the technology and understands instruction. Although the district's governing board is enthusiastic about implementing student response systems, these too require a thoughtful and systemic professional development plan to increase the capacity of staff at school sites to use the systems effectively to improve instruction and student achievement. It is also a best practice to ensure that data can be captured from student response pads and integrated into a district assessment system for both school site and districtwide benchmark assessments.

The district recently reinstated a teacher on special assignment (TOSA) position to support the integration of technology into the curriculum. However, the district does not have a thorough, systematic plan for using this position, and the TOSA and the technology department sometimes work at cross-purposes. The perception is that the TOSA lacks understanding about technology systems and the technology services department lacks a willingness to either explain issues or find solutions when obstacles are encountered.

Developing a thorough plan for use of the TOSA, in conjunction with the recommendation earlier in this report to hire a director of technology, would benefit the district. A director of technology could work directly with the cabinet to identify areas of focus and specific achievable goals for the TOSA. These might include tasks such as regular scheduled time at each site, after-school and/or summer training, and focusing on specific technologies and instructional standards. Developing and clearly communicating the areas of focus and goals will improve the effectiveness of the TOSA. It is a best practice is to have the TOSA work directly with a district's technology department to provide a unified message and rationale regarding the technology that can be supported and used.

The district implemented a new student information system (SIS) called Genesis in 2009-10. Although it was implemented in a short time, the district has made a successful transition to the new product. The San Diego County Office of Education hosts and supports the software. The system has significant functionality, and some modules have not yet been fully implemented, including ParentVUE, StudentVUE, TeacherVUE and the teacher grade book.

There was also some confusion within the district regarding whether Genesis was to be the district's assessment system. Although Genesis has the capacity to store test history and grades, it is not a true assessment system. A typical assessment system provides local teacher, site and district benchmark assessments. These are often developed from question banks provided by assessment system publishers, textbook publishers, teaching staff and district office staff. An assessment system should also interface directly with the SIS, which should populate the assessment system with student demographics and key scheduling information. An assessment system should provide web-based online assessment opportunities as well as integration with student response systems to capture data from response pads and directly show that data. A best practice is to assemble a district data team to research different solutions, visit school districts that have implemented different systems, host vendor demonstrations of systems, develop a request for proposal (RFP) with specific criteria that meets the district requirements, and proceed with the bidding and selection process. Most assessment systems take a year to eighteen months to fully implement. As is the case with many other technology initiatives, staff development is essential to successful implementation.

## **Recommendations**

The district should:

- 1. Develop and analyze its technology plan to determine the hardware needs of each site. Establish baseline standards for hardware and software for schools, classrooms and computer labs.
- 2. Adopt formal policies regarding instructional and administrative software. Work to limit and prioritize software choices to ensure successful implementation, technical support and staff development.
- 3. Under the direction of a new director of technology, establish regular monthly meetings of representatives from schools sites and administrators from the educational services division to review curriculum needs and how technology best meets these needs.

Strive to ensure that technology is an integrated component of instruction, not simply an addition to it. The committee should adopt consistent methods of communication and adhere to them to ensure that all staff are aware of policies and procedures for software selection, installation and support.

- 4. Ensure that a concurrent plan for sustaining professional development is in place prior to implementing any new technology. The plan should encourage pilot programs that build local capacity and provide ongoing support for teachers.
- 5. Ensure that, under the supervision of a director of technology, the district's TOSAs develop clear plans and goals regarding how to best to provide professional development and ongoing support for technology in the classroom. Make it a goal for the TOSA and the technology services department to have a common and unified purpose and delivery of service.
- 6. Research student assessment systems such as Data Director, DataWise, SchoolCity and others; develop an RFP; and select an assessment system.

## **Administrative Technology Services**

## Student Information System (SIS) Support and Training

Responses to questions about, and direction regarding, the SIS are often provided by the department leader rather than in consultation with the data analysts who are directly responsible for managing those areas of the SIS. This has resulted in less than optimal operational decisions, miscommunication among staff, and additional efforts by staff to ameliorate deficiencies. Confidence in SIS data is critical to the operation of several district divisions yet is severely lacking among the district's staff. A disproportionate amount of staff time is dedicated to supporting the system and communicating with administrators, teachers and staff about the system.

Training for site staff with SIS management responsibilities has suffered because of the state budget crisis and state requirements for both a greater amount of data and more accurate data. This has resulted in an increased workload for site staff and fewer opportunities for training. Site clerical staff participate in two SIS trainings at the district office each year, but on-site one-onone just-in-time training at sites is ineffective because of the constant interruptions that occur as staff perform needed site responsibilities while training on the job.

### Website

School district websites have become a primary tool for communication between a district and interested parties including staff, students, parents and the community. Because of this, these sites are most effective when content is current and when content providers can easily, independently and quickly post content themselves. The district hosts its own website and an individual in the technology services department performs all content updates. This has resulted in additional and unnecessary workload for technology services personnel and diminished the site's value as a primary communication tool.

Typical services provided by website hosting companies serving K-12 educational agencies can include website design, transferring existing content to the new platform, integration with active directory, user training and more. E-rate discounts are available for some of these hosted solutions. The district could benefit from this type of solution.

### Internet Filtering and Bandwidth

The district uses the M86 web filtering appliance to ensure compliance with the Children's Internet Protection Act (CIPA), which states, "The protection measures must block or filter Internet access to pictures that are: (a) obscene; (b) child pornography; or (c) harmful to minors (for computers that are accessed by minors)." (http://www.fcc.gov/guides/childrens-internet-protection-act)

Web filtering is more of an art than a science, and because of the proliferation of web sites there is no perfect solution. It is common for websites that are not yet categorized to be placed in "not allowed" status and blocked. Although certain categories such as pornography are blocked, it is not uncommon for legitimate sites to be blocked inadvertently.

Because of this, the district's teachers and administrative staff expressed frustration regarding the sites blocked by the M86 filter. This is not uncommon; many districts are struggling with implementing procedures that allow for teachers or staff to request overrides to blocked sites. If

#### ADMINISTRATIVE TECHNOLOGY SERVICES

the appliance is implemented fully, it can be integrated with a district's active directory system so that when a teacher requests access to a blocked site the system will track the username, date, time and the site being requested. This allows for more trust as well as accountability on the part of staff. If the district were to implement this, the procedures would need to be clearly spelled out and a communication campaign developed to inform staff how to request overrides and to hold them accountable for access.

### Recommendations

The district should:

- 1. Allow the SIS data analysts to respond directly to questions regarding operational details of the SIS and to make recommendations regarding operational decisions that would require the assent of leadership. Provide opportunities for the SIS data analysts to participate in discussions with SIS users outside the district, including visits with San Diego County Office of Education technical staff and others.
- 2. Provide data analysts with remote desktop access tools such as VNC to enable brief, effective just-in-time training by phone and computer with site clerical staff and others at convenient times and with minimal interruptions.
- 3. Pursue E-Rate discounts for an affordable, hosted website content management solution. After transition to the new website solution is complete, the superintendent should require each department head and site administrator to be responsible for maintaining up-to-date content on their assigned areas of the website.
- 4. Review and develop its web filtering policy and procedures to provide for staff requests for overrides and integration with active directory. Ensure that this is accompanied by communication that fosters staff responsibility and accountability for the use of Internet resources in the educational environment.

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## **Network Infrastructure and Performance**

The district's wide area network (WAN) is inadequate for centralizing servers or providing weband cloud-based software to users at sites. These inconsistencies can create unequal access to vital educational resources. The district has not implemented wireless local area networks (WLANs) at any of its school sites.

The district does not use enterprise tools to manage switches, routers, firewalls and other network hardware and infrastructure. FCMAT did not receive information regarding whether the district has adequate monitoring tools to accurately assess bandwidth, restrictions in bandwidth, or curricular needs. It is a best practice to use monitoring tools (such as InterMapper or Net Flow) to help manage bandwidth. These tools can provide data on bandwidth use, protocol usage and in some cases even packet shaping. The goal of using such tools is to better understand and identify how the network infrastructure is being used and to ensure that it is optimally configured to serve the needs of students and staff.

The district has a 50-megabit (MB) internet connection to the Orange County Department of Education. Although this connection speed appears adequate, numerous staff reported that they were unable to access certain Internet resources or run web-based applications during certain times of the day. Three T-1 lines (4.5 MB maximum) connect each school site and the district office, and the district plans to add one T-1 line (1.54 MB) per site, bringing the maximum bandwidth to 6 MB. This bandwidth is not adequate for both administrative systems and for delivering curriculum software and services to staff and students.

The district also decided to spend some of its recent general obligation bond revenues to move from an aging analog PBX telephone system to a state-of-the-art Cisco VoIP solution. Although this is a best practice, it is wholly dependent on bandwidth between the sites and the district office. The quality of service is adequate but will surely be tested as demand for bandwidth increases.

A best practice for network access is to ensure a bandwidth of 10 or even 100 MB between the school sites and the district office. The district's recently implemented Genesis SIS is web-based and hosted by the San Diego County Office of Education. Performance is adequate currently, but subscription services such as United Streaming and Discovery Learning are unavailable during certain times of the day.

An increasing number of instructional and curriculum applications are web- or cloud-based, but because of the district's current topology many of these solutions will not be feasible until band-width is increased between the sites and the district office.

Another best practice employed by districts throughout the country is centralization and then virtualization of servers. This solution reduces hardware and backup failure, utility costs and site visits. However, bandwidth to school sites is critical to successful implementation of this solution and must be sized appropriately.

## Cypress School District Network Map



As part of its bond-funded facilities modernization project, the district installed new cabling and network infrastructure. In the schools and classrooms that have been modernized, it was decided to have three to four network cable drops per classroom. Additional network cable drops were installed to accommodate wireless access points, which have not been implemented despite requests for access for mobile devices such as wireless tablets, netbooks and laptops. A best practice is to set up a guest and secured wireless network that can be both managed and controlled through a central location. Under this practice, an access key is required for the guest network, and login credentials are required log in the secured network. Many districts are implementing these technologies. The district needs to develop policies and procedures to embrace these devices in a controlled and planned fashion.

Because district's technology services department has not had a defined budget, staff have tried to implement free or low-cost tools to manage an enterprise network. These tools are not providing adequate network and server management or alerting staff to potential problems. The department has also not developed procedures for how these types of problems will be addressed and resolved.

The department has a small staff and supports seven sites. Therefore it is necessary to spend funds on enterprise management tools. Many districts that have implemented best practices in this area are using tools such as the Dell KACE asset management appliance for inventory, application packaging and installation, remote desktop support and patch scheduling and deployment. Other tools such as NVision or the previously mentioned InterMapper can help monitor the health of the servers and the network, including providing notice in case of outages or potential outages, thus providing a tremendous benefit.

## Recommendations

The district should:

- Work closely with its E-rate consultant to analyze the cost of replacing its current copper T-1 lines with fiber-optic lines to connect all sites to the district at minimum bandwidth of 10 MB, with a growth clause allowing an increase to 100 MB. The district should also research the cost of increasing the bandwidth between the district office and the Orange County Department of Education.
- 2. Develop a policy regarding mobile devices on the network, then implement both a guest network and secured network for mobile wireless devices. The Orange County Department of Education's technology engineers or a reputable Cisco support engineer should review this policy and the management solution. The policy and procedures should then be clearly communicated to all site staff prior to implementation.
- 3. Research and compare enterprise monitoring tools to support hardware desktop management, network bandwidth use and server health and maintenance. The district should provide a line item budget for the ongoing support of these tools because they typically require updates and annual support. The district should provide staff with training in the use of these tools and implement procedures for determining responsibilities, actions, strategies and tasks in response to alert notifications.

### NETWORK INFRASTRUCTURE AND PERFORMANCE

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4. Contract with an outside consultant to provide a complete network configuration audit. The audit should review all network switches, routers, firewalls and their setup to ensure that they are optimally configured to provide adequate protocols and bandwidth.

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# Appendix

**Study Agreement** 

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2010 CALIFORNIA SCHOOL INFORMATION SERVICES

### FISCAL CRISIS & MANAGEMENT ASSISTANCE TEAM STUDY AGREEMENT March 22, 2011

The FISCAL CRISIS AND MANAGEMENT ASSISTANCE TEAM (FCMAT), hereinafter referred to as the Team, and the Cypress 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 Cypress 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.

#### 2. <u>SCOPE OF THE WORK</u>

A. Scope and Objectives of the Study

The scope and objectives of this study are to:

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

- 4. Review the delivery of administrative technology services and make recommendations for improvement.
- 5. Review the district's hardware and network infrastructure and make recommendations for improvement.

#### B. Services and Products to be Provided

Orientation Meeting - The Team will conduct an orientation session at the School 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 Sufficient copies of a preliminary draft report will be delivered to the District administration for review and comment.
- 4. Final Report Sufficient copies of the final study report will be delivered to the District administration following completion of the review.
- 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.	Andrew Prestage	FCMAT Management Analyst
B.	To Be Determined	FCMAT Consultant
С.	To Be Determined	FCMAT 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. <u>PROJECT COSTS</u>

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 not to exceed \$10,000.

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

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

#### 5. <u>RESPONSIBILITIES OF THE DISTRICT</u>

- 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
<b>Board Presentation:</b>	to be determined
Follow-Up Support:	If requested

#### **CONTACT PERSON** 7.

Name of contact person: Sheri Loewenstein

Telephone: (714) 220-6911 FAX: 714-220-6909

E-Mail: sloewenstein@cypsd.k12.ca.us

4 senand Sheri Loewenstein, Superintendent Date

Cypress School District

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March 22, 2011 Date

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

#### Fiscal Crisis & Management Assistance Team