TECHNOLOGY MASTER PLAN
November 12, 2019

Executive Summary

Midland ISD has prepared its Long-Range Technology Plan to articulate a common vision for the district and identify the strategies that will help us use advanced technology in conjunction with rigorous curriculum standards to improve the academic achievement, including technology literacy, of all students. We also want to develop critical thinking skills that are essential for academic and workplace success and build the capacity of all teachers to integrate technology effectively into curriculum and instruction. This Long-Range Technology Plan is driven by the state curriculum standards, and by the No Child Left Behind Act of 2001. Specific attention is given to addressing student standards for technology as defined by the Technology Applications Texas Essential Knowledge and Skills (TEKS), required in the Texas Education Code, Section 28.002.

The Technology Applications TEKS found in 19 TAC Chapter 126 describe what students should know and be able to do using technology. As a part of the enrichment curriculum, these TEKS are to be used as guidelines for providing instruction. The goal of the Technology Applications TEKS is for students to gain technology-based knowledge and skills and to apply them to all curriculum areas at all grade levels. The plan stresses the importance of ongoing and sustained staff development in the integration of technology into the curriculum for teachers, principals, administrators, and school library media personnel to further the effective use of technology in the classroom or library media center. It also is consistent with the recommendations for Local Education Agencies as defined by the Texas Long-Range Plan for Technology in the areas of Teaching and Learning, Educator Preparation and Development, Administration and Support Services, and Infrastructure for Technology, as well as other state standards, such as the Technology Applications Standards for Beginning Teachers.

Midland Independent School District

Needs Assessment

Inventory

Our current inventory shows approximately 10,000 networked PCs running mostly Microsoft Windows 10, along with over 16,000 Chromebooks, 500 Chromeboxes, 2,000 iPads, and 2,000 Android Tablets (LearnPads). Reports are run on a regular basis using a software package that detects networked computers. Reports are run at the end of the budget year to determine changes within the budget year, but also periodically throughout the year as a monitoring tool. Campus and department administrators are responsible for maintaining a physical inventory of computers and other specific technology items, whether networked or not, and for following procedures for inventory additions or deletions. Computers have been purchased with Technology Allotment, local, TIF, Title, grant and other funds, or have been donated by the campus's local Partner in Education or Parent Teacher Association. A district approved software list is maintained to ensure that only district approved software is installed on network computers. A software approval form is used to assure all software is compatible with district hardware and that the software successfully addresses student needs. The technology purchasing specialist posts a recommended list of hardware and software to allow departments/campuses to purchase standardized technology hardware and software that is supported and pre-approved for compatibility. The approved hardware and software list is the result of an annual bid process through the Midland ISD procurement department.

Existing Conditions:

Funding from grants and other sources have varied historically from campus to campus. Some campuses receive federal Title I funding while others do not. A variable amount of funding, combined with site-based management of technology, results in varying amounts of technology purchases and implementation across the district. To achieve consistency regarding network infrastructure increasing the capabilities of the network and to establish a consistent infrastructure as funding allows. Consistent with this objective, the school board approved acceptance of E-rate funds for program year 13 (2010-2011)to install increased numbers of network drops for classrooms, wireless access points to blanket campuses for Wi-Fi connectivity, and complete network overhauls for 9 additional campuses with older data networks. This project was completed by Fall of 2012. However, since technology funding for Elementary infrastructure from the approved November, 2012 bond was available in Spring, 2013, and the school board approved additional funding for the secondary Wi-Fi project in 2015, the district was able to complete the technology infrastructure overhaul begun in 2008. As of February, 2016, this has brought every campus and administration building up to a common standard, regarding our data infrastructure, to now include dense wireless access. Future construction of classrooms, particularly in secondary schools, will continue to expand capacity for wireless internet to accommodate 1 to 1 computing and flexible classrooms with more portable devices.

The following technology is currently in place district-wide:

- Direct connection to the Internet via leased fiber lines. The current shared Internet bandwidth for the district is 8 Gb/s (up to 1 Gb per campus peak). At least one network drop in every room and office for connectivity, though elementary classrooms have a minimum of 8 network drops. The district has upgraded its total Internet bandwidth to 4 Gb/s, shared among two locations and two providers, as of November 12, 2019.
- Internet filtering equipment and firewall. Internet content-filtering devices are in place that work from a master database. New sites are added to the database daily, and automatically download to the database every night to keep up with the rapid evolution of the internet. The district makes every effort to block inappropriate content from minors and adults. Teachers may submit written requests to unblock sites that are content related. Teachers have been empowered to unblock Youtube links for their students at their discretion unless specifically blocked. The district may add further equipment to block inappropriate content based on pattern recognition, not relying solely on the current website database, to further enhance student protection.
- Local Area Networks at each building that form the district Wide Area Network
- Full coverage by secured wireless access points at all administration and campus buildings (dense Wi-Fi)
- Equipment for centralized backup of data is centralized to two remote locations with redundancy.
- Blade Server Farm and Storage Area Network implementation
- Direct connection to Region XX for data processing requirements
- Email accounts for each staff member
- Google Suite accounts for students, Grade PK-12, for Google Docs, Google Drive, and Google Classroom (email grades 6-12)
- Shared online calendar for all staff
- Capability to collaborate on documents online for all staff
- District web and SQL servers in place providing information
- Written policy in place for acceptable use of the Internet and district computers
- Distance learning with connectivity to Region XVIII available for use by students and staff
- Networked online card catalog and automated checkout in the library at each campus
- Four Technology Applications courses are offered
- Centralized grade reporting server with electronic submission of grades
- Parental access to their children's grades online
- Online access to bus routes and ability to pay for school lunches
- Online employment applications and substitute requests
- Online attendance reporting implemented at all campuses.
- Calling system provides recorded messages from campuses or departments to parents
- All teachers, campuses, and district departments have a web presence

- Data disaggregating software used to improve student achievement
- Streaming video clips available as student resources (United Streaming)
- Anti-virus software
- High school and college credit courses offered at the High Schools
- Interactive whiteboards used in Elementary Classrooms
- Online curriculum used in core curriculum areas
- Assistive Technology software available at all campuses
- Public address system in secondary classrooms with connectivity to campus office
- Integrated PA, Intercom, classroom sound system, and lock-down and alerts system in Elementary schools
- Telephone systems at secondary location with Plexar features to transfer calls, hunt the next available line, etc.
- Voice over IP telephone system, throughout Elementary Schools, in every classroom.
- Access control system to secure Elementary campuses, control points at every classroom door, and providing instant "lock-down" ability.
- District maintains a website, Facebook and Twitter accounts, and a mobile app for enhanced community communications
- Multiple software packages for student learning
- Online survey and form creation software
- Assignment posting for student access on web
- Access to use eAlerts for communicating web presence changes to parents
- Online classes for students
- Virtual instruction at secondary campuses

General Overview of Technology Areas/Departments

The Executive Director of Technology oversees Instructional Technology, Technology Infrastructure, and Technology Support. He also files for E-rate funding and helps design, coordinate, and implement the long range plan for technology.

Instructional Technology
One Instructional Technology Director and One Enterprise Technology Coordinator present district - and site-based technology workshops, provide training for teachers, administrators, and support staff, and provide technology support to campuses. Maintain existing accounts and administration/configurations of district-owned mobile devices.

Network
One Director of Data Operations, One Senior Network Administrator, Two Network Administrators, Two Server Administrators
Design and maintain the WAN, and install/maintain servers and applications.

Technology Support

Two Call Center techs and fourteen PC techs are supervised by the Technology Customer Service Coordinator. They support students, teachers, and staff by installing and maintaining workstations, laptops, tablets, interactive displays, phones, and other classroom technology both remotely and on-site at the administration buildings and campuses.

Instruction in Technology Applications courses is offered by teachers at the secondary campuses, as well as the district central office. At the high school level, Computer Science I through III, and Desktop Publishing are offered. At the junior high level, the Computer Literacy requirement is being met by offering an integrated approach to eighth graders that incorporates projects in the curriculum areas being studied. At the elementary level, the Technology Applications TEKS is being addressed in lab and classroom settings determined by site-based decisions at the campus level. In the 2005-2006 school year, the use of the state-adopted online materials was implemented to assist with meeting the TA TEKS.

The Executive Director of Technology oversees the hardware installation and maintenance areas of technology. Technology Support Services staff and their responsibilities are listed below.

Technology Support Services
Two Supervisors, sixteen Computer Technicians, two Cable/Smart Board Installers, and an electronics technician.
Install, maintain, and repair district technology hardware and infrastructure equipment, telephones, along with network and A/V cabling.

District staff also provides essential training and support for hardware and software use. With an adequate infrastructure in place, it is now possible to focus on implementation and effective integration of technology at all levels.

Committees meet to design and program the technology that will be needed at these campuses. Needs and implementations will differ based on the projects scheduled for each campus. Infrastructure equipment, cabling, possible wireless technology use, electrical wiring, telecommunications equipment and other needs will be assessed in relation to technology needs.

Technology Needs

Inventory records and the campus surveys have shown that Midland ISD continues to strive for equitable access to technology. The need for more technology is ongoing and increasing so replacements and upgrades are necessary. Midland ISD needs more computers to meet the Target level of a 1:1 student to device ratio though we have reached a 1:1 teacher to device ratio. Allowing BYOD (bring your own device) for approved purposes has also been helpful in some cases. Midland ISD needs to continue upgrading and replacing technology as it ages. The

majority of district computers are over 5 years old, and there is inequity in the distribution of the newer computers, with a bias toward the Elementary schools. A yearly, district-based computer replacement initiative is needed. Also, overhead projectors, old-style CRT wall-mounted TVs, VCRs, projector screens, etc. are no longer on the approved hardware list, in favor of the current alternatives. If technology reaches a certain age, it may no longer be possible to support if it needs service. A significant computer refresh has been approved for the 2019-20 budget year to meet Microsoft compatibility requirements.

Advances in technology are allowing network-based collaboration and interaction from personal devices in the classroom at a lower cost than ever before. The increasing use of technology and new implementations such as online testing and online transcripts drive the need for continuous enhancement and expansion of existing technology from workstations, to software, to servers, to bandwidth and network equipment. Midland ISD needs to continue the process of centralizing servers and fully implementing a disaster recovery site. This trend includes increasing the use of virtualization technology and server based computing to maximize efficiency of hardware and staff.

Secured wireless access is needed to support the programs campus administrators and teachers want to implement for data access and instruction. Though dense wireless access has been installed throughout all campuses, we have found the need for an additional system to accommodate the challenge prioritizing the resource for essential needs, such as online testing. We are currently piloting such a system. The constantly growing technology presence in the schools also impacts the number of personnel to support the various uses of technology in the district. As technology use grows, more support staff will be needed. Currently the Computer Technician to computer ratio is approximately 1:750, but this is a misleading statistic, since technicians also support a variety of other types of instructional technology.

Ongoing professional development and more support for the integration of technology into the curriculum are needed based on information gathered from interviews, focus group sessions, and the Brightbytes results. Midland ISD is using a technology proficiency test of basic skills to assess the staff's ability to use technology, integrate it into curriculum and meet requirements of their jobs.

Using technology to promote student achievement and develop critical thinking skills requires the continuation of using written curriculum that includes the use of technology and the documentation of meeting the Technology Applications TEKS. Midland ISD also needs to plan and implement online delivery of curriculum.

Midland ISD needs to continue the use of technology as a means to provide information to parents and the community to involve them in student achievement and gain their support of public education. This includes a web presence, email, telephones, a calling system, and the equipment and infrastructure to support these types of communication.

Midland ISD will continue to apply for E-Rate funding to help with the costs of the telecom lines to all sites in the District (the WAN) and Internet access. Midland ISD is continuing to migrate all sites to new network (IP-based) phones as technology changes and pricing offers suitable options to meet district needs. Midland ISD plans to initiate a request for proposal for a centralized power generator to maintain critical systems during power outages, as part of its disaster recovery plan.

The technology department is implementing a 1,300 device refresh for the 2019-2020 school year in order to meet Microsoft compatibility requirements, and replace incompatible equipment. In addition, the district is implementing a new inventory software platform to help monitor device age and compatibility in order to make an informed decision regarding future purchases in the refresh cycle.

The current classroom model for an Elementary Classroom is 5 students computers, 1 teacher desktop, 1 document camera, and an Interactive Whiteboard. This setup was implemented via 2012 bond funds. Those funds only covered elementary needs. Therefore, the secondary classroom is inconsistent with most classrooms having one teacher computer, and some type of projection device. The ultimate goal for a modern classroom would be to strive for uniformity amongst the elementary and secondary standards of technology for each classroom. (e.g. teacher desktop, availability of student devices with charging cart, document camera, and interactive touch screen.)

Network Infrastructure Planning

There is a need to improve the network infrastructure focusing on safeguards such as disaster recovery, off-site backups and mirrored storage, a backup generator for central office, planned refresh of servers and other network equipment. This multi-year strategy will also include bandwidth and WAN (Wide Area Network) expansion as well as equipment to upgrade the firewall and web filtering appliances to meet capacity. This year we also plan to enhance wi-fi with better administration, authentication, prioritizing bandwidth, as well as an upgrade to the Bowie auditorium to meet professional development needs.

The technology department is working with other municipal entities regarding a fiber project that will allow Midland ISD to provide internet access to all district locations with enhanced flexibility and data capacity.

Security Technology Infrastructure

The security technology infrastructure is lacking specifically at secondary campuses. Secondary campuses need access control points for entryways, IP security cameras, lock down capability, and unified district/campus communications via audio/visual equipment installed on campuses to match the current elementary campus configuration.