

Hamilton-Wenham Regional School District

Technology Plan

2024-2029

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Executive Summary

Purpose and Vision

The Technology Plan is designed to support the district's vision of preparing well-rounded graduates who will engage the future with creativity and confidence. It focuses on providing a diverse range of devices to support digital learning and the district's academic objectives, ensuring that all students can use technology to enrich their educational experience.

Strategic Initiatives

- **Assessment and Selection:** Conduct thoughtful evaluations to select devices and services that meet the educational needs of each grade level. This involves gathering feedback from educators and administrators and analyzing the compatibility with the selected digital learning platforms.
- **Funding and Budgeting:** Identify and allocate financial resources to support the acquisition and maintenance of devices. Our current technology budget does not fully fund a robust lifecycle management plan.
- **Implementation Timeline:** Develop a phased rollout plan that considers the current lifecycle strategy and gradually expands to full implementation.
- **Support data-informed instruction** by implementing and utilizing leading-edge technologies that provide clear, student-centered advanced analytics tools
- **Monitoring and Evaluation:** Implement ongoing monitoring systems to assess the impact of technology on student learning outcomes and make data-driven adjustments as needed.

Alignment with District Mission

The plan supports the district's mission by creating an environment that helps students develop essential technical skills needed to communicate and collaborate in a digital world. By focusing on these strategic initiatives, the Technology Department can significantly enhance the ability of educators to deliver targeted, practical instruction that meets the diverse needs of all students. This approach supports academic achievement and aligns with the district's broader mission to develop well-rounded, digitally literate graduates. By integrating technology thoughtfully and equitably, the district aims to prepare students to be adaptable, knowledgeable, and proficient in digital literacy, enhancing their readiness for future academic and career endeavors. This approach ensures that technology is integrated as an integral part of the learning process, aligning with the district's overarching educational goals and the Portrait of a Graduate framework.

Background

District Mission

Together we inspire continuous learning in order to lead a purposeful life.

Information Technology Department

The Information Technology Department consists of a small, dedicated group of six technical staff that supports the school and provides business continuity services, technical assistance, and back-office system maintenance to support the district's integration of technology in teaching, learning, and business operations. To accomplish this, the IT Department consistently invests in proven technologies that offer stable, resilient, cost-effective equipment and services that we leverage into a curated set of flexible tools to meet the changing academic landscape, business operation goals, and cybersecurity threats.

Information Technology Department's Vision

Curate a stable, reliable, secure set of technology solutions that supports teaching and learning within the confines of the district budgetary constraints.

Information Technology Positions

IT Director

Lead, mentor, and coach a team of IT specialists to provide technical assistance and business continuity services in support of the integration of technology in teaching, learning, and district operations. To accomplish the director will establish department goals and vision, identify, budget, and invest in three management tactics: staff development, acquisition of proven technologies, and cultivation of siloed third-party services. The benefits of these tactics are stable, resilient, cost-effective equipment and services that we leverage into a curated set of tools to meet the changing academic landscape, our business operation goals, and our defense against cybersecurity threats. Procure outside services and maintain existing contracts within the structure of Mass GL Chapter 30B. The director will endeavor to ensure that the district's mission is actively supported while safeguarding the district's digital secrets and assets.

System and Software Manager

The Systems and Software Manager plays a crucial role in our district's operations. The position is tasked be capable of troubleshooting and resolving multi-platform software and hardware-related issues. They should be able to demonstrate hands-on experience with management systems for Microsoft and Apple operating systems mobile device management (MDM) for Apple OS X and iOS devices. Candidates must understand wire and wireless network services (TCP/IP, DNS, DHCP, Active Directory, and Open LDAP). A successful candidate will be able to communicate effectively and professionally and modulate their technical vocabulary when communicating with staff, students, and vendors.

Network and Systems Administrator

Network and System Administrator responsibilities include maintaining our multihomed, multi-modal district computer and communications network spread across six buildings on four sites. The network comprises a 1GB fiber WAN backbone and a 10GB LAN at the high school/middle school complex. Maintaining our WAN requires closely coordinated network operations with the Town of Hamilton. All are facilitated by a Windows Server environment that supports 182-node Aruba wireless network. An integral part of the position's duties includes network and endpoint security, backup, and disaster recovery (BDR), a pivotal component of the district's business continuity strategy. User authentication and profile management are managed on Active Directory and Google Workspace. Other duties include district phone system and unified messaging supported by our Avaya IOffice telecommunications platform. Maintenance and management of the district's 15 Xerox multi-function copiers and 110+/- desktop printers.

Technology Integration Specialists

Provide guidance and support to teachers in all buildings, infusing digital technologies and media skills throughout the curricula. The Technology Integration Specialist positions require a thoughtful, inquisitive mind that will search out new methods and technical enhancements to the problem of the evolving classroom practice—enriching the teacher's pursuit of a pertinent student learning experience. The positions will need a collaborative mindset to search out opportunities to work with teachers and teaching assistants to develop technology integration strategies in the classroom and the curriculum and will champion the shared learning culture.

Data Management Specialist

The Data Management Specialist is primarily responsible for maintaining the school database systems to ensure their integrity and efficiency. They prepare and submit accurate and timely state, federal, and local reports and maintain various assessment and tracking systems. Additionally, they make the data accessible and easy to understand to support teaching and learning and lead the district's efforts in the professional development of staff responsible for the integrity of the district's data. Some of their responsibilities include managing student enrollment, demographic and contact information, staff demographics, licensure, and district employment history. They are also responsible for conducting regular data validation, generating reports, and implementing, monitoring, and maintaining automated processes that integrate district data sets with SaaS digital learning systems. They also build out-of-district website pages, help manage content, and provide support and training to staff members on managing their site pages, as well as troubleshoot issues related to the website. Other duties include providing school-level user software and hardware support and system maintenance.

IT Technician

The responsibilities of an IT support technician include setting up and configuring computer systems, installing and maintaining software, troubleshooting hardware and software issues, providing technical assistance to teachers, students, and staff, and ensuring the smooth and secure functioning of all computer systems and networks. Prepares digital testing environments and monitors for platform issues. IT Technician also triages all support requests, collaborates with team members to resolve issues, manages warranty claims for user devices, and coordinates the recycling and disposal of outdated devices and equipment.

Current State of Technology

Infrastructure, Equipment, Systems, and Integration in Teaching and Learning

Network Infrastructure

The Hamilton-Wenham Regional Schools District IT department provides network services and support to over 1,700 students, 350 staff, and 2,100 devices. The core of the district's network infrastructure is located at the high/middle schools complex, connected by a 10Gbps fiber backbone linking the edge switch and access points to the district's core network facilities at the HS300. The 1Gb Hamilton-Wenham town institutional network connects the three elementary schools, with the central relay located at the Hamilton Public Safety Building at 265 Bay Road. The district's classrooms and offices are equipped with 182 Aruba Networks wireless access points, upgraded to support WIFI 6 IEEE 802.11ax in the spring of 2023. Currently, the district uses two 1Gbps Internet connections provided by Comcast and Verizon, exceeding the FCC recommendations of 1 Mbps per student for a media-rich educational experience. Research by the "State Educational Technology Directors Association (SETDA)" suggests that the district should consider increasing its Internet throughput capacity to 3.5 – 4.5 Mbps per student to meet anticipated data consumption needs.

Network Operations

Network operations encompass services such as network management, disaster recovery, network security, and user management. These services are essential for the end-user experience and are currently supported by our on-premises servers, which still have several years of functional use left. However, there are now alternative off-site hardware options that could potentially provide greater value than maintaining these services on-site. The district should assess the cost-effectiveness of outsourcing these services to cloud-based infrastructure providers.

Device & Classroom Audiovisual

The district maintains a fleet of some 2,280 devices. With the student device, that numbering 1,465+/- (43 iMacs, 654 iPads, 945 HP Chromebooks). The teachers, staff, and administrators are provided with an additional 340 MacBook laptops or Windows-based PCs. As part of our lifecycle management, the district endeavors to replace approximately 70 teacher laptops, 140 Chromebooks, and 210 iPads annually. These computers are used by administrative staff in the schools and the administration building, as well as for classroom and lab use. Each classroom has an audiovisual configuration that includes an interactive board, a document camera, and a near-field voice amplification system. Except for the HS and a few outliers, all classrooms have new Smart 86" interactive TVs installed during the 23–24 school year. Funds have been earmarked in the FY25 budget to complete the installation of these same devices in all the high school classrooms and the few remaining outliers.

Student Information System (SIS)

Follett's Aspen, our current Student information system (SIS), has been in place since March 2013. It has served us well but appears to be lagging behind newer offerings in terms of ease of use and data analytics. For these reasons, the district has begun to explore possible alternatives.

Phone System & E911

The district's on-premises integrated phone system and unified messaging module have been a multi-year consolidation effort, with some aspects of the Avaya IP Office system's installations going back to 2012 and a previous tech plan. Although there is no physical aspect of the system that will constrain our current services for years to come, there are functional reasons and constraints that this system requires replacement. Moving this phone system to a cloud-based voice-over-internet protocol (VOIP) would enhance feature management and allow for full E911 compliance as outlined in Kari's Law.

Goals & Objectives

Goal #1: Enhancement of Network Infrastructure

LAN and WAN that meets or exceeds the FCC guidance for per-student Internet bandwidth and the subsequent LAN and WAN components to provide a media-rich educational experience.

Objective #1: Internet Bandwidth Capacity

Provide adequate Internet bandwidth at the network perimeter to facilitate a per-student connectivity of between 3Mbit and 4Mbit.

Initiatives and Activities	Responsibility	Timeline
Engage ISP in annual conversation to identify affordable Internet connection offering in our geographic location	IT Director	Annually in November
Leverage The Federal Communication Commission's (FCC) Universal Service for Schools and Libraries Program (often referred to as E-rate) to maximize the district telecommunications and Internet access discount	IT Director	Annually beginning in December
Acquisition Cost: TBD		
Policy Considerations: n/a		
Other Considerations: n/a		

Objective #2: Expand Wide Area Network (WAN) Capacity

Expand wide area network capacity from 1Gbit to 10 Gbit to meet per-student connectivity guidance from the Federal Communication Commission (FCC). Currently, our WAN capacity is capped at a theoretical 1Mbit. To meet the per-student guidance, a 10Gbit/s fiber backbone will need to be installed to provide appropriate bandwidth capacity.

Initiatives and Activities	Responsibility	Timeline
Determine the feasibility of replacing WAN 1GB topology elementary schools to the network hub.	IT Director & Asst. Sup. Finance	FY28
Prepare Acquisition documents and protocols in compliance with Ch30B.	IT Director & Asst. Sup. Finance	FY28
Install 10G WAN backbone network and edge infrastructure	IT Director	FY29
Acquisition Cost: \$150,000		
Policy Considerations: n/a		
Other Considerations: The town of Hamilton and Wenham Institutional Network		

Objective #3: Expand existing wireless infrastructure to meet the growing number of devices

Each classroom requires an individual access point to ensure adequate wireless connectivity for students and staff in the class.

Initiatives and Activities	Responsibility	Timeline
Install wired network connection to underserved classrooms to support additional access points	IT Department	FY26
Install access points to complement the current installed Aruba Network WIFI devices.	IT Department	FY26
Acquire AP licenses	IT Department	FY26
Consider eRate category 2 discount	IT Director	FY26
Acquisition Cost: +\$74,000 one-time, \$2,200 annually for licensing		
Policy Considerations: n/a		
Other Considerations		

Objective #4: Upgrade the wireless network to IEEE 802.11bn WIFI 8.

Move from an on-premises network controller to a cloud-managed system.

Initiatives and Activities	Responsibility	Timeline
Review wireless network vendors to identify most advantageous WIFI 8 network replacement topologies	IT Director & Asst. Sup. Finance	FY29
Identify funding sources for future replacement	IT Director & Asst. Sup. Finance	FY29
Prepare Acquisition documents and protocols in compliance with Ch30B.	IT Director & Asst. Sup. Finance	FY29
Consider eRate category 2 discount	IT Director & Asst. Sup. Finance	FY29
Acquisition Cost: to be determined		
Policy Considerations: n/a		
Other Considerations: new construction		

Goal #2: Phone System and E911

Objective #1: Consider Cloud-Managed VOIP

The existing on-premises phone communication platform lacks Kari's Law-compliant e911 component. Retrofitting the existing system is price prohibitive. Moving to cloud-based services will provide ease of management e911 compliance. We currently support 197 virtual extensions, 319 handsets, and 434 direct inward dialing (DID) numbers that utilize 92 telecommunication channels over for session-initiated protocol (SIP) trunks.

Initiatives and Activities	Responsibility	Timeline
Review VOIP vendor offering to identify advantageous criteria to incorporate into the acquisition documents. Compare to on-premises upgrade cost.	IT Director & Asst. Sup. Finance	FY25
Identify funding sources for future replacement.	IT Director & Asst. Sup. Finance	FY25
Prepare Acquisition documents and protocols in compliance with Ch30B.	IT Director & Asst. Sup. Finance	FY26
Implement device replacement and staff training	IT Director	FY26
Acquisition Cost: +\$72,000 one time, +\$22,000 annually fees/licensing		
Policy Considerations: n/a		
Other Considerations: Phone service consolidation and redundancy.		

Goal #3: Enhancing student learning through technology integration

Objective #1: Academic Level Appropriate Learning Device

The district's return to in-person learning after the pandemic has resulted in a mix of student grade-level devices. The district acquired a large number of devices to ensure that students had access to functioning remote learning platforms. However, the devices were distributed to students based on availability rather than considering their educational needs. Going forward, the mix of devices and their replacement over a student's time in the district should be prescribed by a group of educators who can take into account the following criteria: suitability for the digital learning curriculum, appropriate features for each grade level, and financially sustainable maintenance throughout the lifecycle of the devices.

Initiatives and Activities	Responsibility	Timeline
Convene focus groups of teachers and curriculum coordinators at each academic level to discuss digital pedagogical needs and determine the most appropriate computer device by grade. The group will analyze how the district may progress from ensuring digital access to implementing digital equity.	Director of Teaching and Learning, IT Director, Technology Integration Specialists	Fall of 2024
Consider how changes affect the lifecycle purchasing and the budget.	IT Director & Asst. Sup. Finance	December 2025
Align digital equity practice with The Learning Accelerator's Digital Equity Guide using the Digital Equity Audit: Self-Assessment Tool	Director of Teaching and Learning, Superintendent, Director of Student Services, Technology Integration Specialists	March 2026

Consider teacher training to support the integration of devices at each academic level to enhance integration between digital curriculum and classroom practice.	Director of Teaching and Learning, IT Director, Technology Integration Specialists	Spring of 2025
Fully funded the lifecycle management of the district's student device to meet the DESE's expectation of a 1to1 computing environment and the district's education expectations.	IT Director & Asst. Sup. Finance	FY26
Acquisition Cost: +\$70,000 annually		
Policy Considerations: Digital Equity Policy		
Other Considerations: n/a		

Objective #2: Supporting Digital Literacy in the Classroom

The use of technology is now ubiquitous in all areas of instruction. Nearly all resources we use include digital components, which require a level of technology support for all users. Our support of these devices and services needs to align with digital literacy standards for our students.

Initiatives and Activities	Responsibility	Timeline
Identify digital literacy standards K-12 that are currently addressed in the curriculum then create a plan to integrate remaining digital literacy standards into K-12 classrooms through both the library/technology classes as well as classroom technology integration support.	Director of Teaching and Learning, Principals, Technology Integration Specialists and Library/Technology Specialists	Fall 2024
Integrate interactive digital tools into daily curriculum to enhance engagement and understanding, using professional development and the technology integration specialists to support technology integration and the use of devices.	Classroom Teachers and Technology Integration Specialists	Ongoing
Create systems to review and identify additional digital resources that align with grade level standards, instructional practices, and student privacy requirements.	Director of Teaching and Learning, Principals, Technology Integration Specialists and Library/Technology Specialists	Ongoing

Acquisition Cost: to be determined
Policy Considerations: Digital Equity Policy
Other Considerations: n/a

Goal #4: Improving and Updating Student Information Systems and Privacy

Objective #1: The current student information system (SIS) user interface has become antiquated.

Features that are relied upon daily and should be integrated into the SIS are missing, requiring additional agreements with other vendors. The district should consider a replacement.

Initiatives and Activities	Responsibility	Timeline
High-level evaluation of all viable offerings. Six vendors were reviewed four provided short demos.	IT Director & Leadership Team	Complete
Specialist sandbox trial	Leadership Team, IT Department, & select staff	October 2024
Focus group to evaluate in-depth demonstration of select product, survey for preference	IT Director	November 2024
Make recommendation to Superintendent	IT Director & Asst. Sup. Finance	December 2024
Acquisition Cost: Annual Range (-10,000 to +10,000), One-time Range (+12,000 to +25,000)		
Policy Considerations: n/a		
Other Considerations: n/a		

Objective #2 Student Information Privacy

Ensuring compliance with ever-changing student privacy regulations requires us to align our practices and procure assistance with compliant processes.

Initiatives and Activities	Responsibility	Timeline
Create system for vetting digital resources that comply with COPPA and FERPA regulations which require the online privacy of children under age 13.	Technology Integration Specialists, Principals, Director of Teaching and Learning, IT Director	2024-2025 School Year
Join the Student Data Privacy Consortium (Access 4 Learning Community) to access clearinghouse of research and privacy-effective practices in order to create compliant audit and adoption processes.	Technology Integration Specialists, Principals, Director of Teaching and Learning	Summer 2024

	Learning, IT Director	
Acquisition Cost: membership \$975 annually		
Policy Considerations: n/a		
Other Considerations: n/a:		

Appendix

Device Inventory

Apple iPads by Model	Qty
iPad 4th Generation (Wi-Fi)	1
iPad 5th Generation (Wi-Fi)	38
iPad 6th Generation (Wi-Fi)	30
iPad 7th Generation (Wi-Fi)	245
iPad 8th generation (Wi-Fi)	219
iPad 9th generation (Wi-Fi)	335
iPad Air (Wi-Fi)	5
iPad Air 2 (Wi-Fi)	4
iPad Air 5th generation (Wi-Fi)	1
iPad mini 5th generation (Wi-Fi)	1
iPad Pro (12.9-inch Wi-Fi)	2
iPad Pro (12.9-inch) (6th generation)	1
iPad Pro (9.7-inch Wi-Fi)	4
iPad Pro 2nd Generation (10.5-inch Wi-Fi)	13
TOTAL	899

Apple Mac by Model	Qty
13-inch MacBook Pro (Early 2015)	2
13-inch MacBook Pro (Mid 2012)	1
iMac (24-inch, M1, 2021)	52
iMac Intel (Retina 5K, 27-Inch, 2019)	3
MacBook Air (13-inch Early 2015)	58
MacBook Air (15-inch, M2, 2023)	3
MacBook Air (M1, 2020)	45
MacBook Air (M2, 2022)	126
MacBook Air (Retina, 13-inch, 2019)	1

MacBook Air (Retina, 13-inch, 2020)	48
MacBook Pro (13-inch, M2, 2022)	1
MacBook Pro (14-inch, 2021)	2
Mac mini (M2, 2023)	2
TOTAL	344

Chromebooks by Models	Qty
HP Chromebook 11 G3/G4/G4 EE	21
HP Chromebook 11 G5 EE	110
HP Chromebook 11 G6 EE / Chromebook 11a	68
HP Chromebook 11 G9 EE	140
HP Chromebook 11MK G9 EE	580
Lenovo Chromebook Duet / Lenovo Ideapad Duet Chromebook	1
TOTAL	920

Windows PC by Model	Qty
HP Compaq 8100 Elite SFF	1
HP Compaq dc5800 Microtower	1
Hp Pro Mini 400 G9 Desktop	15
HP Probook 430 G8 Notebook	1
HP Probook 445 G8 Notebook	2
HP Probook 640 G1	4
HP Probook 640 G2	2
HP Probook 640 G8 Notebook	1
HP Probook 6470b	1
HP Z2 SFF G5 Workstation	24
HP Z210 Workstation	8
HP Compaq Z220	25
HP Zbook 15	2
HP Zbook 15v G5	1
HP Zbook Firefly 14 inch G10 A Mobile Workstation	26
TOTAL	114

Network Infrastructure Inventory

Windows Server by Model	Qty
HPE ProLiant DL360 Gen10	2
HPE ProLiant DL380 Gen10	1
HPE ProLiant DL160 G6	1
TOTAL	4

Network Switch By Model	Qty
HPE Aruba 2930M 48G PoE+ 1 slot switch	11
HPE Aruba 2930M 24G PoE+ 1 slot switch	1
HPE 2510G-48 Switch	10
HPE 2610-48 Switch	1
HPE 2636B Switch	1
HPE 2650-PWR Switch	1
HPE 2650B Switch	3
HPE 2650C Switch	2
HPE 2810-24G Switch	1
HPE 2824 Switch	1
HPE 2910al-48G-Poe+ Switch	3
HPE 5412R zl2 Switch (Core)	1
HPE 6108 Switch	1
TOTAL	37

Wireless Access Points	QTY
HPE Aruba Ap-615	173
HPE Aruba AP-575	1
HPE Aruba AP-577	6
TOTAL	180