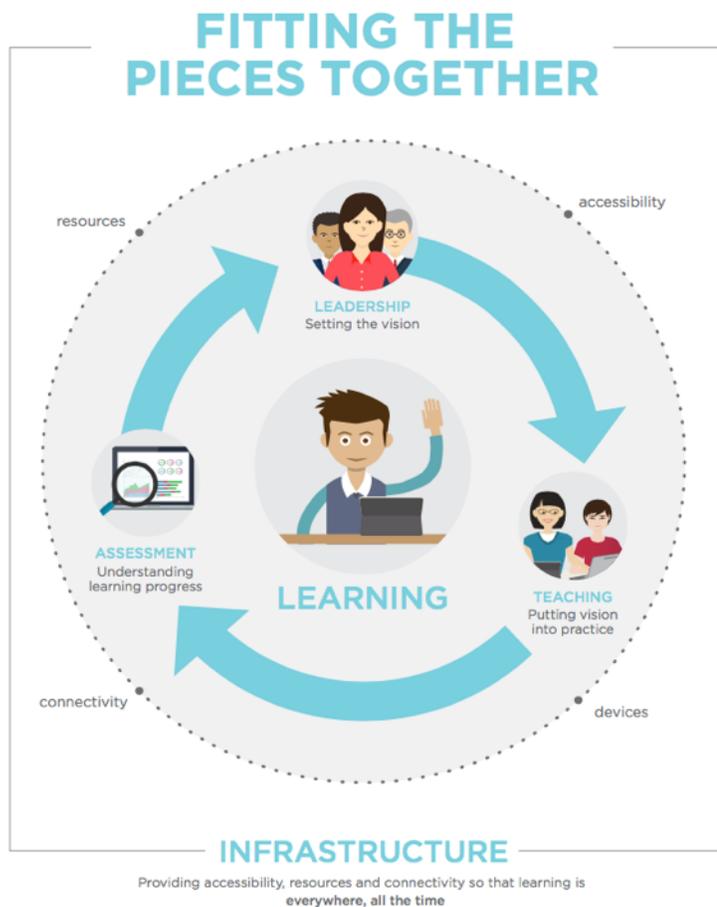


FMS Technology Plan 2016-2019

Over the past decade, and increasingly in the last several years, the conversation regarding technology in education has shifted from *whether* technology should be used in learning to *how* it can be used to improve learning and to ensure that all students have access to high-quality educational experiences. ¹

The Farmington Municipal Schools Technology Plan draws from the 2016 National Education Technology Plan (<http://tech.ed.gov/files/2015/12/NETP16.pdf>) to create both a plan and a guide when: allocating resources; developing policies, procedures, evaluations and standards related to technology in education; building or remodeling instructional spaces; acquiring new or updating existing technology; and generally working towards the creation of a 21st century educational environment for current and future students.

Farmington Municipal Schools has long been a leader in the integration of technology in the educational space and while there has been steady growth and progress over the last decade there remains much to be done to meet our increasingly demanding goals and mission.



A common theme for the past 10-15 years has been that of a “digital divide” which separated those that have access to technology and those that do not. Farmington Municipal Schools has worked to remove this barrier by providing access to technology at all grade levels with a 1-to-1 environment for students at the secondary level. Today this divide is being reformed around not *access* but *type* of use. Leveraging technology for pure consumption of content does not move our district, and our students, towards the focus on 21st century skills that are a requirement for success in the ever changing and increasingly connected and collaborative world they will find themselves in.

DIGITAL USE DIVIDE

Traditionally, the digital divide referred to the gap between students who had access to the Internet and devices at school and home and those who did not.^{2,3} Significant progress is being made to increase Internet access in schools, libraries, and homes across the country. However, a digital use divide separates many students who use technology in ways that transform their learning from those who use the tools to complete the same activities



but now with an electronic device (e.g., digital worksheets, online multiple-choice tests).

The digital use divide is present in both formal and informal learning settings and across high- and low-poverty schools and communities.^{4,5,6}

¹ American Association of School Administrators, Consortium for School Networking, and National School Boards Association. Leading the digital leap. Retrieved from leaddigitalleap.org.

² McConnaughey, J., Nila, C. A., & Sloan, T. (1995). Falling through the net: A survey of the “have nots” in rural and urban America. Washington, DC: National Telecommunications and Information Administration, United States Department of Commerce.

³ Culp, K. M., Honey, M., & Mandinach, E. (2005). A retrospective on twenty years of education technology policy. *Journal of Educational Computing Research*, 32(3), 279–307.

⁴ Warschauer, M. (2012). The digital divide and social inclusion. *Americas Quarterly*, 6(2), 131–135.

⁵ Fishman, B., Dede, C., & Means, B. (in press). Teaching and technology: New tools for new times. In D. Gitomer & C. Bell (Eds.), *Handbook of Research on Teaching* (5th ed.).

⁶ Valadez, J. R., & Durán, R. P. (2007). Redefining the digital divide: Beyond access to computers and the Internet. *The High School Journal*, 90(3), 31–44.

About This Plan

The National Education Technology Plan (NETP) sets a national vision and plan for learning enabled by technology through building on the work of leading education researchers; district, school, and higher education leaders; classroom teachers; developers; entrepreneurs; and nonprofit organizations. The principles and examples provided in this document align to the Innovative Technology Expands Children's Horizons (ITECH) program as authorized by Congress in December 2015 through the Every Child Achieves Act. The Farmington Municipal Schools plan will echo this approach and provide district relevant information intended to provide guidance specific to the district.

School districts who apply for technology funding through any Federal grant program, NM Technology Act funds, or E-rate, are required to have developed a comprehensive, three-year plan, which outlines how the District intends to utilize and integrate educational technology. This plan must be approved by the Public Education Department (PED) of the State of New Mexico after approval by the District Board of Education.

District Technology Contact

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This technology plan focuses on using technology to transform learning experiences with the goal of providing greater equity and accessibility (see Section 1: Learning).

When carefully designed and thoughtfully applied, technology can accelerate, amplify, and expand the impact of effective teaching practices. However, to be transformative, educators need to have the knowledge and skills to take full advantage of technology-rich learning environments (see Section 2: Teaching). In addition, the roles of PK–12 classroom teachers and post-secondary instructors, librarians, families, and learners all will need to shift as technology enables new types of learning experiences.

For these systemic changes in learning and teaching to occur, education leaders need to create a shared vision for how technology can best meet the needs of all learners and to develop a plan that translates the vision into action (see Section 3: Leadership).

Technology-enabled assessments support learning and teaching by communicating evidence of learning progress and providing insights to teachers; administrators; families; and, most importantly, the learners themselves. These assessments can be embedded within digital learning activities to reduce interruptions to learning time (see Section 4: Assessment).

Learning, teaching, and assessment enabled by technology require a robust infrastructure (see Section 5: Infrastructure). Key elements of this infrastructure include high-speed connectivity

and devices that are available to teachers and students when they need them. Aside from wires and devices, a comprehensive learning infrastructure includes digital learning content and other resources as well as professional development for educators and education leaders.

District Technology Committee

Each cycle of the FMS Technology Plan review and approval is conducted by a group of district staff in collaboration digitally, using the tools provided to all staff. The Technology Committee should represent all stakeholders. Development of the technology plan and implementation of the plan should enable parents, educators, students and community members to benefit from the investment in technology and all should have representation on the committee.

Technology Committee Members

Member	Title	Constituency Represented
Charles Thacker	Executive Director of Technology	District Technology Staff/Parent
Gary Sartin	PVHS Tech Specialist	High School/Parent
Shanna Iverson	District Tech – Elementary	Elementary/Parent
Melissa Vigil	Elementary Educator	Elementary
Elijah Thomas	District Tech – Middle Schools	Middle School
Nathan Pierantoni	Middle School Principal	Middle School Administration/ Parent
Janet Hunter	Curriculum Director	Curriculum Office - Secondary
Stacie Hamblin	Technology Professional Development	Professional Development - Elementary
Nicole Lambson	Curriculum Director	Curriculum Office – Elementary
Terrill Henegar	Middle School Educator	Middle School/Parent
Joshua Stallings	FHS Tech Specialist	High School/Parent
Kay Liessmann	District Tech Specialist	Technology
Rita Garrett	Exceptional Programs Evaluation Adm	Special Education
Cody Diehl	Director of Support Services	District Administration/Parent

Date of plan approval by the Board of Education:

Board Meeting Minutes when submitting District Technology Plan are attached.

Approved by:

Signature of Superintendent or Authorized School Official

Date

Eugene Schmidt, Superintendent

Vision

Farmington Schools believes that technology is a learning tool that empowers students to maximize their ability to become self-directed learners, enables teachers to expand their instructional skills and abilities, and contributes to the efficient and effective operation of all district administrative and support systems. It is the vision of Farmington Schools to create a technological environment where students, teachers and staff have ubiquitous access to the technology resources necessary to foster a challenging curriculum that stimulates critical-thinking and creativity.

Mission

Farmington Schools will provide students and staff with the technological tools, communications systems, and professional development essential for the successful integration of technology in all aspects of teaching, learning and administration.

1. Learning

Engaging and Empowering Learning Through Technology

GOAL: All learners will have engaging and empowering learning experiences in both formal and informal settings that prepare them to be active, creative, knowledgeable, and ethical participants in our globally connected society.

Supporting Concepts

- * Technology can enable personalized learning or experiences that are more engaging and relevant.
- * Technology can help organize learning around real-world challenges and project-based learning using a wide variety of digital learning devices and resources to show competency with complex concepts and content.
- * Technology can help learning move beyond the classroom and take advantage of learning opportunities available in museums, libraries, and other out-of-school settings.
- * Technology can help learners pursue passions and personal interests.
- * Technology access when equitable can help close the digital divide and make transformative learning opportunities available to all learners.

District Learning Strategies

Activity/Task	Professional Development	Evaluation (Measurable Change)	Cost/Funding Source
1.1 Continue to purchase/upgrade laptops for students and staff	Use of equipment and technology integration skills: Provided by Apple and District professional development staff	Computer inventory, improved student learning outcomes	\$3.8M one-time/Ed. Tech Notes \$100K annually for replacements, etc.../Ed. Tech Notes

Activity/Task	Professional Development	Evaluation (Measurable Change)	Cost/Funding Source
1.2 Continue to purchase and deploy digital curriculum resources and supplemental technology equipment (e.g. document cameras, interactive tools, adaptive technology, etc...)	Same as 1.1	Same as 1.1	\$800K annually/Ed. Tech Notes
1.3 Investigate alternative 1-1 devices to reduce cost and management while retaining educational value	Same as 1.1	Staff comments during evaluation process	N/A
1.4 Continue to upgrade student computers in elementary computer labs	Same as 1.1	Same as 1.1	\$280K every 4 years/Ed. Tech Notes
1.5 Continue 'trickle down' upgrade of elementary mobile devices (laptops) by repurposing secondary student devices	Same as 1.1	Same as 1.1	

2. Teaching

Teaching With Technology

GOAL: Educators will be supported by technology that connects them to people, data, content, resources, expertise, and learning experiences that can empower and inspire them to provide more effective teaching for all learners.

Supporting Concepts

- * Educators can collaborate far beyond the walls of their schools.
- * Educators can design highly engaging and relevant learning experiences through technology.
- * Educators can lead the evaluation and implementation of new technologies for learning.
- * Educators can be guides, facilitators, and motivators of learners.
- * Educators can be co-learners with students and peers.
- * Educators can become catalysts to serve the underserved.

District Teaching Strategies

Activity/Task	Professional Development	Evaluation (Measurable Change)	Cost/Funding Source
2.1 Continue implementation of staff development on use of technology resources	Use of computer hardware and software	Staff surveys and technology proficiency profiles will indicate improved ability to use technology	\$20K annually/ Ed. Tech Notes

Activity/Task	Professional Development	Evaluation (Measurable Change)	Cost/Funding Source
2.2 Continue implementation of staff development on integration of technology into all curriculum areas	Technology based projects, lessons and assessments, outside training sources (online, district staff and vendor provided)	Same as 2.1	Same as 2.1
2.3 Continue implementation of staff development for administrators on evaluations of technology integration	Classroom observations, technology integration strategies	Administrators will add technology goals to PDPs and monitor them effectively	Same as 2.1
2.4 Continue subscriptions to digital curriculum resources as available	PD by curriculum content providers	Review of curriculum subscriptions	Curriculum Budget
2.4 Continue investigation and evaluation of district created digital curriculum resources	PD provided by district staff and vendors	Realize reduction in purchased curricular content	Same as 2.1
2.5 Continue investigation and evaluation of freely available digital curriculum resources	PD provided by district staff and vendors	Realize reduction in purchased curricular content	Same as 2.1

3. Leadership

Creating a Culture and Conditions for Innovation and Change

GOAL: Embed an understanding of technology-enabled education within the roles and responsibilities of education leaders at all levels and set state, regional, and local visions for technology in learning.

Supporting Concepts

- * Future Ready Leaders
- * Future Ready Focus Areas
 - * Collaborative Leadership
 - * Personalized Student Learning
 - * Robust Infrastructure
 - * Personalized Professional Learning
- * Implementation as a Priority
- * Budgeting and Funding for Technology
 - * Eliminate or Reduce Existing Costs
 - * Partner With Other Organizations
 - * Make Full Use of Federal Funds
 - * Rethink Existing Staff Responsibilities
 - * Ensure Long-Term Sustainability

District Leadership Strategies

Activity/Task	Professional Development	Evaluation (Measurable Change)	Cost/Funding Source
3.1 Encourage district and school leadership to support and implement the strategies in section 2: Learning above.	Use of computer hardware and software	Staff surveys and technology proficiency profiles will indicate improved ability to use technology	\$20K annually/ Ed. Tech Notes
3.2 Maintain open and frequent communication with district leadership regarding the implementation of technology as an educational tool	N/A	N/A	N/A
3.3 Continue to pursue funding through Federal programs	N/A	Federal funding offsetting district expenditures	N/A
3.4 Continue to leverage state funding sources (Educational Technology Act) to provide long term sustainable funding for technology	N/A	Ed Tech Notes requests every two years	N/A
3.5 Reference and support goals of item #5 below (Infrastructure) to continue to support technology as an educational tool	Reference Goal 5	Reference Tasks in Goal 5	Reference Costs in Goal 5

4. Assessment

Measuring for Learning

GOAL: At all levels, our education system will leverage the power of technology to measure what matters and use assessment data to improve learning.

FUTURE OF ASSESSMENT

The shift from traditional paper and pencil to next generation digital assessments enables more flexibility, responsiveness, and contextualization.

	TRADITIONAL	NEXT GENERATION
TIMING	 <p>After learning</p>	 <p>Embedded in learning</p>
ACCESSIBILITY	 <p>Limited</p>	 <p>Universally designed</p>
PATHWAYS	 <p>Fixed</p>	 <p>Adaptive</p>
FEEDBACK	 <p>Delayed</p>	 <p>Real Time</p>
ITEM TYPES	 <p>Generic</p>	 <p>Enhanced</p>

Supporting Concepts

- * Approaches to Assessment
- * Using Assessment Data to Support Learning
- * How Technology Transforms Assessment
 - * Enable Enhanced Question Types
 - * Measure Complex Competencies
 - * Provide Real-Time Feedback
 - * Increase Accessibility
 - * Adapt to Learner Ability and Knowledge
 - * Embedded With the Learning Process
 - * Assess for Ongoing Learning
- * The Future of Technology-Based Assessment
 - * Continuous Improvement of Assessments
 - * Integrated Learning and Assessment Systems
 - * Using Data Effectively and Appropriately
 - * Learning Dashboards That Enable Visualizations
 - * Set of Shared Skill Standards

District Assessment Strategies

Activity/Task	Professional Development	Evaluation (Measurable Change)	Cost/Funding Source
4.1 Leverage available assessment tools for district and state assessments (CFAs, SCAs, EOCs, etc...)	Use of computer hardware and software	Availability of data from online assessment tools.	Varies based on provider/assessment budget

Activity/Task	Professional Development	Evaluation (Measurable Change)	Cost/Funding Source
4.2 Continue support and implementation of online learning management systems (LMS)	Online and staff lead training on use of LMS tools	Number of classes which include an online component	\$90k annually/ Ed. Tech Notes
4.3 Provide tools for access to and evaluation of data gathered by assessment systems and LMS systems	PD by assessment department	Administrators will monitor and evaluate staff use of data in decision making processes	\$4k annually/ Ed. Tech Notes

5. Infrastructure

Enabling Access and Effective Use

GOAL: All students and educators will have access to a robust and comprehensive infrastructure when and where they need it for learning.

INFRASTRUCTURE

To Support Everywhere, All the Time Learning



Supporting Concepts

- * Ubiquitous Connectivity
 - * Connectivity at School
 - * Connectivity at Home
- * Powerful Learning Devices
 - * Preventing Continuation of Digital Divide (BYOD)
- * High-Quality Digital Learning Content
 - * Openly Licensed Educational Resources
- * Responsible Use Policies (RUP) or Acceptable Use Policies (AUP)
- * Protections for Student Data and Privacy
- * Device and Network Management
 - * Standardization of Technology
 - * Reducing TCO and increasing ROI

District Infrastructure Strategies

Activity/Task	Professional Development	Evaluation (Measurable Change)	Cost/Funding Source
5.1 Continue implementation of Farmington Learning Initiative 1-1 deployment of laptops to 6-12 grade students	N/A	Inventory of laptops	Covered by 1.1
5.2 Continue upgrades to wireless infrastructure at all campuses and offices	N/A	Inventory of wireless equipment	\$170K one-time/ Ed. Tech Notes, e-rate funding may reduce to \$34K or less

Activity/Task	Professional Development	Evaluation (Measurable Change)	Cost/Funding Source
5.3 Upgrade district microwave WAN connections to 1-10Gbps fiber optic connections, leveraging e-rate modernization rules for special fiber construction builds, federal recommendation is 1Mb per student, requiring 1Gbps minimum at all K-8 schools and 2Gbps at FHS and PVHS	N/A	Mapping of district WAN connectivity points	\$1.5M one-time/ Ed. Tech Notes, e-rate funding may reduce this to \$300K or less; \$9K to \$100K annually, e-rate funding may reduce this to \$1K to \$20K or less
5.4 Upgrade district internet connection to 1-10Gbps fiber, federal recommendation is 10-12Gbps by 2018 for FMS	N/A	Mapping of district internet connectivity	\$48K annually/e-rate funding will reduce this to \$9K
5.5 Upgrade existing LAN switches at all sites	N/A	Mapping of district LAN	\$300K one-time/ Ed. Tech Notes, e-rate funding may reduce to \$60K or less
5.6 Implement forward thinking design in all new construction and remodels to facilitate 21st century education environments	N/A	New and remodel spaces will be conducive to current and future technology use	Variable based on projects, construction and e-rate funding sources
5.7 Continue use of network management and device management tools to track, monitor, maintain, update and inventory all equipment	N/A	N/A	\$90K annually/ Ed. Tech Notes
5.8 Standardize all printing devices under centralized Managed Printer Services contract with overage costs distributed to schools based on real usage	N/A	Reduced printer fleet, reduced model variety, increased support speed, increased functionality	\$358K annually/ Operational and Ed. Tech Notes (reduction in printing will reduce this cost)

Technology Budget Summary

The technology budget for Farmington Municipal Schools is built to project the costs of all technology expenditures over a two year time frame. There is much that happens in two years in our school district and unexpected costs or reductions in costs happen during that time period. The data provided below is based on our experience with the systems already in place, maintenance of those systems, potential new implementations and specifically planned updates, upgrades or acquisitions.

The projected budget provided represents the total two year cost of technology for the district as well as the potential reductions if E-rate is leveraged for annual costs and for one time costs as provided under the new E-rate modernization rules. While the total expenditures expected do not deviate greatly from the prior Educational Technology Act bond/note request there is a great opportunity for savings in both the short and long term by leveraging E-rate funding on items previously not supported. It is the recommendation of the committee that this budget be approved, that Educational Technology Act funding in the form of “Ed Tech Notes” be authorized, and that all possible E-rate funding options be applied for and used to fulfill the goals of the district’s Technology Plan.

Estimated Technology Budget w/ E-rate Options		
	Expenditure	E-Rate
Annual Expenditures	\$ 3,034,654	\$ (639,000)
One Time Expenditures	\$ 4,216,000	\$ (400,000)
Total	\$ 7,250,654	\$ (1,039,000)
Total w/ E-rate Annual	\$ 6,611,654	
Total w/ E-rate One Time	\$ 6,211,654	

The costs above do not reflect the total one time costs of proposed Internet Access, WAN, and LAN upgrades. The bulk of those costs (up to 80% initially) are covered by E-rate for approved projects. The total cost of those projects is as yet unconfirmed but could be in the range of \$1.5M to \$2M.