TECHNOLOGY ROADMAP

Spring 2016

MATANUSKA SUSITNA BOROUGH SCHOOL DISTRICT

Produced by the Mat-Su Borough School District

June 2016

Purpose & National Framework

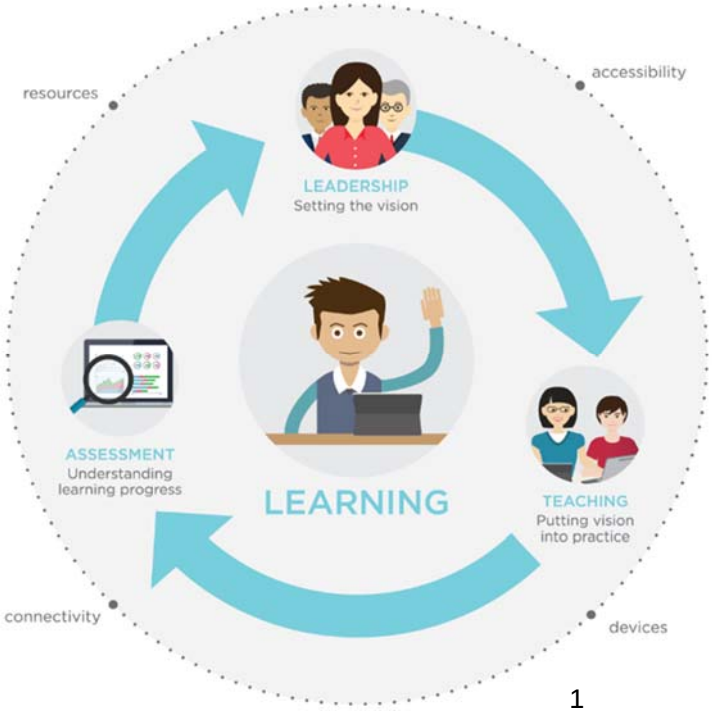
During the 2015-2016 school year, the Mat-Su Borough School District (MSBSD) developed a five-year technology roadmap aligned with a School Board Objective that was designed to:

- Outline goals for educational technology within MSBSD
- Outline technology infrastructure goals
- Provide a construct for managing technology standards and expenditures.

The basis for the technology roadmap lies in the National Education Technology Plan (NETP), which states:

> *"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."*

Student learning must be at the center of all technology-related initiatives. But encircling student learning, there must be a strong positive correlation between leadership, teaching, and assessment wherein they each affect the next. And supporting those, there must be a network of resources, high levels of accessibility, usable devices, and seamless connectivity. **Undergirding all of these is infrastructure, which provides the accessibility, resources, and connectivity so that learning is everywhere, all the time.**



School Board Objective:

Create a Five Year Technology Roadmap

1.2 Assess current devices and staff/student access to create baseline data

2.3 & 3.1 Identify and define common language / messaging on the District's technology plan

5.3 Explore technologies to increase student access

6.1 Develop a roadmap / plan which provides for enhanced access at middle and high schools over the next 5-10 years

6.2 Develop standards and the funding mechanism that provides for sustaining an "enhanced access" program

6.3 Develop a strategy to elicit private enterprise funding to support "enriched access" build-out

7.2 Develop a plan to improve coverage of wireless network access across the District

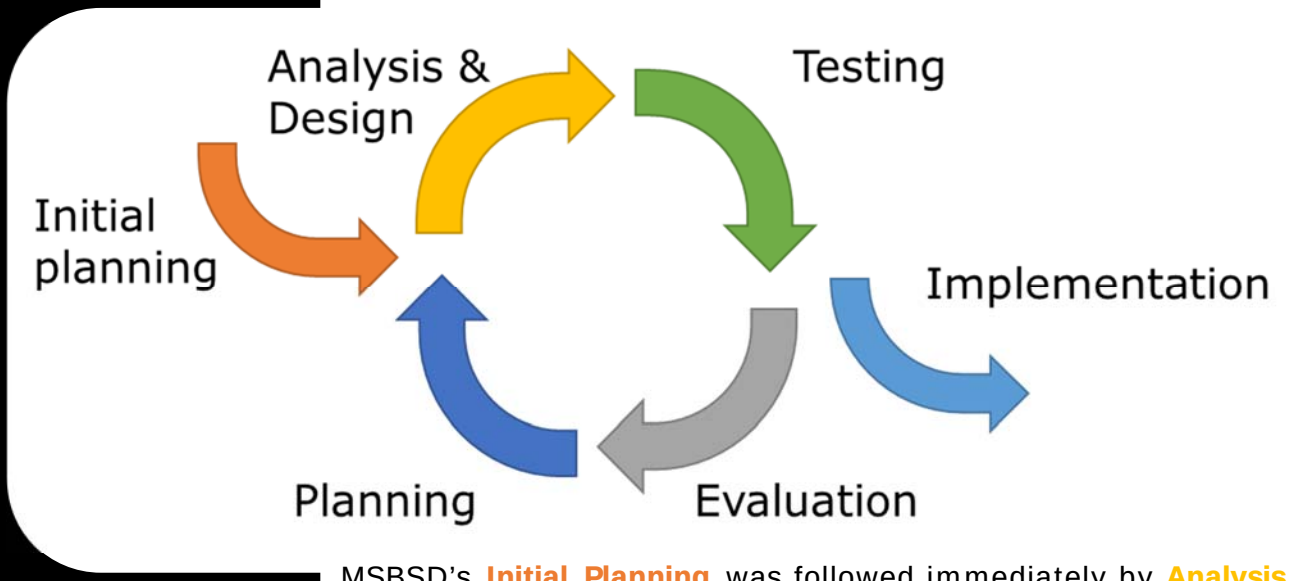
7.5 Develop a scheme for the centralized management of District mobile devices

Additional information about the National Education Technology Plan can be found at http://tech.ed.gove/netp

Background

Process

When considering the technology roadmap, it is important to remember that while this is a plan, it is also a living document that will evolve over time. Implementation does not stop as the plan evolves, but rather occurs simultaneously.



MSBSD's **Initial Planning** was followed immediately by **Analysis & Design**. Many variables were included in the analysis and design, such as infrastructure, cost, ease of use, sustainability, and readiness for adoption. **Testing** ensured there were no connectivity issues , devices met immediate needs, and were easy to use. Next, **Implementation** provided an avenue through which users could teach and learn with the devices. Simultaneously, the devices were put through a rigorous **Evaluation** phase where they were again analyzed for usability, cost, sustainability, and more. The results of the evaluation led to more **Planning**, and the cycle continues with a fresh **Analysis & Design**.

For example, this cycle is evidenced in Colony High School's adoption of Chromebooks in the FY16 school year:

- *Staff recognized a need for technology in core content areas.**
- *Analysis and design led to a Chromebook pilot program.*
- *Chromebook carts were purchased for "technology savvy" teachers as part of the testing phase.*
- *The Chromebooks were implemented and used for the remainder of the school year. Simultaneously, they were evaluated for their ease of use and how well they met student/teacher needs.*
- *Planning ensued as staff decided whether to continue with Chromebooks or explore other options for technology.*
- *This pilot program led to a wider District adoption which is underway for the FY17 school year.*

*Core Content: Language Arts, Social Studies, Math, and Science Courses

See page 11 for more information about Project RED.

In addition to a Chromebook pilot program, MSBSD participated in two site visits, conducted a needs assessment, and analyzed the results of Project RED to assist in the development of an implementation plan.

Developing the Technology Roadmap

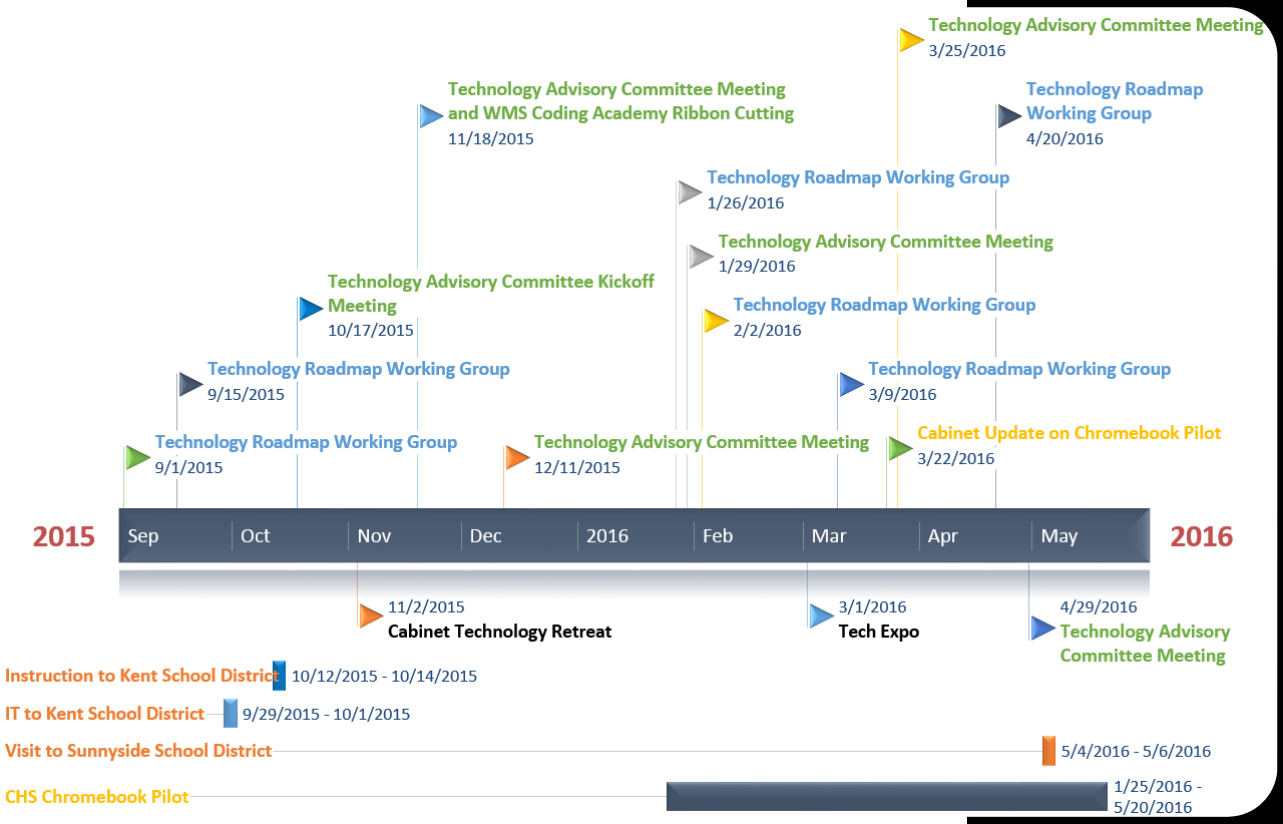
The technology roadmap was developed by improving collaboration for technology decision making. The idea was to involve more than just the IT department when selecting devices, so the District turned to the following groups/programs for input:

- IT and Instruction working groups
- District Technology Advisory Committee (TAC)
- Pilot programs and evaluations
- Early adopters
- Change management process
- Vendor meetings and device testings

Individuals were selected for these groups based on their use of technology in their department/school and position, their willingness to provide honest and collaborative feedback, and their comfort with considering and utilizing new technology.

Between September 1, 2015 and April 29, 2016, the above groups met periodically to brainstorm, problem-solve, and offer fresh perspectives to MSBSD's technology needs. An overview calendar of various meetings is provided:

The TAC was formed in the fall of 2015. Members were nominated by Principals and Supervisors based on their unique perspectives and utilization of technology. Elementary, middle, and high school teachers and staff were represented, along with various admin department staff. Through periodic meetings, TAC members discussed and debated the merits of various pieces of technology before offering insight to the final device selection.



Together, these groups helped inform the 2015-2016 focus areas for both Instruction and IT.

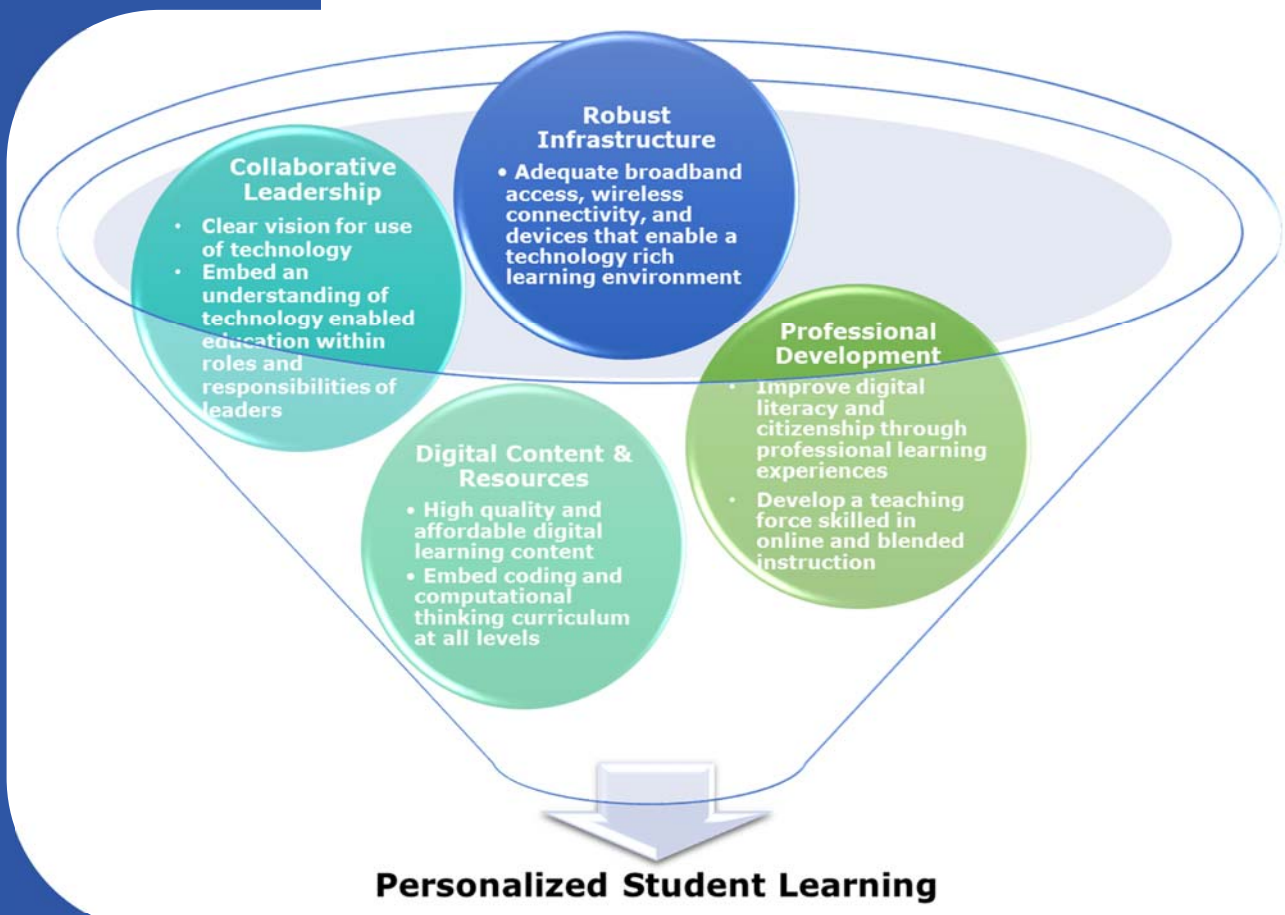
Where We're Going

Education Technology Framework & Goals

MSBSD's ultimate goal in utilizing technology in education is **Personalized Student Learning**.

Four key elements construct the framework that leads to personalized student learning, as displayed in the funnel below. They are:

- **Robust Infrastructure**
- **Collaborative Leadership**
- **Digital Content & Resources**
- **Professional Development**

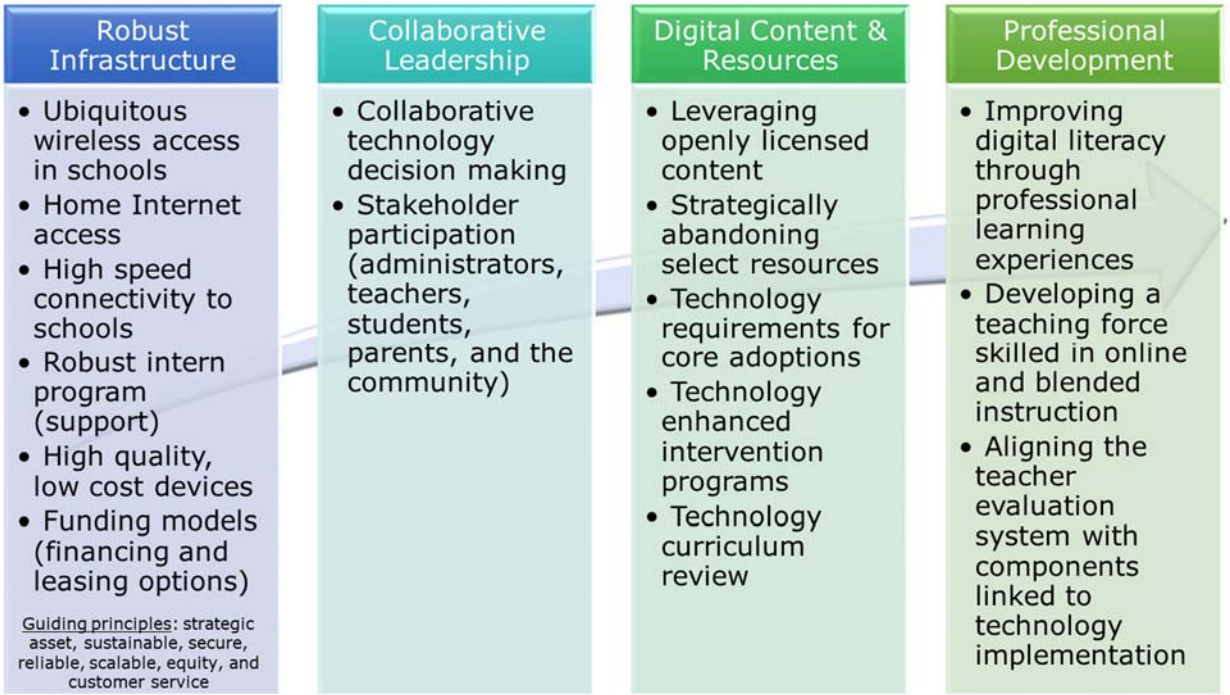


Personalized student learning refers to employing resources that create equitable and accessible learning systems that make learning possible everywhere and all the time.

Personalized student learning is what truly prepares students to be competent, aware, and prepared for the future. Whether they head to college or into a career post high school, all students must be empowered to direct their own use of technology as they continue to learn everywhere and all the time.

Education Technology Initiatives

Together, the Education Technology Framework and Goals inform the Education Technology Initiatives:



The IT Department's development of a robust infrastructure includes these components:

- **Ubiquitous connectivity:** Persistent access to high-speed Internet in and out of school
- **Powerful learning devices:** Access to mobile devices that connect learners and educators to vast resources of the Internet and facilitate communication and collaboration
- **High-quality digital learning content:** Digital learning content and tools that can be used to design and deliver engaging and relevant learning experiences
- **Responsible use policies (RUPs):** Guidelines to safeguard students and ensure that the infrastructure is used to support learning

Each of these components is necessary to support "everywhere, all the time" learning.

"Don't ask kids what they want to be when they grow up but what problems they want to solve. This changes the conversation from 'who do I want to work for,' to 'what do I need to learn to be able to do that.'"
- Jaime Casap, Google Global Education Evangelist

Where We're Going

Technology Benchmarks & Strategy

*Core Content: Language Arts, Social Studies, Math, and Science Courses

Simply moving toward the Blueprint, however, is not enough. Adding more technology to a classroom and/or learning environment does not make them superior, more engaging, more efficient, or produce higher test scores. Rather, meaningful and lasting change occurs only through intentionally planned processes that integrate various tools, combines powerful resources, and produces and utilizes digital content. When technology is combined with traditional methods of teaching, students are better able and more prepared to explore the world around them, solve diverse problems, and communicate effectively.

- MSBSD Project RED Commentary

In order to achieve Blueprint benchmarks, MSBSD has developed the following strategy that includes:

- Building teacher capacity
- Increasing resourcing and support systems
- Creating conditions for smooth transitions to a take-home model

This strategy manifests itself in the following action items:

- Provide robust teacher devices coupled with professional development (Integrated Classroom; see flier on next page)
- Enhance elementary access
- Enhance secondary access by providing Chromebooks to core content* areas
- Maintain robust devices supporting Career & Technical Education (CTE) and non-core content* areas.

In two to three years, MSBSD will be at a cross roads where a decision must be made with regards to where technology investments are made. The path taken at this cross roads will be determined by considering these points:

- Reassess device requirements and instructional needs to determine the best device for secondary purposes
- Is enhanced access sustainable?
- Should a take-home model be added in order to enhance access?

Below is a comparison between where MSBSD is today with technology and the Blueprint technology goals.

Today	Benchmark	Blueprint
3.7 Years	Average Device Age	2.5 Years
$413	Cost per Student	$629
2.6 : 1	Overall District Student : Device ratio	1.5 : 1
3%	Tech Infrastructure Spending as a % of Operating Budget	5%
55 Mbps	Internet bandwidth per 1,000 students	100 Mbps

integrated CLASSROOM

An MSBSD Technology Initiative

OVERVIEW

A personalized technology plan allows teachers to adjust technology to meet the needs of their classroom. The Integrated Classroom supports wireless connectivity, giving teachers the freedom to navigate the classroom and interact with students while utilizing exceptional equipment.

KEY TENETS

Portability
Mobility
Enable BYOT*
Enhanced Connectivity
Choice

**Bring Your Own Technology*

IMPLEMENTATION

Fall 2016: 250 Bundles deployed via SAMS*

(Monitor, Dock, 2-in-1 Tablet, Wireless Presentation & Collaboration System)

**Summer Academy in the Mat-Su*

DEVICE COMPATIBILITY

Apple (iOS & OSx)
Windows (PCs & Tablets)
Google (Chrome OS & Android)

What Will it Take to Get There?

2015-2016 Focus Areas

IT's focus areas are manifest in the following IT projects:

- Network design and refresh
- Integrated Classroom
- Chromebook deployment
- Wireless access point expansion and refresh
- Site Support Specialist restructuring
- Automate device configuration management
- Call Center
- Intern program
- Cloud migration

Instruction assessed District readiness via the "Tech Readiness Survey." 3,950 students and 595 staff participated.

Students:

- 89% report access at home
- 80% report wireless access at home

Teachers:

- 82% report daily use for instruction
- 35% report daily student use for coursework

IT Focus Areas:

- Build the technology portfolio (planning and design)*
- Revitalize (modernize) the network
- Improve responsiveness by adopting a fourth-utility mindset and automating processes
- Emphasize customer service

*Building the technology portfolio includes:

Drafting the Blueprint — *Taking Inventory* — *Identifying Gaps* — *Setting Priorities*

Instruction Focus Areas:

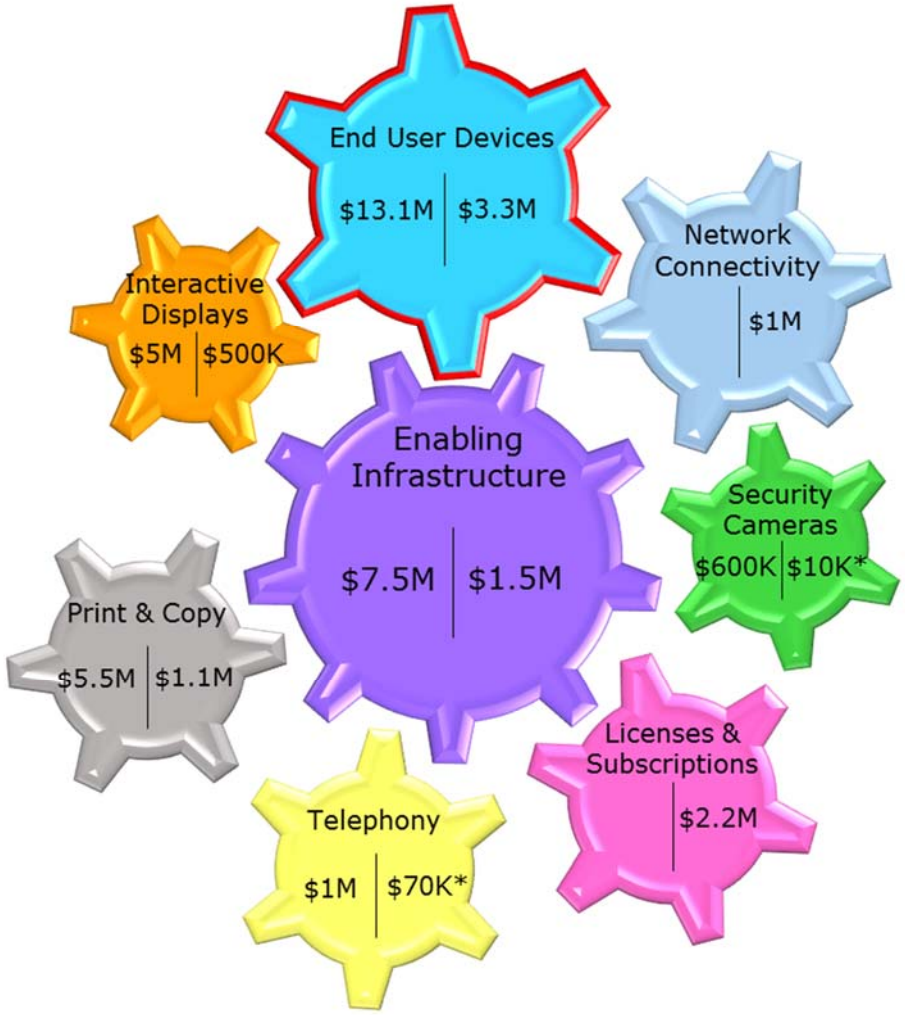
- Assess District readiness in:
  1. Teachers
  2. Students
  3. Administrators
- Build capacity in Principals by:
  1. Modeling technology use
  2. Using Technology with Classroom Instruction FLT
  3. SAMS technology for Principals
- Review technology curriculum including:
  1. Standards
  2. Scope & sequence
  3. Pacing guides
  4. Instructional materials
  5. Digital citizenship
- Foster community awareness and support for modernization via:
  1. Annual Tech Expo
  2. Highlight technology driven teaching and learning

The first annual Tech Expo, held March 1, 2016 at Wasilla Middle School included student-led presentations and experiential projects, such as robotics, 3D prosthetics printing, a video broadcast studio, Google classroom demonstrations, and emergency dispatch communications.

As previously mentioned, the IT Department focused on developing a technology portfolio in the 2015-2016 school year. The image below is intended to categorize technology spending into major areas. This provides the groundwork for discussions about costs and sustainability.

In each category, the dollar figure to the left of the bar is the total value of the asset; the dollar figure to the right of the bar is the annual recurring cost. Where there is no dollar figure to the left, there is no asset to count, only annual recurring costs (as in the case of network connectivity).

For example, MSBSD has $13,100,000 in end user devices. Annually, end user devices cost $3,300,000, if maintaining established device refresh rates.



* Telephony and Security Cameras will be on a break-fix model in lieu of a refresh cycle

Total Portfolio Value:
$32.7M | $9.7M

Enhanced Access:

To institute secondary (grades 9-12) enhanced access (1 device per student) above what MSBSD provides today increases the annual cost by an average of $342,000.

Secondary enhanced access calculations do not include charter schools or Mat-Su Central School.

Enhanced access at elementary schools includes four Chromebooks in each elementary classroom above what MSBSD provides today, for an average annual cost of about $263,000.

This blueprint with enhanced access yields an overall 1.5:1 student to device ratio. Currently, MSBSD is operating at a ratio of just over 3:1.

Financial Analysis

Funding sources not considered in this analysis:

- Grants
- E-Rate Category 2
- CIP Funds
- Bonds (FF&E)

MSBSD's **current budget** for technology can be divided into these categories:

Category	Cost
End-User Equipment	$ 1,000,000
Network Connectivity	$ 1,000,000
Licenses & Subscriptions	$ 2,000,000
Enabling Infrastructure	$ 1,500,000
Print & Copy	$ 1,100,000
TOTAL:	**$ 6,600,000**

To build out the **blueprint with enhanced access**, the following funding would be required:

Category	Cost
End-User Devices	$ 3,300,000
Classroom Displays	$ 500,000
Other Infrastructure Costs	$ 5,900,000
TOTAL:	**$ 9,700,000**

*There is a **$3,100,000 gap** between MSBSD's current budget and blueprint costs.*

Device infrastructure suffers the most when an entire program is not fully funded. Other priorities are required (such as network connectivity) to enable technology in the class-room. Without those other components / priorities, the full potential of the system is not realized due to limited access.

Takeaway: The blueprint will require adjustments over time to demonstrate sustainability.

Sustainability cannot be achieved through one-time monies (such as grants and bonds). This program's sustainability is contingent on additional permanent funding, reductions to spending elsewhere, or an adjustment in spending priorities.

Current spending priorities are:

1. Network Connectivity / Internet Access
2. Enabling Infrastructure
3. Licenses and Subscriptions
4. Print and Copy
5. Staff Devices
6. Interactive Displays
7. Student Devices

Project RED represents the largest independent research of technology use in schools. It is the first and only nationally conducted study that focuses on academic results and the financial implications of utilizing technology in education. According to Project RED, there are three key issues in education in the United States:

- How to improve student achievement
- What the financial impact technology has on budgets
- How continuous access to devices affects students and student learning

Some key findings from Project RED: The Technology Factor are included here:

- Nine key implementation factors are linked most strongly to education success.
  1. Intervention classes: Technology is integrated into every intervention class period.
  2. Change management leadership by principal: Leaders provide time for teacher professional learning and collaboration at least monthly.
  3. Online collaboration: Students use technology daily for online collaboration (games/simulations and social media).
  4. Core subjects: Technology is integrated into core curriculum weekly or more frequently.
  5. Online formative assessments: Assessments are done at least weekly.
  6. Student-computer ratio: Lower ratios improve outcomes.
  7. Virtual field trips: With more frequent use, virtual trips are more powerful. The best schools do these at least monthly.
  8. Search engines: Students use daily.
  9. Principal training: Principals are trained in teacher buy-in, best practices, and technology-transformed learning.
- Properly implemented technology saves money.
- Schools employing key implementation factors outperform all other schools.
- The principal's ability to lead change is critical.
- Technology-transformed intervention improves learning.
- Online collaboration increases learning productivity and student engagement.
- Daily use of technology delivers the best return on investment (ROI).

"Project RED is nothing less than a blueprint for remaking American education—second-order change—not through more or better testing, charter schools, longer school days, more or even better teachers, but through fundamentally altering how we do education, the first real change in the process of education itself in a thousand years." - Angus King, Former Governor of Maine

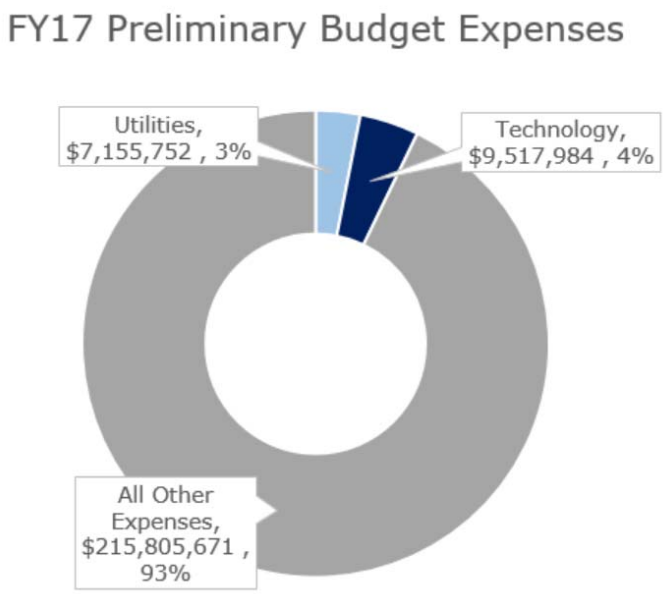
According to Project RED, Principal leadership is key in initiating change and adopting a greater use of technology.

"A leader takes people where they want to go. A great leader takes people where they don't necessarily want to go, but ought to be." - Rosalynn Carter

Additional information about Project RED can be found at http://www.one-to-oneinstitute.org/introducing-project-red

Technology as the "Fourth Utility"

Water / sewer, electric, and natural gas are basic utilities that ensure our facilities are able to function properly to achieve maximum student learning. But what if we considered technology as a fourth utility required to achieve maximum student learning?



Including technology as the fourth utility establishes it as a core need of the school district and, as a result, something that is budgeted and prioritized just like water / sewer, electric, and natural gas.

Resourcing technology is similar to resourcing other utilities. Just as we ensure there is constant electricity at the schools (and have contingency plans—such as backup generators—if something goes amiss), we should expect there to be constant connectivity available. Ensuring reliable access, students and staff will be able to access the online knowledge that is available to them.

"You have to have a big vision and take very small steps to get there. You have to be humble as you execute but visionary and gigantic in terms of your aspiration. In the Internet industry, it's not about grand innovation, it's about a lot of little innovations: every day, every week, every month, making it a little bit better."

- Jason Calacanis,
Internet Entrepreneur

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We prepare all students for success