

Technology Plan

*2013 - 2016
Winchester Public Schools*

Winchester's Vision for Technology

Technology is used seamlessly for differentiated teaching and learning in Winchester's educational community. Students will utilize technology as a catalyst and tool for creation, critical thinking, collaboration, and problem-solving. We will prepare all students to become information literate, teaching them how to find, analyze, and use information. We believe they will become life-long learners, productive, contributing, and responsible digital citizens in an ever more complex world.

Winchester Public Schools Technology Plan Committee

Phillip Belleniot, Elementary Instructional Technology Specialist

Cindy Bohne, School Committee

Jessica Callahan, Lynch Library Media Specialist

Jerry Chapman, Winchester High School Assistant Principal

Caren Connelly, WFEE Executive Director

Shelly Chamberlain, Consultant

John Danizio, Director of Finance

Patricia DeVries, Middle School Instructional Technology Specialist

Joanne Dohnerty, Information Manager

Heidi Driscoll, Parent

Jennifer Elineema, Assistant Superintendent

Leah Ferullo, Muraco Teacher

Christine Kelley, Lynch Principal

Lynn King, McCall Special Education Teacher

Roger Michelson, Parent

Tom Murphy, Network Manager

Laurie Kirby, Muraco Principal

Katie Malone, Vinson Owen Reading Teacher and Asst. Principal

Donna Marcotte-Rizza, Assistive Technology

Bill McAlduff, Superintendent

David Petty, Winchester High School Math and Computer Teacher

Mark Pine, Winchester High School Math Teacher

Nicole Pineau, McCall Middle School Wellness Teacher

Jeff Sun, Consultant

Susan Verdicchio, School Committee

Sean Walsh, Director of Personnel

Tom Murphy, Information Manager

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1. Introduction

Background

The following plan provides strategic direction and establishes specific action steps to implement instructional technology so to improve learning and teaching in the Winchester Public Schools over the next three school years. This Technology Plan is designed to provide a blueprint for district technology efforts, and is based on the belief that technology should be embedded, used for critical thinking, and as a tool to support all stakeholders.

We realize that we face considerable obstacles in achieving our overall goal of utilizing technology tools to enrich and improve learning for all students. As the Current Status (Chapter 2) section of this document shows, there have been considerable concerns regarding the state of the infrastructure, the inconsistent distribution/application/use of hardware and/or software, and the professional development needed for learning and teaching in a school district that prepares students for the technology-rich world that they will live and work in.

Thus, in the Spring of 2013, the school committee acted on the superintendent's recommendation to conduct a technology program review. This program review was thorough, included all stakeholders, and specified areas for improvement. Once the program review was completed, the district made the decision to move forward with the following plan and timeline:

- Convening a technology committee in the Spring of 2013
- Tech committee completing a draft of a technology plan by September 2013
- A draft of the technology plan out to the district for comment by September 2013
- A draft of the technology plan presented to the school committee for review by October 2013
- A draft of the technology plan out to the community by October 2013
- Review of the feedback by the technology committee October and November 2013
- Revised draft presented to the school committee in December 2013

Winchester’s Technology Organization – Roles and Responsibilities

In order to implement its Technology Plan and move forward, the district is working on creating a seamless connection between technology infrastructure/support and curriculum.

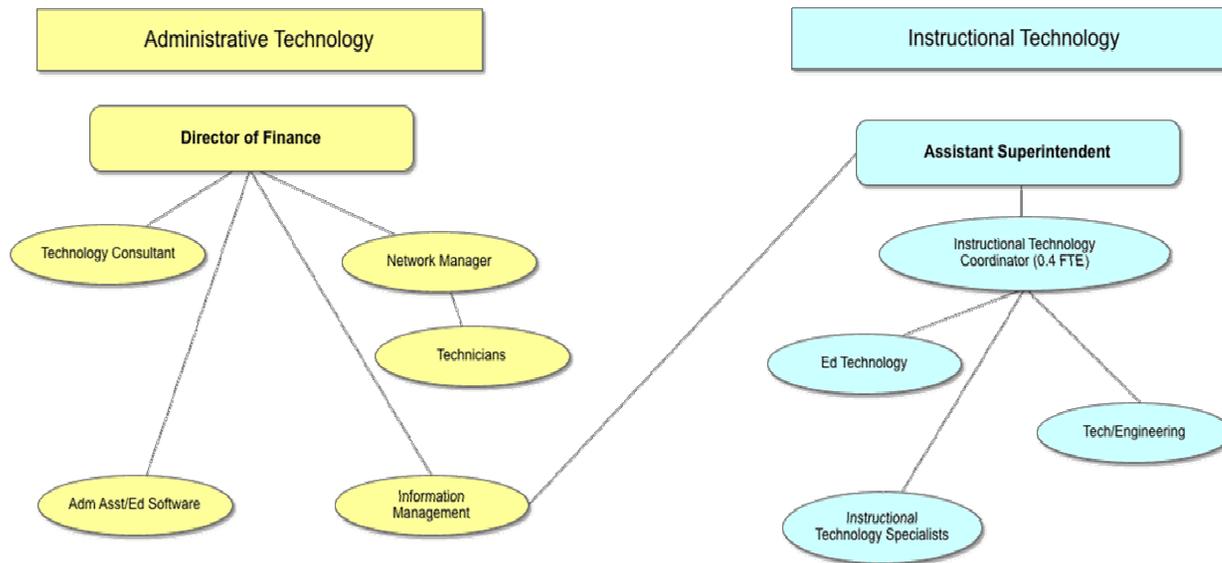
The District Technology Committee

The district will create a permanent District Technology Committee composed of district stakeholders, which will meet regularly to provide guidance on the implementation of technology throughout the district. This committee, comprised of technology personnel, teachers, ITS, library media specialists, parents, local foundation/organizations representatives, and administration will:

- Give feedback on design plans for implementation of long-term major projects involving the purchase and use of educational technology.
- Make recommendations on funding procedures through the operational budget, and outside organizations such as WFEE (Winchester Foundation for Educational Excellence), parent associations, grant foundations, etc.
- Make recommendations for specific technology purchases and implementation - equipment, software, etc.
- Standardize equipment.
- Discuss and make recommendations for equity.
- Make recommendation for policies and procedures to the superintendent

Technology Department

The current Strategic Technology Plan specifies a revised structure for roles and responsibilities related to technology management and staffing. This structure is shown below and described in the following brief position descriptions.



Network Manager –The Network Manager designs, installs, and manages building computer networks and the district wide area network for both the administrative and academic clients. This position troubleshoots and repairs all aspects of the wide area network including workstations, servers, wiring, etc. This individual has primary responsibility for providing networking services and computer applications throughout the Winchester Public Schools.

Technical Support Specialist – The Technical Support Specialists perform specialized technical work in the repair and maintenance of various electronic devices such as personal computers, monitors, disk drives, and printers for both administrative and instructional clients. Work involves using specialized testing devices and maintenance documentation to determine malfunctions; repairing computer equipment; assembling devices; and installing electronic components.

Administrative Assistant/Educational Software This position works with the technology Department phone support, is the primary contact for the purchasing of district hardware and software once it is approved, and is the database coordinator for curriculum software.

Information Management – Management of data in a timely and accurate fashion, responsible for submitting required district reports to the ESE (Massachusetts Elementary and Secondary Education) and overseeing the numerous databases used by the district. This position is responsible for extracting data from numerous district databases for analysis and distribution in the district and community. Key resource person to contact to obtain necessary data for students, staff and other resources within the district.

Instructional Technology Coordinator - This 0.4 FTE position works with district technology instruction, while collaborating with all areas of the district to provide technology support. This person assists with: department budget, project and staff coordination, planning, resource allocation and efficiency improvements. The coordinator advises and assists with the implementation of state and district policies, including CIPA (Children’s Internet Protection Act), technology needs, and MA technology standards.

Instructional Technology Specialists – The primary role of this position is to support teachers in the integration of technology in student-centered learning in a variety of ways such as co-planning, co-teaching, support, and trouble-shooting. The secondary focus is to support teachers in other technology areas such as: using technology for parent communication, submitting grades, and other technology applications. Additionally, at the elementary level, they may provide some direct instruction to students.

Winchester Public Schools Mission

Our Mission is to provide all students with an outstanding education in a nurturing yet challenging environment that fosters academic achievement, healthy social and emotional development, enthusiasm for education, and a life-long love of learning.

Winchester's Vision for Instructional Technology

Technology is used seamlessly for differentiated teaching and learning in Winchester's educational community. Students will utilize technology as a catalyst and tool for creation, critical thinking, collaboration, and problem-solving. We will prepare all students to become information literate, teaching them how to find, analyze, and use information. We believe they will become life-long learners, productive, contributing, and responsible digital citizens in an ever more complex world.

2. Technology Needs – Current Status

Status of Technology in Winchester Public Schools

Findings

Between March and May 2013, Winchester Public Schools contracted the services of an independent evaluator to assess key dimensions of the district's instructional technology implementation effort. Over the course of the three-month review process, the evaluators spoke to and listened to a large number of Winchester teachers, parents, administrators and interested community members. Throughout the data resulting from this review, several trends and themes emerged as to what Winchester Public Schools stakeholders felt was necessary to improve students' use of technology in the educational environment. These themes are concisely summed up by the following stakeholder comment from the technology audit report:

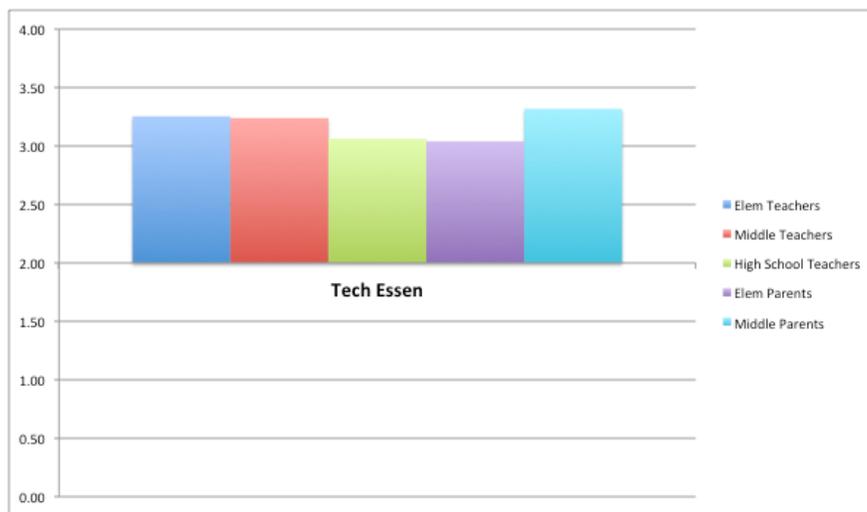
First and foremost, improve the infrastructure so that it can support the use of technology. Second, create a well thought out technology plan/vision for all schools to work toward. Third, make thoughtful technology purchases, with inclusion of professional development. Implement and track its use and effectiveness. Fourth, ensure there are enough technicians to support the technology that is deployed.

Winchester developed three highly descriptive performance indicators to guide its program review and to express its intent for how technology is to be used to support student learning (see **Appendix**). The key areas that the program review found that the district needed to improve upon were:

- The creation and articulation of the districts' vision for technology
- An overhaul of the infrastructure across the district
- The creation and implementation of policies, procedures, and practices to support the vision
- The design and implementation of professional development to support the vision
- The purchase and deployment of equipment and software that is equitable across the district
- The analysis and revision of technology support staffing as needed to support the vision
- The design and implementation of a clear rotation plan for the replacement of equipment

Community consensus (among parents, teachers, and administrators) exists on the *importance* of technology in education. On parent and teacher surveys, both groups agreed that technology is an essential tool for teaching and learning.

Figure 2 – Average teacher and parent agreement with the statement “I believe that technology is an essential tool for teaching and learning.” 4 = Strongly Agree, 3 = Agree, 2 = Neutral, 1 = Disagree, 0 = Strongly Disagree



Likewise, a number of teachers, parents, and administrators expressed opinions on how technology could be used within the educational environment that were very much in line with the district’s indicators.

It can enhance learning, provide engaging experiences, aid in differentiation. Ideally it will foster communication and collaboration and allow students to participate in project based learning where they are responsible and in control of their learning.

Science, technology is also extremely useful for the recording, analysis, and presentation of data. Probes that connect either directly or wirelessly to a network and/or computer make working with data much easier and more accurate than traditional methods of collection. More and more companies are producing software and hardware that work with tablets, smartphones, and computers, and smartphones now can be used as in situ data collection devices, which can then send information via a network to all other students and teachers.

Students can learn how to do research, analyze the validity of resources, and analyze resources for content bias. Students can become more vested in their own learning (ex. web quests involving primary and secondary resources). The internet provides access to primary sources that would otherwise be difficult to gather and show students (maps, current events articles, videos, works of art, photographs, songs, poetry, etc.) Being able to display these primary sources on the internet real time through links (instead of downloading and/or copying) also allows teachers to honor

copyright laws. Visuals especially engage learners and question prompts can further encourage critical thinking about issues and ideas.

In conclusion, the Spring 2013 program review urged Winchester to undertake a thorough and comprehensive re-design of the district's technology program. Through such work, it is highly likely that the district will be able to meet the highly visionary indicators laid out at the beginning of the program review. Such work will take time, resources, and community support, but the payoff is one that will allow *all* Winchester students to learn in an environment reflective of the district's technology indicators (see *Appendix I*).

Student skills and outcomes indicator:

Winchester Public School students are life-long learners who utilize instructional technology as a catalyst and tool for critical thinking and engagement in authentic, curriculum-centered, learning experiences. These experiences promote discovery, exploration, investigation, risk taking, and perseverance. Students are engaged in collaborative learning opportunities to encourage global and local communication and foster a culturally enriched perspective. Our students are responsible and safe digital citizens who are able to select and utilize appropriate tools and applications, troubleshoot problems and formulate solutions.

3. 2013 – 2016 Goals and Action Plans

Goals

In overall support of Winchester’s vision for technology the district has established the following strategic instructional technology goals.

Research tells us that real change takes 3-5 years. We have built a 3-year plan with the realistic approach that we may very well take 4 or 5 years to implement it.

Action Plans

1. *Student Outcomes*

GOALS:

1. Establish clear expectations of student technology skills connected to the academic curriculum
2. All students will participate in project-based learning that incorporates technology to support the development of skills in the 4C’s – collaboration, communication, critical thinking and creativity.
3. All students will have opportunities to (develop and) apply digital citizenship practices, information (literacy), and media literacy skills across the curriculum.
4. Students will apply technology skills within the academic curriculum

Year	Action Item	Start Date	Completion Date	Lead Person
1	1.1 Establish a curriculum sub-committee of the Technology Committee with representation from each school and varied departments to develop a K-12 student technology curriculum map by grade level.	October, 2013	October, 2013	Assistant Superintendent
1	1.2 Gather and compile a list of existing curriculum maps or scope and sequence. 1.3 Develop, examine, and evaluate current digital citizenship practices and information literacy skills curriculum and delivery	October, 2013	August, 2014	Curriculum Subcommittee of Technology Committee with Assistant Superintendent

2	1.4 Establish expectations around how the curriculum map will be used. Post on the web for the parents to view.	October, 2014	November, 2014	Principals and teachers
1-2	1.5 The Technology Curriculum Committee will investigate and evaluate web based tools and/or software that students can use for project based learning. Tool needs to be accessible for all students (including students who struggle with reading and writing).	October, 2013	On-going	Assistant Superintendent and Tech. Dept. Technology Curriculum Committee
1-3	1.6 Investigate, analyze, and purchase software/hardware to meet "high needs" (as defined by Dept. of Educ.: special education, low-income, ELL, and former ELL) learners	November, 2013	On-going	Technology Committee

Student Outcomes continued:

Year	Action Item	Start Date	Completion Date	Lead Role
2	1.7 Teachers, departments, and specialists will work together on cross-curricular projects that incorporate the 4 C's, collaboration, communication, creativity and critical thinking. Common planning time will be given to this end.	July, 2014	On-going	Teachers, ITS, LMS
1-2	1.8 Teachers, with the support of ITS (Instructional Technology) staff will establish a variety of assessment tools for project-based learning. (Eg. rubrics, student portfolios, observation, student interviews, student response systems, Edline and other online tools for ongoing feedback).	October, 2013	On-going	ITS staff and teachers
3	1.9 Library Media Specialists, ITS, core teachers and specialists will collaborate to create authentic Capstone projects that utilize technology as a catalyst and tool for communication, creation, critical thinking, collaboration, and problem-solving skills, that assess student media literacy and information literacy skills.	October, 2015	Ongoing	LMS, ITS, Teachers
2	1.10 Teachers with the support of ITS and/or LMS (Library Media Specialists) showcase student work online.	July, 2014	on-going	ITS and teachers
2-3	1.11 Explore various computer science and other technology courses to be offered at the various grade levels throughout the district, in particular at the secondary level	Summer 2014	On-going	Administration and Teachers

2. Educator Skills

GOALS:

1. Teachers will continuously improve their practice by participating in professional development and promoting and demonstrating the effective use of digital tools and resources.
2. Teachers will establish a student-centered atmosphere in which students learn to think critically, problem-solve, communicate, and collaborate about real world experiences.
3. Teachers will use their knowledge of subject matter, teaching and learning, and technology to facilitate differentiated experiences that advance student learning, creativity and innovation.
4. Teachers will develop and implement opportunities for students to apply digital citizenship practices.
5. Administrators will participate in and provide professional development throughout the school year in order to learn and provide 21st century classroom support and guidance
6. Teachers will continuously improve their practice by participating in professional development which focuses on developing student centered learning, differentiated instruction and digital citizenship.
7. Teachers collaborate on curriculum, best practice, technology use, and student centered learning.

Year	Action Item	Start Date	Completion Date	Lead Person
1	2.1 Develop an in-depth survey to gather baseline data on the specific technology staff is currently using and the level at which they are using it.	Fall 2013	Winter 2013	Tech Committee
1-3	2.2 Based on survey, create and implement a prioritized PD (professional development) plan to ensure all educators have baseline knowledge of tech integration and to offer PD based on interests and needs.	Fall 2013	Summer 2016	Tech Committee with PD Committee
1-3	2.3 Administrators follow up on tech PD by making time during district meetings for exemplars and attending professional development	Winter 2013	Ongoing	Administration
1-3	2.4 Administer follow up surveys and analyze data to determine next steps based on needs and interests.	Fall 2013	Spring 2014, 2015, and 2016	Administration

Teacher Skills continued:

Year	Action Item	Start Date	Completion Date	Lead Person
1	2.5 Teachers and administrators meet during District Meeting time, PD days, and other opportunities to collaborate with colleagues (cross curricular and grade/dept) for curriculum integration	2013-14	On-going	Directors/Administrators/Teachers
1	2.6 Teachers will be given time within the school day to meet with ITS in order to create lesson plans incorporating technology they are interested in using.	2013-14	On-going	Principals, ITS Staff
1-3	2.7 Teachers observe peers and provide feedback in order to provide support and coach each other for successful PD implementation in classroom	Winter 2014	On-going	Tech Committee, PD Committee, Administration, Teachers
1-3	2.8 Teachers and administrators self evaluate growth and utilization	2013	On-going	Teachers/Administrators

Year	Action Item	Start Date	Completion Date	Lead Person
1	2.9 Administrators set clear expectations and standards for what teachers should be taking for professional development/classes.	Fall 2013	On-going	Administrators
1-3	2.10 Administrators will set aside time for teacher collaboration as well as research and find tools to make collaboration easier among teachers, administrators and schools.	Fall 2013	On-going	Administrators
1-3	2.11 Administrators will make connections between the new evaluation rubrics, teachers' SMART goals, and tech integration in the classroom	Spring 2014	On-going	Administrators

3. *Technology Infrastructure and Support*

GOALS:

1. Create systems that make the management of teaching and learning more efficient.
2. Ensure the equitable access to all technology resources and infrastructure.
3. Upgrade infrastructure to support teaching and learning
4. Everyone will have access to the internet easily and quickly, and be able to stay on it without interruption

Year	Action Item	Start Date	Completion Date	Lead Person
1-3	3.1 Determine the efficiency of technical support to teachers and plan for needed changes	Fall 2013	On-going	District Leadership
1-2	3.2 Clarify – and improve as necessary – the district’s ability to provide effective technical and network support (including issues related to passwords and security) to all users.	Clarify 2013 Improvements 2013	Spring 2014 Spring 2016	Tech Committee Assistant Superintendent, Director of Finance and leadership team
1-2	3.3 Edline: <ul style="list-style-type: none"> • Investigate obstacles to uniform implementation of Edline • If necessary, evaluate alternatives to Edline • Decide and uniformly implement district decisions related to Edline 	Fall 2013	Summer 2014	Edline Study Team District Leadership
	3.4 Integrate all student services information under one student management system	2013	spring 2015	Assistant Superintendent, Director of Finance
	3.5 Improve email and calendar system: Investigate alternative to First Class (e.g., Google Apps for Education)	2013	spring 2014	Assistant Superintendent, Director of Finance

Technology Infrastructure and Support continued:

Year	Action Item	Start Date	Completion Date	Lead Person
1-2	3.6 Analyze needs and make recommendations based on state requirements for the implementation of PARCC (Partnership for Assessment of Readiness for College Careers)	2013	Ongoing	Assistant Superintendent, Director of Finance
1-3	3.7 Ongoing inventory analysis of equipment	2013	ongoing	Director of Finance
1-3	3.8 Create the infrastructure that can scale to support a BYOD environment <ul style="list-style-type: none"> a. Create redundancy to reduce the possibility of down network time as well as double the bandwidth to the district. (completed) b. Replace switches, access points, cabling, and other associated needs in phases c. Implement platform Software management to manage security issues, efficient and effective monitoring, and provide a totally “managed” networked through a single interface. d. Implement Wireless network access and control provisioning software for management and security of the wireless network 	1. 2013 2. 2013 3. 2014 4. 2015	1. 2013 2. 2015 3. 2016 4. 2017	Assistant Superintendent, Director of Finance
1-2	3.9 Develop a mechanism for determining inequities among elementary schools	2013	2014	Assistant Superintendent, Director of Finance

Technology Infrastructure and Support continued:

1-2	3.10 Create a funding mechanism for bringing a standardized technology environment to all classrooms (including a plan for on-going rotation of equipment)	2013	2014	Assistant Superintendent, Director of Finance, Tech Committee
2-3	3.11 Increase the optional use of electronic texts as a supplement and explore the use of electronic texts as a replacement for “hard copy” texts	2014	2016	Tech Committee, Administrators, Teachers, parent input, student input
1-3	<p>3.12 Effectively Utilize Personnel</p> <ul style="list-style-type: none"> • Develop and make recommendations for the ITS and library media specialist positions/roles in terms of instructional support and direct student instruction. • Define the roles, analyze human resources and make recommendations for administrative technology positions: technical support information management, and network management. • Define the roles, analyze human resources and make recommendations for instructional technology positions and programs: library media programs and specialists, ITS, technology instructors, and district technology coordinator. 	2013	Spring 2015	Administrators, teachers

4. *District Procedures and Community Engagement*

GOALS:

1. The (students and staff of the) Winchester Public Schools educational community has (have) equal access to technology to support teaching, learning and administrative functions
2. The Winchester Public Schools educational community has the necessary and sustainable professional development to utilize technology to support differentiated teaching and learning.
3. The Winchester Public Schools educational community provides staffing that fully supports the integration of technology into (teaching and learning) the classroom.
4. The Winchester Public Schools will continue to have a strong partnership with the greater community to foster support for Winchester Public School's technology initiative
5. The Winchester School Department will have an established Technology Committee to support the implementation of the Technology Plan and the integration within the district.
6. The Technology Team will make recommendations for district wide policies and procedures that will support technology.

Year	Action Item	Start Date	Completion Date	Lead Person
1	4.1 Create a Technology Committee that will include representation of staff members, administrators, and community members.	Summer 2013	November 2013	Superintendent, Assistant Superintendent, Director of Finance
1	4.2 Define roles of the members of the Committee, meeting schedules, and Leadership structure	Sept. 2013	Nov. 2013	Assistant Superintendent, Director of Finance

District Procedures and Community Engagement continued:

Year	Action Item	Start Date	Completion Date	Lead Person
1-3	4.3 Review all district policies and make recommendations for edits as necessary by consulting with various stakeholder groups as applicable	2013-14	On-going	Technology Committee
1-3	4.4 Create drafts of procedures for technology practices within the district to district leadership	2013	On-going	Technology Committee
1-3	4.5 Work with individual schools to support implementation of technology.	2013	On-going	Technology Committee

District Procedures and Community Engagement continued:

Year	Action Item	Start Date	Completion Date	Lead Person
1-3	4.6 Identify key stakeholders and as a piece of the Technology Committee, form a liaison and public relations sub-group that will focus on communication and connection with the community at large. This communication will focus on multi-modalities (EX: print media, electronic, cable, face-to-face, etc.)	Nov. 2013	On-going	Administration and Technology Committee
1+	4.7 Host Technology events that will engage key stakeholders and community committee members on a timely basis.	Spring 2014	On-going	Technology Committee
1+	4.8 Host Technology Outreach programs that are geared to student levels (ie-elementary, middle school, high school) that focus on appropriate digital citizenship	Spring 2014	On-going	Technology Committee, Administration, Teachers

BUDGETARY IMPLICATIONS FOR 2013-2016:

\$350,000 - \$400,000 for infrastructure

\$ 15,000 - \$30,000 for professional development

end-user equipment TBD

4. Evaluation and Assessment for Technology

Evaluation Design

Winchester is committed to conducting a regular and on-going evaluation process that aims to measure the level of implementation of technology in the classroom for students and support for faculty and staff. This evaluation goes beyond accounting for technology infrastructure and reporting quantitative data on students, teachers, and administrators achieving basic technology literacy benchmarks. The district's technology plan evaluation effort will report on the qualitative impact of technology on teaching and learning. Data will be gathered through: surveys of all stakeholders, observations of practices, and qualitative feedback from educators, students, and parents. This data will be used to inform practices of the district in terms of professional development, technology integration, and communication.

FUNDING:

This multi-year living plan will be implemented from September 2013 through June 2016. It is Winchester's intent to begin the implementation of the goals and actions of this Strategic Technology Plan as soon as possible, in service of the district's mission and overall vision of the plan. Given that several of the action items identified in the plan require funding, the implementation of these items will be contingent on available funds. The district plans to utilize the following funding sources in order to support implementation of these action items: Allocation of funds within the operating budget; grants and private funding; and establishment of community partnerships.

Appendix I: Winchester's Technology Indicators

Student Skills and Outcomes

Winchester Public School students are life-long learners who utilize instructional technology as a catalyst and tool for critical thinking and engagement in authentic, curriculum-centered, learning experiences. These experiences promote discovery, exploration, investigation, risk taking, and perseverance. Students are engaged in collaborative learning opportunities to encourage global and local communication and foster a culturally enriched perspective. Our students are responsible and safe digital citizens who are able to select and utilize appropriate tools and applications, troubleshoot problems and formulate solutions.

Teacher Skills/Pedagogy

Winchester Public School teachers utilize technology to design, implement, and assess student-centered learning experiences, focused on the development of higher-order thinking skills that address students' diverse learning styles, working strategies, and abilities. In order to support student success and innovation, Winchester teachers communicate with students, peers, families, and community members using digital tools and resources. Teachers are proficient in the use of existing technology tools and resources and participate in a variety of professional learning experiences to enrich and expand their knowledge of technology infused pedagogy. Winchester teachers collaborate to design, implement, and assess lessons that infuse technology to assist students in meeting identified learning goals.

Administration and District Policy

Winchester Public Schools administrators effectively communicate to all stakeholders the need to create and support a culture for the meaningful use of technology to aid and enrich student learning. The district takes a lead in crafting and implementing a vision for technology centered on its use as an essential tool for teaching and learning. Teachers, administrators, and parents across the district understand and know their role in the implementation of this vision.

The district establishes and funds equitable access for all students to the digital tools and resources appropriate to their learning needs. Administrators consistently model responsible, innovative use of technology to serve district goals and actively seek professional development opportunities to facilitate staff's ability to learn about and share best practices in and outside the district. The district, through the work of its administrators and via district policy, provides the necessary professional development resources for teachers so that they may collaboratively develop and share strategies for enriching and improving student learning.

NETS-S (Students)

1. Creativity and Innovation -- Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:
 - a. apply existing knowledge to generate new ideas, products, or processes.
 - b. create original works as a means of personal or group expression.
 - c. use models and simulations to explore complex systems and issues.
 - d. identify trends and forecast possibilities.
2. Communication and Collaboration -- Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:
 - a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
 - b. communicate information and ideas effectively to multiple audiences using a variety of media and formats.
 - c. develop cultural understanding and global awareness by engaging with learners of other cultures.
 - d. contribute to project teams to produce original works or solve problems.
3. Research and Information Fluency -- Students apply digital tools to gather, evaluate, and use information. Students:
 - a. plan strategies to guide inquiry.
 - b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
 - c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
 - d. process data and report results.
4. Critical Thinking, Problem Solving, and Decision Making -- Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students:
 - a. identify and define authentic problems and significant questions for investigation.
 - b. plan and manage activities to develop a solution or complete a project.
 - c. collect and analyze data to identify solutions and/or make informed decisions.
 - d. use multiple processes and diverse perspectives to explore alternative solutions.
5. Digital Citizenship -- Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:
 - a. advocate and practice safe, legal, and responsible use of information and technology.
 - b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.
 - c. demonstrate personal responsibility for lifelong learning.
 - d. exhibit leadership for digital citizenship.
6. Technology Operations and Concepts -- Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:
 - a. understand and use technology systems.
 - b. select and use applications effectively and productively.
 - c. troubleshoot systems and applications.
 - d. transfer current knowledge to learning of new technologies.

NETS-T (Teachers)

1. Facilitate and Inspire Student Learning and Creativity -- Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments. Teachers:
 - a. promote, support, and model creative and innovative thinking and inventiveness
 - b. engage students in exploring real-world issues and solving authentic problems using digital tools and resources
 - c. promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes
 - d. model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments
2. Design and Develop Digital-Age Learning Experiences and Assessments -- Teachers design, develop, and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the NETS•S. Teachers:
 - a. design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity
 - b. develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress
 - c. customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources
 - d. provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching
3. Model Digital-Age Work and Learning -- Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society. Teachers:
 - a. demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations
 - b. collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation
 - c. communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats
 - d. model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning
4. Promote and Model Digital Citizenship and Responsibility -- Teachers understand local and global societal issues and responsibilities in an evolving digital culture and exhibit legal and ethical behavior in their professional practices. Teachers:
 - a. advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources
 - b. address the diverse needs of all learners by using learner-centered strategies and providing equitable access to appropriate digital tools and resources
 - c. promote and model digital etiquette and responsible social interactions related to the use of technology and information
 - d. develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital-age communication and collaboration tools

5. Engage in Professional Growth and Leadership -- Teachers continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources. Teachers:
 - a. participate in local and global learning communities to explore creative applications of technology to improve student learning
 - b. exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others
 - c. evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning
 - d. contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community

NETS-A (Administrators)

1. Visionary Leadership. Educational Administrators inspire and lead development and implementation of a shared vision for comprehensive integration of technology to promote excellence and support transformation throughout the organization. Educational Administrators:
 - a. inspire and facilitate among all stakeholders a shared vision of purposeful change that maximizes use of digital-age resources to meet and exceed learning goals, support effective instructional practice, and maximize performance of district and school leaders
 - b. engage in an ongoing process to develop, implement, and communicate technology-infused strategic plans aligned with a shared vision
 - c. advocate on local, state, and national levels for policies, programs, and funding to support implementation of a technology-infused vision and strategic plan
2. Digital-Age Learning Culture. Educational Administrators create, promote, and sustain a dynamic, digital-age learning culture that provides a rigorous, relevant, and engaging education for all students. Educational Administrators:
 - a. ensure instructional innovation focused on continuous improvement of digital-age learning
 - b. model and promote the frequent and effective use of technology for learning
 - c. provide learner-centered environments equipped with technology and learning resources to meet the individual, diverse needs of all learners
 - d. ensure effective practice in the study of technology and its infusion across the curriculum
 - e. promote and participate in local, national, and global learning communities that stimulate innovation, creativity, and digital-age collaboration
3. Excellence in Professional Practice. Educational Administrators promote an environment of professional learning and innovation that empowers educators to enhance student learning through the infusion of contemporary technologies and digital resources. Educational Administrators:
 - a. allocate time, resources, and access to ensure ongoing professional growth in technology fluency and integration
 - b. facilitate and participate in learning communities that stimulate, nurture, and support administrators, faculty, and staff in the study and use of technology
 - c. promote and model effective communication and collaboration among stakeholders using digital-age tools
 - d. stay abreast of educational research and emerging trends regarding effective use of technology and encourage evaluation of new technologies for their potential to improve student learning

4. Systemic Improvement. Educational Administrators provide digital-age leadership and management to continuously improve the organization through the effective use of information and technology resources. Educational Administrators:
 - a. lead purposeful change to maximize the achievement of learning goals through the appropriate use of technology and media-rich resources
 - b. collaborate to establish metrics, collect and analyze data, interpret results, and share findings to improve staff performance and student learning
 - c. recruit and retain highly competent personnel who use technology creatively and proficiently to advance academic and operational goals
 - d. establish and leverage strategic partnerships to support systemic improvement e. establish and maintain a robust infrastructure for technology including integrated, interoperable technology systems to support management, operations, teaching, and learning

5. Digital Citizenship. Educational Administrators model and facilitate understanding of social, ethical, and legal issues and responsibilities related to an evolving digital culture. Educational Administrators:
 - a. ensure equitable access to appropriate digital tools and resources to meet the needs of all learners
 - b. promote, model, and establish policies for safe, legal, and ethical use of digital information and technology
 - c. promote and model responsible social interactions related to the use of technology and information
 - d. model and facilitate the development of a shared cultural understanding and involvement in global issues through the use of contemporary communication and collaboration tools