Cape Elizabeth School Department
Technology Plan - DRAFT
July 1, 2017 - June 30, 2020

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1 Introduction

Creation Date: September 1, 2016
Presented to Cape Elizabeth School Board: TBD
School Board Endorsement Vote: TBD
Approved by Maine DOE: TBD

1.1 Introduction Narrative

The 2017-2020 Technology Plan represents Cape Elizabeth School Department's (CESD) continued commitment and belief that technology can enhance the learning environment and improve teaching and learning experiences. This plan is a critical component of our efforts to adequately prepare our students to be college and career ready.

The foundation of this plan grew out of CESD's Mission, Vision, Strategic Plan, BrightBytes surveys, CESD staff surveys, student surveys, CESD's Technology Literacy Matrix committee, ISTE Standards, and everyday classroom experiences.

With the shared collection from the above sources, insights indicate technology integration continues to emerge as an important factor on CESD's professional culture. Increasing time and effort for Technology-focused Professional Development is crucial for the success of a 21st century Professional Learning Community (PLC). Equally important, with an increase in Professional Development, CESD needs to support quick tech support response 'help' time to assist in classroom troubleshooting.

The implementation of this technology plan focuses on providing professional development for instructional and non-instructional staff, matching technology to curricular and job-related needs, maintaining a reliable and flexible infrastructure to be able to support emerging and evolving technology, and maintaining Internet bandwidth and enhancing the network infrastructure to deliver high speed connectivity to all devices connected to the network in CESD.

It is important to both the authors and the readers of this document to understand that time is a precious commodity and was a constant concern during the drafting of our plan and decision-making. Teachers and support staff must continue to have an important

role and voice in technology and Professional Development decisions. The sharing of best technology practices (organizational, classroom management, creative) throughout CESD has to increase and be sustained. Furthermore, we recognize that technology platforms and/or devices need to be uniform for both students and teachers in order to minimize lost learning and engagement time.

Additionally, CESD must begin to recognize that technology support can come from students and other staff members, as well as, our technology integrators and technology technicians.

1.2 Mission

We empower students with the academic, personal, and social knowledge and skills needed to build fulfilling and engaged lives.

Values:

COMMUNITY: We value the connections among our school, local, and global communities that foster meaningful participation in a dynamic and diverse world.

ACADEMICS: We value rich and varied learning experiences that support critical thinking, perseverance, effective communication, and independent and collaborative work inside and outside of the classroom.

PASSION: We value personal investment in learning in an environment that nourishes joy and creativity, protects risk-taking, and cultivates individual expression.

ETHICS: We value decision-making and actions guided by the principles of personal integrity, empathy, responsibility, and respect for self and others.

1.3 Technology Committee Members:

School Department	Pond Cove	Middle School	High School
Noel N. Harroff	Theresa Curran	Doug Perley	Nate Carpenter
Jason Lund	Tom Charltray	Amanda Kozaka	Ginger Raspiller
Andrea Fuller	Amy Kieran	Jack Duffy	Carolyn Young
Catherine Messmer	Kate Atkinson	Josh Chase	Betsy Nilsen
Jessica Clark	Kate Zellers	Pierre Paradis	Katherine Bock
Howard Colter	Kate Whipple	Susan Dana	Elizabeth Yarrington
Cathy Stankard	Marianne Harrington	Per Noreus	Matthew Young

2. Technology Goals

2.1 Increasing Professional Development for Technology

Professional Development will be expanded across all three building and departments to increase opportunities and job embedded support for integrating technology to assist teachers as they transform their instruction and move beyond merely using digital tools as substitutes for traditional methods. Job-embedded professional development and support for teachers will focus on instructional strategies that will utilize mobile devices and other technology for student learning. CESD will accommodate the ever-changing emerging technologies by offering research-based, relevant professional development learning modalities for teachers and staff.

2.1 Increasing Professional Development	Benchmarks	

Objectives	2017-2018	2018-2019	2019-2020
Technology Representative on the Professional Development Committee	Attendance	Attendance	Attendance
100 % of students will be instructed using technology integrated practices in core subject areas on a daily basis.	50 % of students will be instructed using technology integrated practices in core subject areas on a daily basis.	75 % of students will be instructed using technology integrated practices in core subject areas on a daily basis.	100 % of students will be instructed using technology integrated practices in core subject areas on a daily basis.
Regular, on-going Technology Professional Development during the school year (Part 1)	Tech Boot Camp at the beginning of every school year for both students and staff. Topics to include things like: set up devices, passwords, digital storage and workflow, digital citizenship	Tech Boot Camp at the beginning of every school year for both students and staff. Topics to include things like: set up devices, passwords, digital storage and workflow, digital citizenship	Tech Boot Camp at the beginning of every school year for both students and staff. Topics to include things like: set up devices, passwords, digital storage and workflow, digital citizenship
Regular, on-going Technology Professional Development during the school year (Part 2)	Technology Professional Development included during the District Monthly Professional Development meetings.	Technology Professional Development included during the District Monthly Professional Development meetings.	Technology Professional Development included during the District Monthly Professional Development meetings.
Google Certification Educator-1	All Library & Instructional Technology Specialist (LITS), Technology Integrators, and Lead Teachers, and Technical Support Staff	Technology Department providing Google for Education Professional Development sessions	

Steps to increase Technology focused Professional Development.

1.	The technology department will become a subcommittee of the Professional Development Committee. This subcommittee, lead by the our CESD Curriculum Director, planning in advance, technical training during the District Calendar planned monthly 1/2 days which are set aside for professional development. Each training session will focus on, at a minimum of, one area of the ISTE standards for teachers and, at a minimum of one area of the ISTE standards for students.

2.   At the start of the year, teachers and staff will attend, a "Tech Boot Camp". These will be driven by staff members who have gained technical expertise, students, outside vendors, and the technology support team. During this time, all students and staff will have devices set-up ready for the start of the school year.

3.   The High School will offer CEHS student Teacher Assistant (TA) positions where participant TAs will earn graduation credits. Teacher Assistants will be assigned in all three buildings on an as needed basis. The Technology Integrator(s) and Library & Instructional Technology Specialists (LITS) will manage and promote these students. There will be a log presented to the administration team on a monthly basis which will show student, hours, and class involvement. Each instance logged will also document which ISTE standard(s) (both teacher and student) that was addressed during the assignment. Digital examples of lesson plans and samples will also be documented.

2.2 Common Sense Media Certification

CESD will train teachers to use Common Sense Media and similar curriculum to teach cyber safety to all students. Training will include the appropriate and ethical use of information technologies; including, copyright, plagiarism, peer-to-peer file sharing, proper storage, retrieval and transmission of data.

2.2 Common Sense Media Certification		Benchmarks	
Objectives	2017-2018	2018-2019	2019-2020
Guidance and Technology Staff working together to achieve Common Sense Certified District: Digital Citizenship status	Common Sense Certified District: Digital Citizenship status	Maintain Common Sense Certified District: Digital Citizenship status	Maintain Common Sense Certified District: Digital Citizenship status
100 % of students will be instructed using technology integrated practices in core subject areas on a daily basis.	50 % of teachers will use Common Sense Media or similar curriculum to teach cyber safety to all students.	75 % of teachers will use Common Sense Media or similar curriculum to teach cyber safety to all students.	100 % of teachers will use Common Sense Media or similar curriculum to teach cyber safety to all students.
Learn more about Common Sense Media here: www.commonsensemedia.org			

Steps to achieve Common Sense Certified District: Digital Citizenship status:

1.   LITS, librarians, guidance counselors, and technology integrators begin conducting meetings chaired by the Curriculum Director and Technology Coordinator, for planning for each building, and reporting status to the CESD administration team.

2.   Each building will offer four professional development sessions to help teachers understand content and best practices for implementation. Beginning the summer of 2017, the team referenced in bullet number 1, with support from CESD, will implement the digital literacy and citizenship curriculum with students. The goal is to conduct "train-the- trainer" sessions for classroom teachers as part of their in-service training during 2017-2018 school year.

3.   Technology integrators, LITS, and guidance counselors will conduct, at least, one K-12 family night to inform parents on the Digital Citizenship efforts at CESD, and guidance which they may deploy as a family.

4.   Student eTeams at Pond Cove and Middle School and CEHS student Teacher Assistants will promote Digital Citizenship with the guidance of Technology Integrators.

2.3 Utilization of a Learning Management Systems (LMS)

CESD will use Learning Management Systems (such as Google Classroom {basic}, and eBackpack {advanced}) to enhance collaboration between teachers, students, administrators and parents. Teachers use the LMS as portals to upload all class assignments for students to access both in class, and at home. Students can submit assignments via the portal,directly to their teacher to be graded.

The use of a Learning Management System (LMS) directly supports the district's goal that every student will be writing every day. The use of Google Apps for Education, has become widespread through the district as a method of sharing between staff and students alike.

2.3 Learning Management Systems		Benchmarks	
Objectives	2017-2018	2018-2019	2019-2020
CEHS and CEMS will use a Learning Management System (LMS) to enhance collaboration between teachers, students, administrators and parents.	50% of Teachers, departments, and specialists will work together on cross-curricular projects that incorporate the 4 C's, collaboration, communication,	75% of Teachers, departments, and specialists will work together on cross-curricular projects that incorporate the 4 C's, collaboration,	100% of Teachers, departments, and specialists will work together on cross-curricular projects that incorporate the 4 C's,

	creativity and critical thinking.	communication, creativity and critical thinking.	collaboration, communication, creativity and critical thinking.
CEHS and CEMS students and teachers 95% "Paper-light"; PCES 60% paperless	Classroom Printers phased out	Classroom Printers phased out	All Classroom Printers phased out
CEMS to hold large-scale technology conference (similar to the MLTI student conference held in Orono in May)			May 2020

Steps for integration of Department wide Learning Management Systems (LMS):

1.   Learning Management System (LMS), will be used district-wide to provide an online learning environment for students and staff. This has begun with the utilization of Google Classroom and eBackpack.

2.   Traditional textbooks will be replaced with electronic textbooks over time.

3.   Current educational technology applications will be evaluated and upgraded, as needed, to web-based applications.

2.4 Repurposing our traditional computer labs

CESD is moving away from traditional computer labs and increasing the integration of technology in the classroom. There are certain computer literacy skills students are taught in a computer lab that make integrating technology in the classroom easier. There are certain technology areas (i.e. robotics, CAD, coding) that utilization of a lab is necessary. With mobile technology, labs are, for the most part, not necessary. Many students associate the computer lab with the concept of working alone on assignments. Adjusting how traditional computer labs are used fosters collaboration in the classroom, a highly important 21st century skill.

2.4 Repurposing traditional computer labs		Benchmarks	
Objectives	2017-2018	2018-2019	2019-2020
PCES, CEMS, and CEHS utilizing computer labs only for speciality projects like 3D printing, Robotics, CAD, and	PCES and CEMS computer labs 60% utilization by classroom teachers	PCES and CEMS computer labs 80% utilization by classroom teachers	PCES and CEMS computer labs 100% utilization by classroom teachers

VR. Labs scheduled and run by classroom teachers with CEHS Teacher Assistance , other teachers, and/or other technical staff.			
Reevaluation our technology courses offered at CESD	Form a committee to evaluatate computer science / technology courses offered at CEHS	Implement new CEHS offerings, new technology and install equipment for courses	Evaluate and install new equipment in PCES and CEMS Computer labs

Steps for repurposing the Traditional Computer Labs:

1.   Technology integrators will schedule very few computer classes in Pond Cove, CEMS, and CEHS. Classroom integration in the regular classroom with school-issued devices will be the priority. This will free up technology integrators to assist classroom teachers in integrating technology into their curriculum.

2.   Web-based classroom signup to use the computer labs. The signup will keep track of who, what, and when the lab is utilized.

3.   A committee on evaluating CESH technology courses will meet, chaired by the Curriculum Director and/or Technology Coordinator CEHS administration with lead teachers. This team will develop technology courses offered at CEHS.

2.5 CESD Technology Equipment Sustainability

Technology for CESD's students, staff, and the infrastructure needs to be maintained and sustainable. This doesn't mean that we need "state of the art" equipment.

Technology Life Cycle		
Type	**Years in Service**	**Current Estimated Replacement Cost**
Desktops	7 years	$1,000
Laptops	5-6 years	$1,000
Tablets	4-5 years	$300
Servers	7 years	$5,000 - $15,000
Switches	7 years	$5,000
Access Points	5-7 years	$150

CESD Technology Student Replacement Plan

- [Sustainability Guidelines](#)
- [Major Devices](#)
- [Budget Projections](#)

3.   Technology Areas

3.1 Technical Support

Currently Cape Elizabeth has one (1) Technology Coordinator, two (2) Network and Computer System Administrators, one (1) Computer User Support Specialist, and one (1) Database Facilitator serving both the town and schools of Cape Elizabeth. These positions will be maintained during the next 3 years.

The School District has one (1) Technology Integrator, one (1) Library and Instructional Technology Specialist, and one (1) Computer Teacher at the High School and Middle School; and one (1) Technology/STEAM integrator at Pond Cove. These position will be maintained during the next 3 years, with the exception of sharing one person to assist Pond cove on a regular basis. This could be on a rotating schedule between the 3 positions at CEMS.

We will continue to hold multiple monthly meetings among the school's technology personnel, so it is important to allow continued scheduling flexibility.

In addition, all three buildings need more flexibility with technical support in the classrooms. This will be accomplished by a number of steps.

1.   Allowing teachers with acquired technology skills flexibility to co-teach with staff with less technology experience.

2.   Establishing Technology Teacher Assistants from CEHS students that will be given credits and allowed to support staff in all three buildings.

3.   Eliminating the regular scheduled times in labs, and allow the current staff to help with technology in the classroom and integration of technology into the curriculum.

4.   Budget

4.1 Detailed Budget

2017-2018 CESD Budget ([click here](#))

5.   International Society for Technology in Education (ISTE) Standards

5.1 ISTE Standards - For Educators

Empowered Educator

1.   Learner

Teachers are professionals who are committed to improving their practice through professional learning, monitoring research and proven approaches and learning from and with others. Teachers:

    a. embrace continuous learning of how to transform learning with technology, set goals for professional growth and reflect on practice, and apply evolving pedagogical strategies that leverage technology.

    b. keep abreast of emerging learning science research and collaborate with colleagues and experts to explore how to apply proven approaches with students and within the learning process and environments.

    c. model with colleagues and students social learning through the use or creation of online personal and professional learning networks.

2.   Leader

Teachers are professionals who transform learning with technology through their contributions to a shared vision, advocacy and expertise. Teachers:

    a. engage as teacher-leaders in school or district-wide efforts to shape, advance and accelerate a shared vision of empowered learning with technology.

    b. advocate for equitable access and reducing the digital opportunity gap with colleagues, administrators, parents and the community.

    c. engage as teacher-leaders to inform technology purchase and adoption decisions by identifying, evaluating and curating digital tools, applications and resources.

3.   Citizen

Teachers are professionals who exercise and model the digital rights, responsibilities and opportunities of living in an inter-connected, digital world. Teachers:

   a. exhibit for colleagues and students ethical and legal practice with digital tools and resources, and model positive, socially responsible behavior in interactions online.
   b. model for students and empower them to manage personal data, protect privacy and manage digital identity.
   c. understand the implications of data collection on student privacy and advocate for the awareness and protection of student and learning analytics data.
   d. engage with families to bolster students' educational goals and reduce barriers to digital access. and proactively communicate with families in ways that exhibit cultural competency.

Learning Catalyst

4.   Collaborator

Teachers prioritize collaboration to improve practice by learning and sharing resources, ideas and problem solve. Teachers:

   a. establish dedicated time to collaborate with colleagues to plan and share ideas for using technology to create authentic learning experiences.
   b. collaborate and co-learn with students to explore and experiment with digital tools and resources that support learning, and to diagnose and troubleshoot technology issues.
   c. use collaborative tools to engage virtually with experts, teams and students, locally and globally, to expand students' authentic, real world learning experiences.

5.   Designer

Teachers build a robust toolkit of skills to design learning activities and environments that support students achieving the 2016 ISTE Standards for Students. Teachers:

   a. redesign learning activities around pedagogies that leverage the available technology, digital environments. tools and resources to maximize an authentic, active learner-driven process that aligns with content area standards.
   b. design learning experiences that use technology to accommodate learner variability, personalize learning, and engender student choice, self-direction and goal setting.

c. keep current with effective instructional design practices for a variety of digital learning environments - including online, blended, mobile - and curate digital educational resources and tools to enhance student engagement and learning.
d. create a variety of learning environments that use effective teaching strategies and leverage digital tools and resources to manage and support the learning process.

6. <u>Facilitator</u>

Teachers evolve their role to become a facilitator of learning who empowers students and apply the 2016 ISTE Standards for Students in their practice. Teachers:

a. adopt role as classroom facilitator to promote a culture of student agency where students establish their own learning goals, reflect on learning and assume responsibility for learning outcomes.
b. implement strategies that address learner variability and provide opportunities for personalized learning, student choice and individualized pacing.
c. become adept in applying effective learning strategies and managing the learning process in a variety of classroom configurations and digital environments, including online and emerging virtual environments.
d. promote exemplary research skills to find and critically evaluate data and information and support students in curating resources for their intellectual pursuits.
e. model and support students in the use of digital tools or applications to deploy a deliberate design process for creating or innovating solutions.
f. engage students in formulating and solving problems that leverage computing power and rely on algorithmic thinking, representing data. and modeling to test solutions.
g. cultivate creative student expression in choosing and using digital tools, platforms and resources to communicate or publish original works.

7. <u>Analyst</u>

Teachers understand and use data to inform their instruction and support students to achieve their learning goals. Teachers:

a. design a variety of formative and summative assessments that capitalize on technology to provide immediate feedback to students. offer alternatives that empower students' choice in demonstrating their learning, and include competency-based approaches that allow personalized pacing.
b. access. analyze and use quantitative and qualitative data to effectively respond to student needs and instruction.

   c. understand student assessment input and output and use that information to facilitate ongoing engagement with students and parents to help guide student progress.

5.2 ISTE Standards - For Students

1. <u>Empowered Learner</u>
Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:
   a. articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.
   b. build networks and customize their learning environments in ways that support the learning process.
   c. use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.
   d. understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

2. <u>Digital Citizen</u>
Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical. Students:
   a. cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.
   b. engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.
   c. demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.
   d. manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

3. <u>Knowledge Constructor</u>

Students critically curate a variety of resources using digital tools to construct knowledge, producing creative artifacts and make meaningful learning experiences for themselves and others. Students:

a. plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.
b. evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.
c. curate information from digital multiple resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.
d. build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

4. Innovative Designer

Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions. Students:

a. know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
b. select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
c. develop, test and refine prototypes as part of a cyclical design process.
d. exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

5. Computational Thinker

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions. Students:

a. formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.
b. collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.
c. break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.
d. understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

6. Creative Communicator

Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals. Students:

a. choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
b. create original works or responsibly repurpose or remix digital resources into new creations.
c. communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.
d. publish or present content that customizes the message and medium for their intended audiences.

7. Global Collaborator

Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally. Students:

a. use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.
b. use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.
c. contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.
d. explore local and global issues and use collaborative technologies to work with others to investigate solutions.

ISTE. "International Society for Technology in Education | Standards." International Society for Technology in Education | Home. N.p., 2010. Web. 8 Dec. 2016.

6. Technology Literacy Curriculum

Technology Literacy Curriculum Guiding Principles

- Teachers' instructional practices support the achievement of the school's 21st century learning expectations by:
  - Personalizing instruction
  - Engaging students in cross-disciplinary learning

- ○ Engaging students as active and self-directed learners
- ○ Emphasizing inquiry, problem-solving, and higher order thinking
- ○ Applying knowledge and skills to authentic tasks
- ○ Engaging students in self-assessment and reflection
- ○ Integrating technology

Minimum Expectations for Technology Literacy by Grade Level				
	By 2nd Grade	By 4th Grade	By 8th Grade	By 12th Grade
	Beginner	Advanced Beginner	Strategic Learner	Emerging Expert
Innovative Designer	Use digital tools to draw/illustrate in order to express ideas.	Create and edit a simple word processing document.	Describe and illustrate a content-related concept or process using a model, simulation, spreadsheet, graphing, or concept mapping software.	Design, develop, test, and publish or present digital content to demonstrate knowledge and skills related to cross curricular themes.
	Can type sentences and draw digital pictures.	Be able to open & save as appropriate file types (ex. jpeg, doc, pdf).	Integrate a variety of file types to create and illustrate a document or presentation (i.e., integrating a spreadsheet into presentation app).	Create audience appropriate media-rich presentations demonstrating use of digital tools and resources.
			Independently create and edit a document (font, margins, organizational features, copy/paste, inserting).	Use editing tools/software to create professional documents.

Minimum Expectations for Technology Literacy by Grade Level				
	By 2nd Grade	By 4th Grade	By 8th Grade	By 12th Grade
	Beginner	Advanced Beginner	Strategic Learner	Emerging Expert
Creative Communicator	Share digital information.	Create an online posting as related to a classroom setting.	Participate in a cooperative learning project in an online learning community.	Initiate and facilitate the interactions in a cooperative learning project in an online learning community.
	Create a digital product.	Follow directions to format documents.	Create original animations or videos of high quality.	Create, edit and publish professional-quality multimedia presentations for real-world application.
		Create a presentation using multimedia for an authentic task.	Format documents (ex. layouts, importing, tables).	Publish created documents and select appropriate file types and sizes.
		Maintain and utilize an email account to communicate.	Sharing documents through processes such as linking and uploading.	

Minimum Expectations for Technology Literacy by Grade Level				
	By 2nd Grade	By 4th Grade	By 8th Grade	By 12th Grade
	Beginner	Advanced Beginner	Strategic Learner	Emerging Expert
Knowledge Constructor	Access district provided online content independently (ex. everyday math, teacher websites, etc).	Follow directions to seek out information from web-based resources.	Independently select and evaluate digital resources to determine the credibility of the author and publisher and the timeliness and accuracy of the content.	Use digital tools to organize credible digital resources.
	Locate information using digital resources.	Find relevant information from a variety of digital resources	Choose and navigate appropriate information search options to find specific and appropriate resources (ex. educational database versus search engine).	Choose and navigate advanced information search options to find specific and appropriate resources (ex. educational database versus search engine).
	Identify sources of digital information.	Cite basic sources of information: author, title, source name, URL	Accurately citing sources of information using standard formats	Mastery of citations in a variety of formats, including parenthetical and in-text, as well as annotated bibliographies.
		Follow directions to create a spreadsheet with provided information.	Use spreadsheet software to gather, organize and analyze data.	Create spreadsheets and use formulas to gather, organize and analyze data. Use spreadsheet software to create charts
	Identifies key search terms/phrases to locate information using appropriate search engines.	Use functions such as search and filter to locate relevant and appropriate information using a variety of search engines.	Locate resources using advanced search strategies (i.e. author, title, keyword, subject; Boolean operators or limiters, truncation, copyright year, material type) using an appropriate search engines and databases.	Mastering Boolean search across platforms (databases and websites). Knowing when to use the correct platform for research needs.

Minimum Expectations for Technology Literacy by Grade Level			
	By 2nd Grade	By 4th Grade	By 8th Grade	By 12th Grade
	Beginner	Advanced Beginner	Strategic Learner	Emerging Expert
Computational Thinker	Solves problems though experimentation.	Use digital tools to solve a problem.	Recognize existence of a problem and independently use the appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.	Employ curriculum-specific simulations to practice critical-thinking processes.
		Tries to solve problems before asking for help.	Use Help menu and online resources as a method for problem solving.	Understand software basics and commonalities to be able to address fundamental software issues.

Minimum Expectations for Technology Literacy by Grade Level			
	By 2nd Grade	By 4th Grade	By 8th Grade	By 12th Grade
	Beginner	Advanced Beginner	Strategic Learner	Emerging Expert
Digital Citizen	Awareness of sources.	With guidance, practices the safe, legal and responsible use of information, software systems and technology.	Model and practice safe, legal, and responsible use of information, software, systems and technology.	Analyze situations and make informed decisions about plagiarism, copyright, fair-use and freedom of speech to be in legal compliance.
	Understand the safe and legal use of information & awareness of cyber bullying.	Understand cyberbullying.	Define cyberbullying and understand the magnitude, costs, and penalties of such behavior.	
		Appropriate use of password creation, security and maintenance.		
		Awareness of environmental impact by the use of technology (printing, disposal, electricity use).		

Minimum Expectations for Technology Literacy by Grade Level			
By 2nd Grade	By 4th Grade	By 8th Grade	By 12th Grade
Beginner	Advanced Beginner	Strategic Learner	Emerging Expert
Handles digital devices properly.	Uses some technology systems, and explores new systems.	Can proficiently use various technology systems, and are comfortable exploring new systems.	Proactively configure, update and maintain hardware, software to optimize their use for learning and productivity.
Opens, closes technology resources. Uses special functions (enter, space bar, delete, arrows, mouse click).	Identify hardware and software problems.	Independently apply strategies for identifying and solving routine hardware and software problems.	Analyze the capabilities and limitations of current and emerging technology resources.
		Identify and use internal and external computer peripherals (cloud drive, camera jump drive, etc).	
	Students are able to save and appropriately print documents.	Students understand the difference between and can save and convert files from one source type to another.	

Note: The row label "Empowered Learner" spans the left-most column.

Appendix A

BrightBytes Technology Surveys