



Long Range Plan for Information, Communication, and Technology Services (ICTS)



2014 - 2017

*Written in 2013.
Updated August 2014.*



EXECUTIVE SUMMARY

The Cambridge Public Schools (CPS) Technology and Library Media Plan is intended to be an overarching document providing both an assessment of the district's capacity as well as guidance for moving forward. CPS has a strong history of, and commitment to, providing current and appropriate technology and library media tools and resources to staff and students.

This document was prepared by a committee of CPS staff with input from all stakeholders; staff, students, parents, and community members. Data was gathered over one year via interviews, observations, surveys, and raw data gathering. The results provide an objective view of CPS's current status in respect to Information, Communication & Technology Services as well as a high level outline of priority areas to focus on over the next few years. Department and program goals and action plans will be developed based upon the priority focus areas herein.

In 2011, CPS reorganized the Library Media, Educational Technology, MIS, and Media Arts departments into one new department; Information, Communication, & Technology Services (ICTS). In line with the new CPS structure this plan collapses the previously separate long range Technology Plan and Library Plan into one document. As the delivery of these services are tightly integrated throughout CPS, so is the planning.

The ICTS department strives to provide coordinated and seamless technology and library services with the following vision;

The Information, Communication, Technology Services (ICTS) department is a collaboration among Library Media, Educational Technology, Media Arts, Web Services, and Technical Services divisions. This department strives to support administration and teachers; inform parents; and to prepare students for lifelong learning, informed decision-making, a love of reading, and the use of information and communication technologies.

VISION STATEMENT

The Cambridge Public Schools are built on a foundation of academic excellence and committed to promoting an environment of social justice.

The school system will provide all students with a safe and nurturing environment, and with a core curriculum that is rich and rigorous and which respects diversity in students' learning styles.

We have one guiding principle:
Excellent Instruction in Every Classroom.

ICTS LEADERSHIP TEAM

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Within ICTS, each program area has its own mission;

Educational Technology

The Educational Technology Program ensures that all students, teachers, administrators, and staff have access to and become proficient users of technology and that technology becomes a powerfully integrated and routinely used tool in the Cambridge Public Schools. It strives to make sure that these resources are used to enhance the delivery of instruction, to support all areas of the curriculum, and to support the educational needs of students, staff and community. The Educational Technology Program offers this support with skills-based and curriculum-integrated professional development opportunities, collaborative initiatives with other curricular departments, and software and tools that are current and necessary for a 21st teaching and learning environment.

Library Media

The Library Media Program offers instruction and resources in print, audiovisual, and online formats to provide a foundation for using libraries and information resources in lifelong learning. The library program, in collaboration with classroom teachers, specialists, and staff, supports academic and recreational reading, the development of research and presentation skills integrating the use of technology, and media arts/video production. Cambridge school libraries also foster connections between the school community and local and global institutions and resources for teaching and learning. Library media specialists collaborate with teachers and staff, consult with administrators, and instruct students in order to provide a program and environment that:

- Nurtures students' intellectual and social growth.
- Translates curriculum frameworks into authentic learning activities.
- Identifies, acquires, and organizes resources to support all areas of the curriculum.
- Improves the teaching of effective literacy and information skills to enable students to acquire, judge, and use information, and create new knowledge.
- Incorporates emerging technologies into programs and curriculum-related activities.

Media Arts

The Media Arts Program provides media art education and district wide support of media making and distribution projects. The program offers students an array of classes, clubs and work-study opportunities. Students have real world access to Smart TV98 and CPS TV99, our two Cambridge Educational Access TV (CEATV) cable channels, as well as program distribution on the web. Media Arts teachers and students collaborate with other CPS classrooms, community organizations and local universities to create content for our TV channels and website, offering a dynamic reflection of the educational experience in Cambridge.

Students learn to plan, research and script media programs, and develop an understanding of the creative process. Students acquire field and studio production skills including use of digital video cameras and editing, and proficiency in industry standard multi-media software. Related areas of learning include animation, journalism, music production, web development, and online content production.

The Program is based in the Media Arts Studio, a fully equipped, state-of-the-art digital media production facility located on the Cambridge Rindge and Latin High School campus. This award winning facility is home base for media art education for the district and houses CEATV and the Rindge School for Technical Arts Media Technology Program.

Online & Web Services

The Online & Web Services Program maintains the visual identity of Cambridge Public School District on the World Wide Web. Our goal is to improve the delivery of public information and services through the use of our public web presence. We aim to support the district's brand identity, promote efficient navigation, and generate accurate content in order to create a seamless online experience for all viewers.

Technical Services

The Technical Services Program supports and manages the CPS computer network. The Technical Services department maintains a network that will handle the all new facets of technology. With ever evolving technology, the Technical Services team works to ensure that all users of the CPS network are efficient.

The Technical Services Team works with each department in the district to ensure their technology is working properly throughout the year. The team is also responsible for all computer related technology, desktops, laptops, tablets, cell phones, VoIP phones, as well as the infrastructure behind the scenes to allow internet connectivity. The infrastructure consists of switches, routers, servers (virtual and physical), web filters, firewalls, and packet-shapers.

Also the Technical Services Team works with City IT to assist in support various technical platforms.

This document is divided into four major sections; Executive Summary, Current Status, Vision, and Goals.

The findings of this document will drive the collective work of the ICTS department and programs. Annual action plans will be developed within each program area to support the program area, ICTS, and long range Technology and Library Media planning goals.



Current Status

In addition to observations, surveys, and interviews, four formal technology & library media program measuring tools were employed to provide the most comprehensive picture as possible; The Massachusetts School Technology Readiness Chart, The Massachusetts DESE Technology Plan Benchmarks, The American Association of School Libraries Assessment Guide, and the PARCC Readiness Tool.

The Massachusetts School Technology Readiness Chart (STaR Chart), provided by the State Board of Education Technology Advisory Council, describes what technology looks like in Teaching and Learning, Educator Preparation and Development, Administration and Support Services, and Infrastructure for Technology at four progressively more sophisticated levels. The chart describes the progress in terms of Early Tech, Developing Tech, Proficient Tech, and Advanced Tech in the following areas under each major category:

Teaching and Learning

- Impact of Technology on Teacher Role
- Patterns of Teacher Use*
- Design of Instructional Setting
- Curriculum Areas
- Patterns of Student Use*

Educator Preparation and Development

- Content of Training
- Capabilities of Educators*
- Leadership and Capabilities of Building Principals and District Administrators
- Models of Professional Development
- Levels of Understanding
- Universal Access: Integration of Universal Design and Assistive Technology

Administration and Support Services

- Vision and Planning
- Technical Support (hardware, operating system, network)*
- Technology Integration Specialist*
- Budget Levels
- Budget Allocated for Technology (Total Cost of Ownership)*

Infrastructure for Technology

- Universal Design and Accessible Technology Considerations (e.g. Section 508)
- Students Per Instructional Computer*
- Internet Access Connectivity/Speed*
- E-Learning Environments*
- LAN/WAN*
- Other Technologies
- Security

Below is the STaR Chart including annotations of where CPS currently stands in respect to each of these measurements. The black progression bar indicates where CPS falls along the progression of Early Technology, Developing Technology, Proficient Technology, and Advanced Technology.

Teaching and Learning

		Levels of Progress			
Row	Focus Areas	Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(A)	Impact of Technology on Teacher Role	Mostly teacher-centered lectures. Minimal student use of technology in instruction.	Mostly teacher directed learning. Students use technology to work on individual projects.	Mostly teacher-facilitated learning. Students use technology for cooperative projects in their own classroom.	Mostly student-centered learning, teacher as mentor/facilitator. Students use technology to communicate and collaborate outside the classroom.
		<i>CPS progress towards Advanced Tech status.</i>			
		You will see a mix of teacher-directed and teacher-facilitated learning throughout the district. Students use technology to work on individual projects, cooperative projects within the classroom and school, and in some cases communicate and collaborate outside the classroom with community partnerships.			
(B)	Patterns of Teacher Use	85% of teachers use technology as a productivity tool (e.g., email, grades) and/or as a classroom supplement (e.g. drill and practice).	85% of teachers explore using technology to support curriculum goals (e.g. research, lesson planning).	85% of teachers use technology for research, lesson planning, multimedia and graphical presentations, and simulations. Teachers share technology uses with colleagues.	85% of teachers integrate evolving technologies that transform the teaching process by allowing for greater levels of access, interest, inquiry, analysis, collaboration, creativity, and content production.
		<i>CPS progress towards Advanced Tech status.</i>			
		Through informal observations and conversations, most teachers in CPS are using technology for research, lesson planning, multimedia and graphical presentations, and simulations. Some share their uses with colleagues through various meeting structures. However, there is a need to collect data on specific usage patterns and percentage through a formal process such as an annual survey.			
(C)	Design of Instructional Setting	Mostly computer labs or libraries; scheduled use only.	Labs, libraries, many classrooms; flexible scheduling.	Lab, libraries, all classrooms, and portable technology (e.g. wireless laptops or handheld electronic devices); flexible scheduling.	Seamlessly integrated throughout classes and all content areas. Technology is available anytime both in school and within the community.
		<i>CPS progress towards Advanced Tech status.</i>			
		Technology is present through school buildings in common spaces such as labs and libraries, instructional spaces including classrooms and specialists rooms, and portable through laptop carts. CPS is beginning to introduce tablet devices throughout the schools in a variety of structures to support administrative and instructional tasks. There is a blend of flexible and fixed scheduling to accommodate the developmental needs of students and provide appropriate access to ensure fidelity with district curricular initiatives.			
(D)	Curriculum Areas	Limited to teaching technology skills at different grade levels.	Use of technology is minimal in a few curricular areas across grade levels.	Integrated into most Curriculum Framework areas and activities at all grade levels.	Integral to all curricular areas at all grade levels.
		<i>CPS progress towards Advanced Tech status.</i>			
		Technology is present in all curriculum areas, with some more dependent on it as a resource for daily instruction and others as an occasional resource for research or presentation. There is a need to more intentionally align technology resources to the curriculum frameworks.			

Teaching and Learning (continued...)

		Levels of Progress			
Row	Focus Areas	Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(E)	Patterns of Student Use	Less than half of students show proficiency in all Massachusetts Technology Literacy Standards and Expectations[i] for their grade.	More than half of students show proficiency in all Massachusetts Technology Literacy Standards and Expectations for their grade.	Almost all of students show proficiency in all Massachusetts Technology Literacy Standards and Expectations for their grade.	All students show proficiency in all Massachusetts Technology Literacy Standards and Expectations for their grade.
		CPS progress towards Advanced Tech status.			
		Currently CPS collects data from 5th and 8th grade students related to the Massachusetts Technology Literacy Standards and Expectations. This data indicates that generally students are proficient, however, there are areas in need of additional instruction and support. There is also a need to collect this data at the 3rd and 10th grade level to create a continuum in which proficiency is measured and tracked.			
		Technology skills (email, word processing, Internet browser use, etc.) for teachers' professional use.	Training encompasses more complex professional uses (district applications such as attendance and report cards, scanners, cameras) and curriculum integration strategies.	Training directly ties technology to its use in content areas and how to effectively manage it in the classroom.	Training focuses on modeling, mentoring, and adopting new technologies as well as the integration of Universal Design and access considerations for all students.
		CPS progress towards Advanced Tech status.			
Professional Development opportunities provide exposure to administrative and educational technologies that support the work of all CPS staff. The offerings range from introductory, implementation, to innovation and model effective use of technology in the classroom and workplace.					

Educator Preparation and Development

		Levels of Progress			
Row	Focus Areas	Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(G)	Capabilities of Educators	100% meet TSAT and/or local district teacher technology competencies and implement them into the school environment.	80% meet TSAT and/or local district teacher technology competencies and implement them into the school environment.	80% meet TSAT and/or local district teacher technology competencies and implement them into the school environment.	80% meet TSAT and/or local district teacher technology competencies and implement them into the school environment.
		<i>CPS progress towards Advanced Tech status.</i>			
		Through informal observations and support, it is evident that 80% of CPS teachers meet the Developing Tech benchmarks in the TSAT. There is a need to collect more formal data in order to better align opportunities and ensure that all teachers are progressing in their technology proficiencies, thus moving the majority of teachers from Developing towards Advanced.			
(H)	Leadership of Principals, Teacher Leaders, and District Administrators	Recognizes benefits of technology in instruction to improve learning outcomes for all students. Minimal personal use (email, word processing, Internet browser use, etc.). Awareness of national standards for administrators.	Supports use of technology in instruction. Uses technology in daily work. Approaching proficiency of national standards for administrators.	Recognizes and identifies exemplary use of technology in instruction. Uses technology skills in daily work such as research and communication and models appropriately with staff. Provides constructive feedback to teachers on their technology use.	Promotes exemplary use of technology in instruction. Models and uses in daily work in communication, presentations, online collaborative projects, and management tasks. Develops a school culture that expects all teachers to use technology. Advocates in the community for the integration of technology in instruction. Expects all teachers to use technology well.
		<i>CPS progress towards Advanced Tech status.</i>			
		Principals and Administrators support the use of technology in instruction and use technology in their own daily work. However, there is a need to increase awareness of the national standards and support their identification of exemplary use of technology in instruction. Currently technology use is a part of the teacher evaluation system and administrators have requested support in providing appropriate feedback in this area.			



Educator Preparation and Development (continued...)

		Levels of Progress			
Row	Focus Areas	Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(I)	Models of Professional Development	Whole group, skill-based training with minimal follow-up.	Whole group curriculum-based training with follow-up to facilitate classroom implementation.	Coaching, modeling best practices, district-based mentoring. Involvement in a development / improvement process. Study groups.	Creates a culture of inquiry, sharing and knowledge building, anytime learning available through a variety of delivery systems (e.g., just-in-time support, mentoring, peer observation).
		<i>CPS progress towards Advanced Tech status.</i>			
		Beyond formal professional development offerings. The ICTS Team supports each school community through coaching, modeling, and just in time embedded support.			
(J)	Levels of Understanding	Most at entry or adoption stage (Students learning to use technology; teachers use technology to support traditional instruction).	Most at adaptation stage (technology used to enrich curriculum). Most beginning to use with students.	Most at appropriation stage (technology is integrated, used for its unique capabilities).	Most at invention stage (teachers discover and accept new uses for technology).
		<i>CPS progress towards Advanced Tech status.</i>			
		Across the district, technology integration ranges from enriching curriculum with online resources and supplemental software to full integration where instruction demands the presence of technology to expand the classroom experience. There is a need to create a more systematic approach to integrating and aligning technology resources to the curriculum for teachers to consistently use it as a tool for teaching and learning.			
(K)	Universal Access: Integration of Universal Design and Assistive Technology	Emerging awareness of universal design and assistive technologies (hardware/software) limited to special educators; few examples across the district of universal design strategies or assistive technology used to promote access to the general curriculum.	Awareness of universal design and assistive technologies (hardware/software) by special educators & some general educators; universal design strategies or assistive technology used to promote access to the general curriculum demonstrated across all grade levels.	Awareness of universal design and assistive technologies (hardware/software) by special educators & most general educators; universal design strategies or assistive technology used to promote access to the general curriculum demonstrated across all grade levels; staff are designated to provide AT assessment, procurement, support (training) and maintenance.	Systemic adoption of universal design strategies throughout the curriculum and the seamless integration of assistive technology to promote access to the general curriculum for all students; staff are designated to provide AT assessment, procurement, support (training), and maintenance.
		<i>CPS progress towards Advanced Tech status.</i>			
		The majority of teachers and special educators understand the UDL principles but learning how to integrate the resources into the classroom is more difficult. This may be due to the amount of time they have for planning and the amount of knowledge they have on the resources they have access to.			

Administration & Support Services

		Levels of Progress			
Row	Focus Areas	Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(L)	Vision and Planning	Minimal technology plan; technology used mainly for administrative tasks such as word processing, budgeting, attendance, grade book.	The technology plan is aligned with the Massachusetts Technology Plan, and is approved by the School Committee & supported by the Superintendent. Plan collaboratively developed by key stakeholders (e.g., teachers, parents, community members, local business, and individuals with disabilities), guiding policy and practice. Addresses local district teaching and learning standards.	In addition, the Technology Plan is integrated into district plan; used for internal planning, budgeting, applying for external funding and discounts. Teachers and administrators have a vision for technology use in support of student learning, teacher professionalism, and data management.	The technology plan and vision are focused on improving the success of all students based on needs, research, proven teaching and learning principles and is actively supported by the School Committee and Superintendent. Technology plan is collaboratively developed, guiding policy and practice; updated at least annually.
		<i>CPS progress towards Advanced Tech status.</i>			
		The current Technology Plan is aligned to MA DESE guidelines and was developed collaboratively by stakeholders. It guides the policy and practice of the ICTS Department and addresses local goals for technology. The vision is for the plan to play a more pivotal role in the overall vision for the district and inform all educational and administrative decisions.			
(M)	Technical Support (hardware, operating system, network)	Some technical support and minimal support tools to resolve 95% of problems in greater than five days. Problems cause major disruptions to curriculum delivery using technology.	Sufficient technical staff and support tools to resolve 95% of problems in two to five days. Same-day technical support for infrastructure problems by call-in. Problems sometimes cause major disruptions to curriculum delivery using technology. Designated Network Administrator.	Sufficient technical staff and support tools to resolve 95% of problems within two days. Same-day in-classroom technical support available. Problems infrequently cause major disruptions to curriculum delivery using technology. Network administrator.	Sufficient technical staff and support tools to resolve 95% of problems within one day. Technical support is readily available on-site for both infrastructure and application problems. Problems do not cause major disruptions to curriculum delivery using technology. Network administrator.
		<i>CPS progress towards Advanced Tech status.</i>			
		CPS is very close to providing on-site support 95% of the time across the district. There are just a few areas in which technical support leaves some gaps in coverage.			
(N)	Technology Integration Specialist	No district level Technology Director. Local instructional technology support is inconsistent.	District level Technology Director. One-half instructional technology specialist per 60-120 staff.	District level Technology Director. Dedicated instructional technology specialist—one half person per 30-60 staff. Dedicated staff at district level for data management and assessment.	District Technology Director. Dedicated instructional technology specialist—one half person per 30-60 staff. Dedicated staff at district level for data management and assessment and to help produce integrated curriculum content.
		<i>CPS progress towards Advanced Tech status.</i>			
		There is an Assistant Director of Educational Technology, a .5 Instructional Technology Specialist (ITS) for each school, and district level coaches within the curriculum departments that work closely with the ITS to manage data and generate integrated curriculum content.			

Administration & Support Services (continued...)

		Levels of Progress			
Row	Focus Areas	Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(O)	Budget Levels	Budget for hardware and software purchases and professional development.	Budget for hardware and software purchases (new and replacement) and professional development, minimal staffing support, and some ongoing costs.	Budget for purchases, professional development, adequate staffing support, and ongoing costs. Other state, federal, and local programs directed to support technology funding. Business partnerships, donations, and other local funding designated for technology.	Budget for purchases, incentives for professional development, sufficient staffing support, and ongoing costs. Appropriate budget to support district technology plan.
		<i>CPS progress towards Advanced Tech status.</i>			
		CPS continues to make improvements in the budget levels for hardware, software and professional development. The District has room for improvement in this area to fully fund a five to six year replacement cycle and provide adequate professional development opportunities.			
(P)	Budget Allocated for Technology (Total Cost of Ownership)	Less than \$175 per student.	Between \$175- \$300 per student.	Between \$300 - \$425 per student	\$425 or more per student
		<i>CPS progress towards Advanced Tech status.</i>			
		CPSD currently spends > \$500 per pupil on technology related expenses as calculated by MA DESE including, hardware, software, infrastructure, maintenance, services, technical staff and instructional technology staff.			
(Q)	Universal Design and Accessible Technology Considerations (e.g., Section 508)	Considerations for universal design and accessible technologies are limited to the Individual Education Program (IEP) process for students with disabilities. Procurement policies for information and instructional technologies do not ensure usability, equivalent access, or interoperability.	Considerations for universal design and accessible technologies are established in areas of high student use (e.g., libraries, computer labs); inconsistent implementation of procurement policies for information and instructional technologies that ensure usability, equivalent access, and interoperability.	Considerations for universal design and accessible technologies are established in areas of high student use (e.g., libraries, computer labs), some classrooms and administrative offices; routine implementation of procurement policies for information and instructional technologies that ensure usability, equivalent access, and interoperability.	Universal design and accessible technologies considerations are established throughout the district; procurement policies for information and instructional technologies that ensure usability, equivalent access, and interoperability in accordance to the guidelines established by Section 508.
		<i>CPS progress towards Advanced Tech status.</i>			
		CPS considers all students and staff when identifying appropriate technologies and strives to create a consistent model and experience in all high-use areas, classrooms, and administrative offices.			
(R)	Students Per Instructional Computer	Ten or more students per Type A or B computer; no firm computer replacement policy established by district.	Fewer than ten students per Type A and B computer; replacement policy established; one computer per teacher.	Fewer than five students per Type A and B computer; replacement cycle established for six years or less; one computer per teacher—possibly a laptop for working at home. Most students have access to handheld electronics. Maintains a list of places students can use technology outside of school.	One student per Type A and B computer or other electronic device. Replacement cycle established for five to six years or less; one computer per teacher—possibly a laptop for working at home. 75% of computers meet Massachusetts A/B standards. School works with community to provide equitable access to technology for students and community members after school hours.
		<i>CPS progress towards Advanced Tech status.</i>			
		The district ratio of students per Type A and B computer is 2.43. The ICTS Department is in year three of establishing a replacement cycle for all technology. The high school and Upper Schools have been replaced. There are mobile and handheld devices throughout the district for student use. CPS is working closely with the City of Cambridge to identify areas outside school for students to access technology.			

Infrastructure for Technology

		Levels of Progress			
Row	Focus Areas	Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(S)	Internet & WAN Access, Connectivity, and Speed	Dial-up connectivity to the Internet available only on a few computers.	Direct connectivity to the Internet available at each school and in most rooms. Adequate bandwidth to the school to avoid most delays.	District Internet connection of 10 Mbps per 1,000 students and staff district-wide. School connection to district WAN of 100 Mbps per 1,000 students/staff to avoid most delays. Easy access for students and teachers, including some wireless.	District Internet connection of 100 Mbps per 1,000 students and staff district-wide. School connection to district WAN of 1,000 Mbps per 1,000 students/staff. Easy access for students and teachers including most wireless connectivity to enable interactive presentations and video.
		<i>CPS progress towards Advanced Tech status.</i>			
		When considering bandwidth and wired connectivity the district's infrastructure exceeds the level outlined in the Advanced section with an Internet connection of 174Mbps per 1,000 student. The District currently has five K-5 school buildings with substandard wireless – these buildings have not yet been upgraded to managed wireless solution.			
(T)	E-Learning Environments	Web- and/or satellite-based interactive learning opportunities delivered synchronously or asynchronously, on a scheduled or unscheduled basis, primarily for professional development on a limited basis.	Expanded web- and/or satellite-based interactive learning opportunities with the possible addition of asynchronous video streaming or synchronous video conferencing. The addition of courses for professional development for teachers and student courses at the high school and college level (K-16).	Building upon Developing Tech, development of connections for improved access to web-based and/or interactive IP-based video learning on the local, state, regional, national, and international level (school to school, district to district, school/district to state, state to state, country to country). Applications to include courses, cultural projects, virtual field trips, etc.	Seamless IP-based infrastructure expanded to K-16 to allow development of high-quality web- and video-based content. Content distribution available for all students and teachers. Archives allow for content review asynchronously and sharing/distribution of these resources.
		<i>CPS progress towards Advanced Tech status.</i>			
		CPS is just beginning to explore the potential of distance and e-learning environments.			
(U)	LAN	Limited print/file sharing network at each school for lab, administration, and some classrooms. Some shared resources and some secure storage space. Minimum 10/100 Mbps Cat five hubbed network.	Most rooms connected to Internet via WAN and wireless connectivity where possible at each school with student access. Minimum 10/100 Mbps Cat five switched network. Basic servers for sharing some resources at each school.	All rooms connected to Internet with significant wireless connectivity at each school with sufficient bandwidth for effective student access. Minimum 100 Mbps Cat 5e switched network. District-owned servers or cloud computing provides secure storage, backups, applications, schedule, email, and website. Students, teachers and parents have easy access to educational resources from home and school (e.g., web portal).	All rooms connected to Internet with significant wireless connectivity at each school with sufficient bandwidth for effective student access. Minimum 100 Mbps/1 Gbps Cat 5e/6 switched network to classroom. Different services (data, phone, video, guest access, etc.) on different virtual LANs. All schools have sufficient bandwidth for content delivery through resources such as video streaming and conferencing. Students, teachers and parents have easy access to educational resources from home and school (e.g., web portal).
		<i>CPS progress towards Advanced Tech status.</i>			
		All but five CPS buildings are at the Advanced Tech category. The remaining five buildings are at the Proficient Tech level and are in need of upgraded switches and wireless capabilities.			

Infrastructure for Technology (continued...)

		Levels of Progress			
Row	Focus Areas	Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(V)	Other Technologies	Shared teacher use of resources such as telephone, TVs, VCRs, DVD players, and classroom sets of programmable calculators.	Shared use of resources such as telephone, computer video projectors, or interactive white boards, classroom sets of programmable calculators, digital cameras, and scanners.	Dedicated and assigned use of common technologies such as telephone, computer video projectors, or interactive white boards. Programmable calculators assigned to each student as needed. In each school, there is shared use of specialized technologies, digital cameras, scanners, handheld electronic devices.	Readily available fully equipped classrooms with computer/video projectors, interactive whiteboard, and other technology to enhance student instruction. Use of new and emerging technologies.
		<i>CPS progress towards Advanced Tech status.</i>			
		Technologies such as telephone, projectors, interactive whiteboards, and calculators are available in every school. Some schools have every classroom equipped with such technology as they have already been addressed in the replacement cycle. Each school's library houses shared resources such as audio and video equipment.			
(W)	Safety and Security	Backup and restoration procedures and virus protection to guard individual computers. District-wide acceptable use policy in place.	Basic firewall protection and diligent upgrading of network vulnerabilities added to protect against external threats. Protection against a wide range of malware (viruses, worms, Trojans, rootkits), adware, and spyware. District-wide responsible use policy in place, as well as policy on connecting student/staff-owned devices to school network.	To Developing Tech, add adequate network and server availability protection for expanded capabilities and to ensure dependable access. Protection of workstations from internal network attacks. Encryption of sensitive personal data on local networks. Network supports board policy on connecting student/staff-owned devices (guest devices) on the network.	Usage authentication added for mobile computer and home/external access requirements. Use of virtual LANs (VLANs) to protect network infrastructure and sensitive data. If guest devices are allowed on the network, guest traffic is on an isolated VLAN and/or guest devices are checked for currency of anti-virus software and operating system security patches.
		<i>CPS progress towards Advanced Tech status.</i>			
		CPS utilizes current backup, firewall, virus protection, filtering, encryption, authentication and VLAN technologies to ensure all data is adequately protected.			





The second measurement tool is the The Massachusetts DESE Technology Plan Benchmarks. Below is a chart demonstrating where CPS currently stands on each of these benchmarks.

Benchmark 1: Commitment to a Clear Vision and Implementation Strategies The district's technology plan is a set of goals and implementation strategies that align with the district goals.		
	Guideline	Current Status
Needs Assessment	The district assesses the technology products and services that will be needed to improve teaching and learning.	CPS continually assesses new products and services that may address the districts ever changing library resources and technology needs.
	The technology plan includes an assessment of the services and products that are currently being used and that the district plans to acquire.	CPS continually assesses existing products and services currently being used.
Budget	The district recognizes that technology plays a critical role in achieving its goals. The district has a budget that will ensure the implementation of its long-range technology plan.	CPS is committed to providing adequate library resources and technology to support teaching and learning as well as administrative needs of the district.
	The budget includes staffing, infrastructure, hardware, software applications, professional development, support, and contracted services.	CPS technology and library media arts budgets include funds for staffing, infrastructure, hardware, software applications, professional development and support as needed. Hardware budget is continually analyzed to try to meet five to six year replacement cycle. Staffing levels also continually analyzed to best meet the needs.
	The district seeks funding for technology programs from federal, state, and private resources, as well as from academic departments that are supported by technology. The district explores ways that technology can reduce costs and create efficiencies in other areas of the district budget.	CPS explores all possible funding sources for technology including but not limited to; federal, state, and private resources, as well as other academic departments. Technology is also used to create cost efficiencies on the administrative side where possible.
	For districts that plan to apply for E-rate reimbursement, the technology plan specifies how the district will pay for the non-discounted portion of their costs for the services procured through E-rate.	CPS maintains a sufficient technology budget to pay for all non-discounted portions of technology services procured through E-rate.
Evaluation	The district routinely consults with technology staff before purchasing technologies items, to ensure that the items are appropriate, cost-effective, and sustainable.	The ICTS department maintains constant communication with curriculum and administrative departments regarding all technology-related purchases.
	The district's technology plan includes an evaluation process that enables it to monitor its progress in achieving its goals and to make mid-course corrections in response to new developments and opportunities as they arise.	Currently the ICTS department does not have an evaluation structure for the plan, but identifies this need.



Benchmark 2: Integration and Literacy

CPS strives to ensure that students and teachers are literate and proficient users of educational technologies.

	Guideline	Current Status
Integration	Outside Teaching Time - At least 90% of teachers use technology every day, including some of the following areas: research, lesson planning, organization, administrative tasks, communications, and collaboration. Teachers explore evolving technologies and share information about technology uses with their colleagues.	All CPS teachers use technology daily to support professional tasks.
	For Teaching and Learning - At least 90% of teachers use technology appropriately with students every day to improve student learning of the curriculum. Activities include some of the following: research, multimedia, simulations, data analysis, communications, and collaboration. Teachers integrate evolving technologies that enhance student interest, inquiry, analysis, collaboration, and creativity.	A large percentage of teachers use technology in the classroom at varying degrees of appropriateness and integration. CPS identifies the importance of technology's role in the classroom and includes it in the teacher evaluation process.
Literacy	At least 90% of eighth grade students show proficiency in all the Massachusetts Technology Literacy Standards and Expectations for grade eight.	90% of CPS eighth grade students show proficiency in most of the Massachusetts Technology Standards and Expectations as reported through an annual student survey.
	100% of teachers are working to meet the proficiency level in technology, and by the school year 2014-2015, 90% of teachers will have mastered 90% of the skills in the Massachusetts Technology Self-Assessment Tool (TSAT).	CPS supports all teachers with their development of technology proficiency; however, we do not currently have data regarding percentage.
Staffing	The district has a district-level technology director / coordinator.	CPS has a district level ICTS Leadership team comprised of a Chief Information Officer, Assistant Director of Library Media, Assistant Director of Educational Technology, Media Arts Program Manager, Web and Online Services Manager, and Technical Services Manager.
	The district provides one FTE instructional technology specialist per 60-120 instructional staff to coach and model.	CPS provides one FTE Instructional Technology Specialist per an average of 90 instructional staff with a .5 FTE position at each K-8 school. In addition, CPS provides one FTE Library Media Specialist per an average of 65 instructional staff.
	The district has staff specifically dedicated to data management and assessment.	Currently CPS employs a Senior Database Manager, a Student Data Coordinator, and an Assessment Data Specialist.

Benchmark 3: Professional Development

CPS is both proactive and responsive to technology professional development needs through ongoing conversations with teachers, schools, and departments and aligns offerings on current and emerging trends.

	Guideline	Current Status
Professional	At the end of five years, at least 90% of district staff will have participated in high-quality, ongoing professional development that includes emerging technology issues, technology skills, universal design, and research-based models of technology integration.	The ICTS department offers professional development through afterschool workshops, department meetings, department collaborations, school-based trainings, district-wide initiatives, and point-of-need support covering a range of current and emerging technologies.
	Technology professional development is sustained and ongoing and includes coaching, modeling best practices, district-based mentoring, study groups, and online professional development.	CPS implemented school-based teams (Library Media Specialist, Instructional Technology Specialist and Technology Support Technicians) at all schools to provide coaching, modeling, and training at the school level. CPS has an online professional development center that provides on-demand resources to support district-adopted technologies.
	Professional development planning includes an assessment of district and teachers' needs. The assessment is based on the competencies listed in the Massachusetts Technology Self-Assessment Tool.	CPS surveys targeted groups of teachers to identify needs for annual professional development. School-based ICTS teams informally assess the needs of the school staff to plan appropriate professional development and support.
	Administrators and teachers consider their own needs for technology professional development.	CPS encourages and supports self-assessment of needs by providing outlets to communicate those needs, and emphasizes the importance of continued participation in professional development.

Benchmark 4: Accessibility of Technology

CPS provides appropriate access to the Internet and technology for all students and staff, and seeks innovative approaches to teaching and learning using emerging technologies.

	Guideline	Current Status
Hardware Access	By 2014-2015, the district has an average ratio of one high-capacity, Internet-connected computer for each student. (The Department will work with stakeholders on a regular basis to review and define high-capacity computers.)	CPS's current student to high-capacity, Internet-connected computer ratio is 1.8 to 1.
	The district provides students with emerging technologies appropriate to their grade level.	CPS continuously explores emerging technologies through pilot programs at various grade levels to assist in establishing classroom and student technology standards.
	The district maximizes access to the general education curriculum for all students, including students with disabilities, using universal design principles and assistive technology devices.	Universal Design is embedded throughout all schools. In addition CPS's Assistive Technology Specialists employ a variety of tools to implement the general education curriculum for all students.
	The district has procurement policies for information and instructional technologies that ensure usability, equivalent access, interoperability and SIF compliance.	CPS has policies/procedures in place to ensure usability, access, and interoperability are considered during the acquisition process of new technologies.
	The district provides technology-rich classrooms, with access to devices such as digital projectors, electronic whiteboards, and student response systems.	CPS identifies appropriate technologies through extensive data collection to create innovative classrooms that align with curricular and instructional goals. All classrooms grades 6-12 have an Instructional Suite (projector, interactive whiteboard, desktop computer, audio system) to support teaching and learning.
	The district has established a computer replacement cycle of five years or less.	CPS is developing a 5-year replacement cycle plan that replaces all staff and student devices at the school level and establishes a consistent model district wide.

Benchmark 4: Accessibility of Technology (continued...)

CPS provides appropriate access to the Internet and technology for all students and staff, and seeks innovative approaches to teaching and learning using emerging technologies.

	Guideline	Current Status
Internet Access	The district provides connectivity to the Internet for all computers in all classrooms in all schools, including wireless connectivity.	CPS has connectivity from all computers to the Internet. CPS currently has wireless throughout the district, managed wireless at eight buildings, and hot spots at the remaining buildings.
	The district provides an external Internet connection to the Internet Service Provider (ISP) of 100 Mbps per 1,000 students/staff.	CPS maintains two Internet connections: <ul style="list-style-type: none">• 100 Mbps shared with the City of Cambridge• 1 GB Internet2 connection This totals 1.2GB of bandwidth at the district level – almost double the 640Mbps standard.
	The district provides bandwidth of at least 10/100/1 GB to each classroom. At peak, the bandwidth at each computer is at least 100 kbps. The network card for each computer is at least 10/100/1 GB.	CPS computers all have connections to the network up to 1 GB.
Networking (LAN/WAN)	The district provides internal wide area network (WAN) connections from the district to each school between schools of at least 1 GB per 1,000 students/staff.	CPS maintains a 1 GB backbone to all CPS buildings exceeding this standard.
	The district provides access to servers for secure file sharing, backups, scheduling, email, and web publishing, either internally or through contracted services.	CPS currently provides access to secure file storage, backups, scheduling, email and web publishing through a variety of internal and contracted services.
	Access to the Internet Outside the School Day	In collaboration with the Cambridge Public Library, after school access and support is provided. CPS educates and encourages qualified families to participate in the Comcast Internet Essentials program, and access a wide range of community-based computer labs.
	The district provides access to its computer labs before and after school to ensure that students and staff have adequate access to the Internet outside of the school day.	CPS makes library and technology facilities available to school and community partners on a need basis.
	The district disseminates a list of up-to-date list of places where students and staff can access the Internet after school hours.	CPS informally supports students on accessing the Internet outside of school through suggested locations. A listing of online resources will soon be available on all district web sites.
Staffing	The district provides staff or contracted services to ensure that its network is functioning at all times.	CPS employs ten Technology Support Technicians to service all school buildings, as well as centralized ICTS department staff to ensure the stability of the network.
	The district provides resolves technical problems within 24 hours, so that they do not cause major disruptions to curriculum delivery. The district provides clear information about how to access technical support, which can be provided in person or remotely.	CPS employs ten Technology Support Technicians to service all school buildings and ICTS department help desk staff to ensure support requests are acted upon in a timely manor. A help desk system is in place to accept and track all support requests.
	The district provides at least one FTE person to support 400 computers. Technical support can be provided by dedicated staff or contracted services.	CPS currently averages a workload of 400 computers per technician district wide.



Benchmark 5: Virtual Learning and Communications

CPS encourages and supports teacher use of innovative online technologies to enhance, extend, and expand learning opportunities.

	Guideline	Current Status
Virtual Learning and Communications	The district encourages the development and use of innovative strategies for delivering high-quality courses through the use of technology.	Online delivery of courses is being utilized in pockets around the district to support identified needs or teacher interest. For example; the High School Extension Program is utilizing E2020 for credit recovery and additional course selection, Moodle is available for teachers interested in establishing an online course presence, a variety of other tools are utilized to access and deliver online content.
	The district deploys IP-based connections for access to web-based and/or interactive video learning on the local, state, regional, national, and international level.	All CPS buildings, offices and classrooms have adequate Internet bandwidth to support web-based and interactive video learning. CPS utilizes both a commercial Internet connection as well as an Internet 2 connection to ensure adequate connection to all internet-based resources.
	Classroom applications of virtual learning include courses, collaborative projects, field trips, and discussions.	Policies and procedures are in place for teachers to utilize online applications to support collaborative work. CPS has established a Google Docs intranet available to all staff and students grades 6-12 as an online productivity and collaboration suite of tools.
	The district maintains an up-to-date website that includes information for parents and community members.	CPS is currently redesigning their online presence to ensure the web sites share up-to-date information while incorporating CPS branding and a unified structure across the district.



Benchmark 6: Safety, Security, and Data Retention

CPS strives to maintain a high level of security, confidentiality, and digital citizenship for all students and staff.

	Guideline	Current Status
Safety, Security, and Data Retention	The district has a CIPA-compliant Acceptable Use Policy (AUP) regarding Internet and network use. The policy is updated as needed to help ensure safe and ethical use of resources by teachers and students.	CPS has a CIPA-compliant AUP that is reviewed and/or updated annually as needed.
	The district educates teachers and students about appropriate online behavior. Topics include cyber bullying, potential risks related to social networking sites and chat rooms, and strategies for dealing with these issues.	CPS has a digital citizenship curriculum for grades 2-8, which includes Internet safety and cyber bullying. Schools have a procedure in place for dealing with all bullying incidents.
	The district has a plan to protect the security and confidentiality of personal information of its students and staff.	CPS has a Comprehensive Information Security Plan identifying best practices to protect the security and confidentiality of personal information of student and staff.
	The district complies with federal and state law, and local policies for archiving electronic communications produced by its staff and students. The district informs staff and students that any information distributed over the district or school network may be a public record.	CPS has an email archive system in place. Local policies for archiving exceed state and federal law. The CPS Acceptable Use Policy informs all staff and students that communication may be public.



Below is the The American Association of School Libraries Assessment (AASL) Guide, including annotations of where CPS currently stands in respect to each of these measurements.

AASL Evaluation Tool for School Library Programs	
*Adapted from Empowering Learners: Guidelines for School Library Programs, AASL 2009	
Building the Learning Environment	Current Status
Benchmark 1: Planning and Evaluating the School Library Program Guideline: The school library program is built on a long-term strategic plan that reflects the mission, goals, and objectives of the district.	<ul style="list-style-type: none"> ICTS is currently completing a three year strategic long-term plan in progress with completion date Spring 2013. ICTS has developed mission, vision and goals that support the missions, goals and objectives of the district. ICTS collected feedback from surveys to teachers, administrators, students and families to inform goals.
Benchmark 2: Staffing Guideline: The school library has a minimum of one full-time certified/ licensed librarian supported by qualified staff sufficient for the school's instructional programs, services, facilities, size, and number of teachers and students.	<ul style="list-style-type: none"> ICTS department created new school-based staffing model. ICTS updated job descriptions for all Library positions. Four new Upper School campuses and 4 K-5 schools currently do not meet this standard by sharing one LMS for two schools. Assistant Director of Library Media Services uses new evaluation process to improve practice, build skills and guide professional development. Assistant Director of Library Media Services plans monthly department meetings, and writes weekly newsletters that provide communication, professional development and collaboration.
Benchmark 3: The Learning Space Guideline: The school library program includes flexible and equitable access to physical and virtual collections of resources that support the school curriculum and meet the diverse needs of all learners.	<ul style="list-style-type: none"> All school buildings have a library media center conducive to active and participatory learning, two schools share one library. Eight libraries recently went through major and minor renovations. All LMS maintain a library website that provides 24/7 access to digital information resources, reference services, links to other libraries and academic sites, information for parents, and exhibits of exemplary student work. ICTS is currently reviewing the technology infrastructure that supports teaching and learning in all K-5 school libraries.
Benchmark 4: The Budget Guideline: The school library program has sufficient funding to support priorities and make steady progress to attain the program's mission, goals and objectives	<ul style="list-style-type: none"> Library resource budgets are inconsistent across the district resulting in per pupil allocation not in line with state and national recommendations. ICTS supports the budget with local and nationally published evidence that shows how the school library program impacts learning. ICTS seeks additional funding through grants, fundraising and parent donation programs.

AASL Evaluation Tool for School Library Programs

*Adapted from Empowering Learners: Guidelines for School Library Programs, AASL 2009

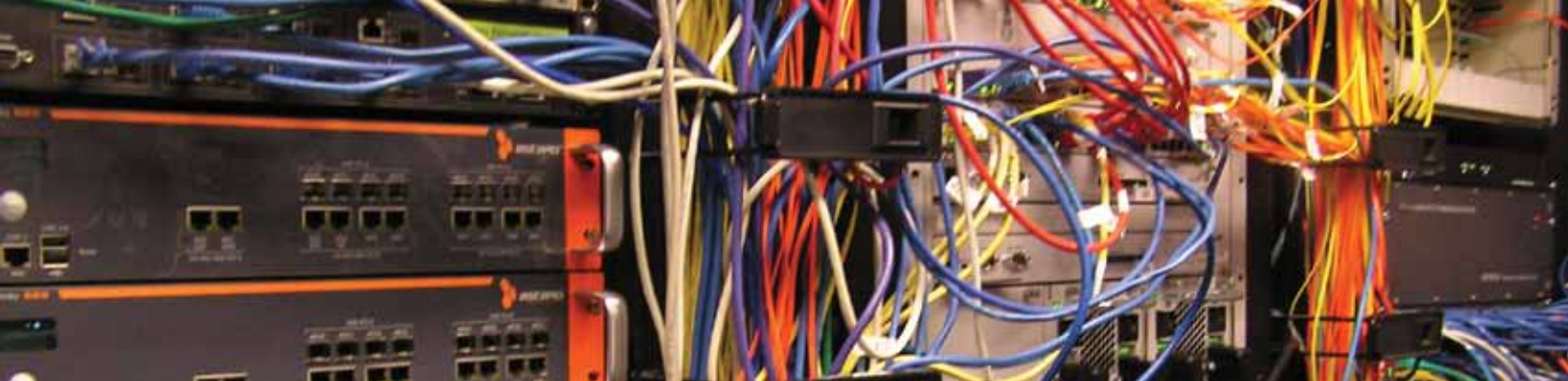
Building the Learning Environment (continued....)	Current Status
Benchmark 5: Policies Guideline: The school library program includes policies, procedures, and guidelines that support equitable access to ideas and information throughout the school community.	<ul style="list-style-type: none"> • ICTS updated the District Circulation/Book Loan Procedure Guide, 2012. • ICTS is currently finalizing an update to District Selection and Reconsideration Policy for challenged materials. • ICTS subscribes to an online tool that guides student to be ethical users of information. • LMS implement an acceptable-use policy.
Benchmark 6: Collection and Information Access Guideline: The school library program includes a well-developed collection of books, periodicals, and non-print materials in a variety of formats that support curricular topics and are suited to inquiry learning and users' needs and interests.	<ul style="list-style-type: none"> • LMS advocate for and protect intellectual access to information and ideas. • LMS collaborate with the teaching staff to develop an up-to-date collection of print and digital resources in multiple genders that appeals to differences in age, gender, ethnicity, reading abilities, and information needs. • LMS map their collection to ensure that it meets the needs of the district curriculum. • LMS regularly seeks input from students to determine students' reading interests and motivations. • LMS promote alternative reading options through reading lists, bibliographies, and digital resources and devices. • LMS link the digital library to local, regional, or state online networks, connecting with other public or academic libraries to take advantage of available virtual resources to support school curriculum. • LMS and district cataloger conduct regular inventory and weeding to ensure that the library collection is up to date. • LMS use circulation reports from automated circulation system to track usage.
Benchmark 7: Outreach Guideline: The school library program is guided by an advocacy plan that builds support from decision makers who affect the quality of the school library program.	<ul style="list-style-type: none"> • LMS analyze stakeholder goals and issues for potential alignment with the library activities and resources, and build promotional efforts around them. • LMS form partnerships with local and state community and educational institutions to promote student learning. • Asst. Director attends district Instructional Council and Superintendent meetings. • ICTS maintains a department website. • LMS use and share local, state, national school library data to engage support. • LMS encourage parent, community and business members to support school libraries by volunteering. • LMS serve on school and parent committees. • LMS write and share articles giving concrete evidence of what the library does to prepare learners to be successful in the 21st. century.
Benchmark 8: Professional Development Guideline: The school library program includes support for school librarian and teacher professional development to sustain and increase knowledge and skills.	<ul style="list-style-type: none"> • LMS offers professional development to teachers through in-school, after-school opportunities. • ICTS department ensures access to professional development opportunities for professional and paraprofessional staff. • ICTS department provides professional development to sustain and to develop knowledge and skills for all LMS. • LMS participate in local, regional, state, and national educational conferences as a learner and as a teacher. • ICTS Leadership provides subscriptions to professional journals and research articles relevant to school libraries, student learning, and new developments in the educational field.

AASL Evaluation Tool for School Library Programs

*Adapted from Empowering Learners: Guidelines for School Library Programs, AASL 2009

Teaching for Learning	Current Status
Benchmark 1: Building Collaborative Partnerships Guideline: The school library program promotes collaboration among members of the learning community and encourages learners to be independent, lifelong users and producers of ideas and information.	<ul style="list-style-type: none"> • LMS work to find ways to work with all teachers to design, implement, and evaluate inquiry lessons and units. • LMS work with administration to actively promote, support, and implement collaboration. • LMS seek input from students on the learning process.
Benchmark 2: The Role of the Learning Guideline: The school library program promotes reading as a foundational skill for learning, personal growth, and enjoyment.	<ul style="list-style-type: none"> • LMS model reading strategies during their lessons and units. • LMS collaborate with ELA coaches, teachers to integrate reading strategies into lessons and units. • LMS acquire and promote current, high-quality, high-interest collections of books and other reading resources in multiple formats. LMS develop initiatives to encourage and engage learners in reading, writing, and listening for understanding and enjoyment. • LMS foster reading fiction and nonfiction for various pursuits, including personal pleasure, knowledge and ideas. • LMS create and promote opportunities to involve families in reading.
Benchmark 3: Addressing Multiple Literacies Guideline: The school library program provides instruction that addresses multiple literacies, including information literacy, media literacy, visual literacy, and technology literacy.	<ul style="list-style-type: none"> • LMS collaborate with teachers to embed skills associated with multiple literacies into lesson and units. • LMS guide students and teachers to formats most appropriate to the learning task. • LMS promote critical thinking by connecting learners with information in multiple formats. • LMS provide instruction specific to searching and presenting data and information in various formats. • LMS stay abreast of emerging technologies and formats • LMS model new skills, new technologies, and new understandings of the learning process. • LMS integrate the use of emerging technologies as a means for effective and creative learning. • LMS embed concepts of legal, ethical and social responsibilities in accessing, using and creating information in various formats.
Benchmark 4: Effective Practices for Inquiry Guideline: The school library program models inquiry-based approach to learning and the information search process.	<ul style="list-style-type: none"> • ICTS supports educational and program standards as defined by state, and national associations. • LMS design learning tasks that stimulate critical thinking, incorporate the information search process, and builds upon learners' prior knowledge. • LMS use differentiated strategies to engage all learners. • LMS integrate the use of emerging technologies as a means for effective and creative learning.
Benchmark 5: Assessment in Teaching for Learning Guideline: The school library program is guided by regular assessment of student learning to ensure the program is meeting its goals.	<ul style="list-style-type: none"> • LMS use informal and formal assessments to guide learners and assess their progress. • LMS use performance-based assessments such as rubrics, checklists and self-questioning. • LMS solicit student input for the pre and post assessments of inquiry-based units upon their completion.





AASL Evaluation Tool for School Library Programs

*Adapted from Empowering Learners: Guidelines for School Library Programs, AASL 2009

Empowering Learning Through Leadership	Current Status
Guideline: The school library program is built by professionals who model leadership and best practice for the school community.	<ul style="list-style-type: none"> • LMS are visible and active leaders within the school community. LMS benchmark their school program to district, state and national standards. • LMS participate in professional associations for education and librarianship. • LMS share knowledge about libraries and learning through various formats (newsletters, website). • LMS share best practices with each other and with other teachers. • LMS use research to inform practice and make evidence-based decisions. • LMS create an environment that is conducive to active and participatory learning, resource-based learning, and collaboration with teaching staff.

The fourth measurement tool is the MA DESE PARCC Readiness Assessment tool. The PARCC assessment tool is scheduled to be implemented in MA schools in the 2014 school year and will replace the current MCAS assessments. The PARCC assessment is developed by the Partnership for Assessment of Readiness for College and Careers; a 23 state consortium.

The PARCC assessments are intended to be administered online. The PARCC Readiness Assessment tool is intended to help prepare districts to have the capacity to administer the new PARCC assessments online.

Below are the current bandwidth and device recommendations for a successful PARCC implementation; as well as CPS's status in each category.

PARCC Bandwidth Recommendations (December 2012)		
	Recommended Specifications	CPS Current Status
External Connection to the Internet	100 Kbps per student or faster	CPS exceeds this standard in all buildings.
Internal School Network	1000 Kbps per student or faster	CPS exceeds this standard in all buildings.
PARCC Device Specifications (December 2012) Desktop, Laptop, Netbook, and Thin Client		
Operating System	Recommended Specifications	CPS Current Status
Windows	Windows 7 or newer	CPS meets or exceeds this standard in all buildings where student windows devices are provided.
Mac OS	Mac OS 10.7 or newer	CPS does not currently meet this requirement.
Linux	Linux: Ubuntu 11.10, Fedora 16 or newer	CPS does not employ Linux for any student devices.
Chrome OS	Chrome OS 19 or newer	CPS meets or exceeds this standard in all buildings.
Memory	1 GB RAM or greater	CPS meets or exceeds this standard in all buildings.
Connectivity	Computers must be able to connect to the Internet via wired or wireless networks	CPS meets or exceeds this standard in all buildings.
Screen Size	9.5 inch screen size or larger	CPS meets or exceeds this standard in all buildings.
Screen Resolution	1024 x 768 resolution or better	CPS meets or exceeds this standard in all buildings.



PARCC Device Specifications (December 2012) Desktop, Laptop, Netbook, and Thin Client) (continued...)		
Operating System	Recommended Specifications	CPS Current Status
Input Device Requirements	<p>Keyboard, Mouse/Touchpad</p> <p>The input device must allow students to control an onscreen cursor to point, click, drag, and select an area. The input device must allow students to enter letters, numbers, and symbols and shift, tab, return, and backspace. Other assistive technologies may be needed for students requiring accommodations. PARCC will release Accessibility Guidelines and Accommodations Guidelines in June 2013.</p>	CPS meets or exceeds this standard in all buildings.
Headphone/Earphone and Microphone Requirements	<p>Headphones/Earphones, Microphone</p> <p>Headphones/earphones and microphones are required for all students taking the English Language Arts/Literacy Speaking and Listening Assessment.</p> <p>Headphones/earphones are required for students using text to speech or other auditory accommodations.</p> <p>Microphones are required for students using speech to text accommodations</p>	CPS may need to invest in more headphones/earphones and microphones.
Additional Guidance	<ol style="list-style-type: none"> Each computer operating in a thin client environment must meet or exceed minimum hardware specifications, as well as bandwidth and security requirements. Computers meeting only the minimum specifications for the 2014-2015 assessment are not likely to be compatible beyond the 2015-2016 assessment. PARCC recommends that schools upgrade from the oldest operating systems and lowest memory levels as soon as possible. Windows XP will no longer be supported by Microsoft after April 8, 2014, presenting both security and support risks for schools. (http://windows.microsoft.com/en-US/windows/end-support-help) Computers running Windows XP-Service Pack 3 may require a web browser other than Internet Explorer due to HTML5 compatibility limitations. PARCC will issue specific web browser guidance by October 2013. Computers must accommodate the 1024 x 768 screen resolution minimum specification without panning 	CPS will continue to monitor the PARCC technical requirements to ensure all devices meet the recommended requirements.

PARCC Device Specifications (December 2012) Tablets		
Operating System	Recommended Specifications	CPS Current Status
Android	Android 4.0 or newer	CPS meets or exceeds this standard in all buildings.
Apple iOS	iPad 2 or newer running iOS6 or newer	CPS may need to upgrade/replace a few iPad 1s.
Windows	Windows 8 or newer	CPS meets or exceeds this standard in all buildings.
Memory	1 GB RAM or greater	CPS meets or exceeds this standard in all buildings.
Connectivity	Computers must be able to connect to the Internet via wired or wireless networks.	CPS meets or exceeds this standard in all buildings.
Screen Size	9.5 inch screen size or larger	CPS meets or exceeds this standard in all buildings.
Screen Resolution	1024 x 768 resolution or better	CPS meets or exceeds this standard in all buildings.
Input Device Requirements	<p>Keyboard, Mouse/Touchpad</p> <p>Due to the onscreen space occupied by a tablet's virtual keyboard, PARCC is strongly recommending that schools be prepared to provide external keyboards for test takers using tablets so as not to limit or obscure the view of test item content and related functionalities when text input is required. Research studies to be conducted by PARCC in Spring 2013 are intended to yield data on student's use of virtual versus external keyboards. PARCC will refine this guidance as needed based on these results.</p> <p>External keyboards must allow students to enter letters, numbers, and symbols and shift, tab, return, and backspace. Tablet touch screen interfaces can be used for student interactions with the assessments other than text input, including to control an onscreen cursor to point, click, drag, and select an area. Other assistive technologies may be needed for students requiring accommodations. PARCC will release Accessibility Guidelines and Accommodations Guidelines in June 2013.</p>	If Tablets are to be employed for the PARCC, CPS may need to invest in external keyboards.
Headphone/Earphone and Microphone Requirements	<p>Headphones/Earphones, Microphone</p> <p>Headphones/earphones and microphones are required for all students taking the English Language Arts/Literacy Speaking and Listening Assessment.</p> <p>Headphones/earphones are required for students using text to speech or other auditory accommodations. Microphones are required for students using speech to text accommodations</p>	CPS may need to invest in more headphones/earphones and microphones.
Additional Guidance	PARCC has not yet evaluated the compatibility of Windows RT for 2014-2015. Further information will be issued on Windows RT in Version 3.0 of the PARCC Guidelines. 7 Smaller tablets (screen size less than 9.5"), e-readers, and smart phones will not be supported and will not be compatible with PARCC assessments for 2014-2015.	CPS will continue to monitor the PARCC technical requirements to ensure all devices meet the recommended requirements.



Vision

The Information, Communication, Technology Services (ICTS) department is a collaboration among Library Media, Educational Technology, Media Arts, Web Services and Technical Services divisions. This department strives to support administration and teachers; inform parents; and to prepare students for lifelong learning, informed decision-making, a love of reading, and the use of information and communication technologies.

Goals

The four instruments above identify issues that require immediate action. Many of the items identified above span multiple measuring tools. This section will outline goals that address all areas of concern. Outside of this document each program area within ICTS will develop annual action plans to work towards meeting these goals. These action plans will be reviewed annually and adjusted as needed.

The findings will be presented in the major categories as identified in the instruments.

Curriculum & Student Proficiency

To create a scope and sequence of K-12 ICTS Learning Expectations that outline necessary skills for the 21st century learner that are aligned with Common Core, curriculum units of study, and resources.

The Library Media and Educational Technology departments have historically maintained a collaborative working relationship. Both at the leadership and school levels, staff from both departments meet and plan regularly to identify the needs of teachers, students and families, and design programs that fit these needs. In addition, both departments reach out to other curriculum departments to support and strengthen units of study, creating dynamic lesson plans that truly embed the ICTS learning expectations.

During the 2012-2013 school year, the departments released an updated K-5 Learning Expectations document and shared it at school and district leadership

meetings. We are now in the process of aligning these expectations to best practices and resources. We are also in the initial stages of updating the 6-12 ICTS Learning Expectations, and will then begin the alignment process. The Library Media department has also issued updated Research Guides for grades K-12 to create a consistent approach to research and ensure all students have the necessary information skills.

The Educational Technology department has collected data on student proficiency through an annual 8th grade end-of-year survey. However, there is a need to broaden this survey to reflect the new ICTS Expectations and be administered to multiple grades.





Online Learning

For all CPS teachers to use innovative online technologies when appropriate to enhance, extend, and expand learning opportunities for themselves and their students.

The ICTS department supports online learning practices through policies, procedures, and tools at both the district and classroom levels. All teachers have access to tools such as Moodle and Google Apps for Education to support their online professional and instructional work, while the Web 2.0 Activity Procedure provides teachers with a pathway to use online tools they discover that meet the needs of their individual classrooms. In addition, the Library Media department provides access to multiple online resources for teachers and students.

Currently, the only instance of distance learning courses occurs at the High School Extension Program for student credit recovery. However, there are pockets of other types of online learning throughout the district that connect students to professionals and content through online communication, collaboration, and experiential tools.

To support teachers, the ICTS department has implemented a media distribution system that will provide access to content and professional development videos.

Staff Proficiency

All Cambridge Public School teachers and staff are effective, efficient, and ethical users of information tools, and utilize them daily to enhance communication, collaboration, creation, and critical thinking.

In 2012-2013, the ICTS department implemented a K-12 school-based staffing structure which includes a Library Media Specialist, Instructional Technology Specialist, and Technology Support Technician. This team is able to provide support at the school level to sustain and increase knowledge and skills for all staff. ICTS team members are able to offer embedded support through point-of-need and collaborative efforts.

Each year, teacher and staff needs are informally assessed in order to inform additional professional development opportunities at the district level. Through the Ed Tech

Academy and the Teacher Resource Center, we are able to offer workshops that target current and emerging technologies based on these needs. These workshops are available to all CPS staff and run throughout the school year.

Most teachers in CPS are using technology and information tools for research, lesson planning, multimedia and graphical presentations, and simulations. Some share their uses with colleagues through various meeting structures. Most administrators use technology and information tools daily in their work; however, there is a request to support their ability to identify

best practices. In order to ensure adequate support, there is a need for more formal assessment of staff proficiency and needs.



Resource Allocation: Budget & Staffing

CPS will provide adequate resources, both staffing and technical, to support all students' learning.

CPS has been making great progress in moving towards a five year replacement cycle for student and staff technology. Over the last three years all classrooms grades 6-12 have been outfitted with new technology designed to meet the curricular needs at each grade. The next two years the application or available resources will be focused on grades Pk-5 to ensure equity in access across all grades and schools. During this process effort is being made to develop a sustainable level of technology and a replacement cycle of five years. This will necessitate further planning in the refresh cycles as well as some additional funding for annual hardware replacements.

In addition, the evolving requirements of the upcoming PARCC assessments may require both additional student devices as well as upgrades and/or peripheral devices to meet the minimum requirements. This work will be reflected in the Educational Technology and Technical Services work plans. Similarly, there is an effort to restructure the school library resources budgets to reflect per pupil spending that is consistent with state and national recommendations.

Finally, staffing levels in general are highlighted in three of the instruments as potential budget items. FY13 was the first year of a

major school based staffing reorganization for ICTS. Overall this new structure is providing much more uniform services in all K-8 schools for instructional technology and technical support, however, the library media staffing is still not adequate. Currently, the Library Media Specialist at buildings that house both a K-5 and 6-8 school are shared and unable to service either effectively. There are still some challenges and issues to be addressed that may require shifting of staff or possible additional staff to ensure universal support. This work will be reflected in the Library Media, Educational Technology, and Technical Services work plans.

Infrastructure

All Cambridge Public School buildings will have adequate infrastructures to support current and future technologies.

CPS does not currently meet the guidelines consistently throughout the district with respect to wireless access. With the completion of the CRLS renovation CPS began a capital project of expanding managed wireless connectivity to all CPS buildings. Currently there are five buildings remaining that have not yet been upgraded to managed wireless. These buildings do have wireless capabilities, but not sufficient enough to fully support wireless classroom activities throughout the buildings.

The Technical Services work plan will address this need as a priority.



Access (Internally & Externally)

Cambridge Public Schools will strive to ensure all students have adequate access to technology resources to support their educational needs.

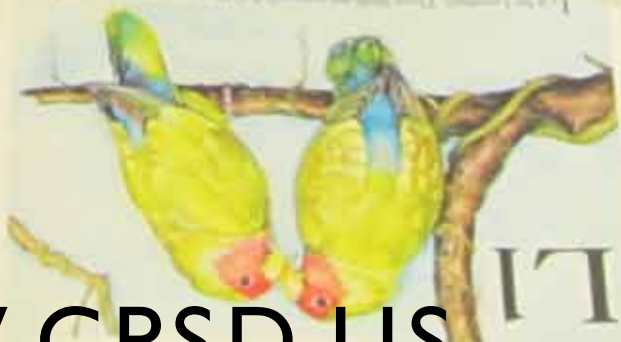
The DESE Technology Plan Benchmarks targets 1:1, student to computer ratio, by the 2014/2015 school year. CPS is currently at 1.8:1. In addition, as mentioned in the budget section above, CPS is not quite at a five year replacement cycle, although we are moving in the right direction. Additionally, the PK-5 classrooms are not currently outfitted with adequate technology suites in all schools. These issues are priorities for the Educational Technology and Technical Services work plans.

Access beyond the school day was also highlighted as a need. Currently the ICTS Department works closely with the Cambridge Digital Access Committee to identify community labs, after school programs, and City resources for those in need.

The Digital Access Committee includes representatives from various departments of the City of Cambridge, the Cambridge Public Schools, non-profits, and concerned citizens. The Committee seeks to ensure equal access to the internet and computing technologies so that every resident of Cambridge can utilize City and School services and make use of the opportunities available online. The Committee focuses on ensuring that low-income and linguistic minority residents have access to the Internet, equipment, and training with particular interest in K-12 students and their parents.



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Curriculum & Student Proficiency

To create a scope and sequence of K – 12 ICTS Learning Expectations that outline necessary skills for the 21st century learner that are aligned with Common Core, curriculum units of study, and resources.

Educational Technology and Library Media Learning Expectations K – 12 were revised, updated, and shared with all stakeholders by September, 2013. ICTS teachers are working with Curriculum Review Teams in Science and ELA to ensure the Education Technology and Library Media Learning Expectations are embedded within the new curriculums. Student assessment tools have been selected and/or created at Grades 4, 5, 6, 8, 9, and 12 to measure student proficiency and growth aligned with the Education Technology and Library Media Learning Expectations. These assessments were piloted in 2013/2014 and will be administered annually as pre-and post tests.

Online Learning

For all CPS teachers to use innovative online technologies when appropriate to enhance, extend, and expand learning opportunities for themselves and their students.

CPS continues to expand resources and opportunities for online learning to occur. Over the past year a number of new online systems have been adopted throughout the district and are in varying stages of implementation. These include; ASPEN Instructional Management System, Online math curriculum support systems, ebook pilots, and expanded use of MediaCast as a secure video distribution system for flipped classroom and other video needs.

The District also upgraded the content management system (CMS) that provides the foundation for all online presence for each school and department. The upgraded CMS, along with the addition of a Technical Design & Social Media Assistant are supporting an increased adoption of social media to enhance the district's online presence.

Finally, the District continues to edit and revise all technology policies and procedures related to online services to ensure CPS adheres to state and federal regulations and protects student privacy while encouraging innovation.



Staff Proficiency

All Cambridge Public School teachers and staff are effective, efficient, and ethical users of information tools, and utilize them daily to enhance communication, collaboration, creation, and critical thinking.



Supporting teachers and staff with their use of technology continues to be a priority for the ICTS department. Through the school-based ICTS teams, teachers and staff are receiving both just-in-time support that matches their specific needs for technology proficiency growth, in addition to school-wide support through targeted afterschool opportunities that reflect the work of the individual schools. Through this support, we have seen a dramatic increase in teacher and staff use of district-wide technologies including our recent deployment of Google Apps for Education and our collection of online digital resources offered through the libraries. This coming year we will focus on measuring this proficiency with a teacher and staff survey administered twice a year, as a means to collect data to focus our support and continue to grow as a district in our efficient and effective use of technology.

Resource Allocation: Budget & Staffing

CPS will provide adequate resources, both staffing and technical, to support all students' learning.

The ICTS department continues to review and revise allocated resources, including hardware, software, and personnel to reflect the ever changing needs of the instructional and administrative systems within the district. The 2013 – 2014 school year marked year 4 of a 6-year hardware replacement cycle that has created a district-wide plan to keep school technology up-to-date and responsive to both the developmental and curricular needs of each grade level.

To date, all instructional technology in grades 6 – 12 have been updated and all classroom technology in grades K – 5, which includes iPads, Chromebooks, laptops, desktops, and other devices to support teaching and learning. The summer purchase of 2016 will mark the start of a new replacement cycle. Similarly, the ICTS department has continued to adjust personnel to support this technology including the addition of a district-level Instructional Technology Specialist to support grades 6 – 12, a dedicated Instructional Technology Specialist for CRLS, a redefined position of a Library Technology Specialist at the four Upper Schools, and within the core department staff, a Technical Design & Social Media Assistant to grow the district use of social media tools and support consistent messaging.

In addition, we identified the need for technical support during the summer months for the variety of internal and external programs that utilize CPS schools to offer opportunities to CPS students. The ICTS department is committed to maintaining a high level of support of appropriate resources and will continue to revise as needed.

Infrastructure

All Cambridge Public School buildings will have adequate infrastructures to support current and future technologies.

The Technical Services Team finished implementing the CPS managed wireless network to all schools in the district. In the 2012 – 2013 school year, ICTS fitted the last three remaining schools which marked the completion of this project. Along with the installation of the wireless access points to these three schools, ICTS installed redundant controllers centrally to ensure that the wireless access points have the proper controller coverage.



Access (Internally & Externally)

Cambridge Public Schools will strive to ensure all students have adequate access to technology resources to support their educational needs.

As mentioned in the Resource Allocation update, the instructional technology replacement cycle has been set at 6 years and includes a substantial data collection process to identify appropriate hardware and models of technology for students. Currently, the updates have created a 1.5:1 ratio at the high school, 2:1 for grades 3 – 8, and a set of five student tablets for every K – 2 classroom. This is the current level that can be supported by the budget, but as prices drop and additional resources become available, the ICTS department will continue to consider the benefits of moving to a 1:1 level for some grades.

Internet access beyond the school day is becoming increasingly important for all our students and families. The ICTS Department continues to work closely with the Cambridge Digital Access Committee to identify community labs, after school programs, and City resources for those in need of hardware, Internet access, and training.

The Digital Access Committee (DAC) includes representatives from various departments of the City of Cambridge, Cambridge Public Schools, non-profits, and concerned citizens. The Committee seeks to ensure equal access to the Internet and computing technologies so that every resident of Cambridge can utilize City and School services and make use of the opportunities available online. The Committee focuses on ensuring that low income and linguistic minority residents have access to the Internet, equipment, and training with particular interest in K – 12 students and their parents. To this end, the DAC works closely with the Cambridge Housing Authority and is currently working to maintain the pilot wireless access project at Newtowne Court Housing Development.

The City of Cambridge is currently forming a task force that will help address the issues identified by the DAC. The task force will examine broadband service in Cambridge and evaluate the city's fiber infrastructure. Options to increase competition, reduce pricing, and improve speed, reliability and customer service for both residents and businesses will be explored. The Task Force will investigate scenarios for leveraging the City's current or future fiber assets to expand access to broadband services, such as service to CHA properties.

This year the newly created CPS Family Engagement Office will also join the effort to identify and serve those in need.