SUSTAINING PROGRESS IN
ACCESS AND EQUITY

EdTech Strategic Planning Guide

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Introduction

In June 2019, I presented a vision for Massachusetts K-12 public education to drive us into a new era of more relevant, meaningful educational experiences and outcomes for **all** students. [Our Way Forward](#) highlighted four key themes by which I believed then – and believe now – this can be accomplished:

I. Deeper Learning for All
II. Holistic Support and Enrichment
III. Innovation and Evidence-Based Practices
IV. The State as a Partner
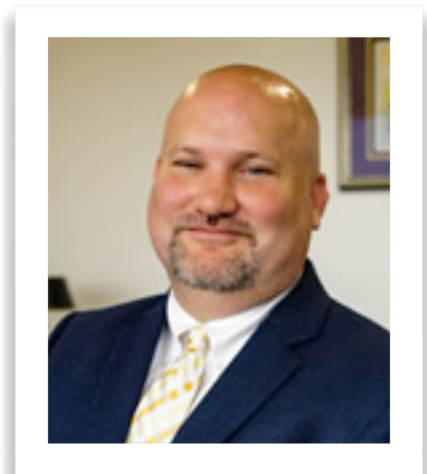
While the COVID-19 pandemic has presented many challenges, it has also created the opportunity for all of us to take stock of the most critical components of school, while simultaneously learning new skills and developing innovative ways to serve students and communities. Many of these adaptations required a significant increase in our use of technology. In the span of a few months, schools and districts across the Commonwealth launched full 1:1 school technology programs, including distributing devices to more than 80% of students and securing internet access for those who needed it. Many districts leveraged the skills of students and families to supplement tech support help desks, saw dramatic increases in participation in school committee meetings and family-teacher conferences, developed virtual social-emotional programs and methods of tracking and monitoring student engagement and wellbeing, and trained educators on instructional methods for delivering instruction across multiple modes. In some of our brightest spots, we saw educators completely reimagine what teaching and learning looked like to create more personalized, relevant, and rigorous experiences for students. And at the Department of Elementary and Secondary Education (DESE or the Department) as well as across other state agencies and departments, we had to adapt in order to meet the rapidly evolving needs of our school communities. Through a global pandemic, the themes expressed in Our Way Forward continued to ring true.

So where do we go from here? Many system leaders are wondering what the role of technology will be as all students return to in-person instruction and our dependency on it lessens. Schools and districts have an opportunity to leverage the technology they've invested in – in conjunction with the skills and mindsets they've developed, and the partnerships they've established or strengthened with one another, families, and community organizations – to enhance student learning experiences, to expand access to meaningful courses and content, to provide opportunities to practice and sharpen college and career-readiness skills. But it won't happen automatically. Technology is a tool, not a solution. This document was created to support districts that are seeking to continue building out their use of educational technology in a strategic and sustainable way, and we hope it's useful in your planning efforts.

In service to the students of Massachusetts,

Jeffrey C. Riley

Commissioner
Massachusetts Department of Elementary and Secondary Education

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Purpose of the Document

The Department, in close partnership with the MA Educational Technology Administrators Association (METAA), the MA BESE Digital Learning Advisory Council (DLAC), and other state and national stakeholders, developed this guidance for district and school leaders in Massachusetts.

This document is intended for district administrative teams including Superintendents, Directors of Educational Technology (EdTech), School Business Officials, and other leaders who participate in district strategic planning.

Over the past year, districts and schools have made considerable technology investments in hardware, software, and infrastructure due to the COVID-19 pandemic. The additional stimulus funding provided in early 2021 and the potential availability of additional funds have provided an unprecedented opportunity for school systems to make meaningful and strategic investments in educational technology to support student learning over the next several years.

DESE offers this guidance in an effort to support and encourage districts to embrace what we've come to know about the power of educational technology – not just this past year, but over the last several decades. As noted in the [School Leader Digital Learning Guide](#) from The US Department of Education, Office of Educational Technology, we must **"embrace what has worked, adjust what has not, and work with students and teachers to chart the path forward."**

While the following information is specific to EdTech, the guidance itself cannot exist apart from the context of each district's mission, vision, and priorities for learning. The information in the following pages is intended to supplement and complement overall district instructional visions and related budget planning. As such, DESE encourages district administrative teams to collaboratively review the information detailed in the guidance below to plan for the future of EdTech in your district and schools.

This document presents an overview of information related to K-12 EdTech and provides insights and suggestions to support district administrative teams as they plan for the future of EdTech in their district and schools.

Where can I find the information I need?

Based on feedback from various stakeholder groups, this guidance includes background information, planning considerations, relevant resources and examples, and potential funding implications in key focus areas.

Key Focus Areas

EdTech Leadership;
Staffing & Personnel;
Professional Learning &
Development;
Data Management;
Instruction;
Infrastructure;
and Funding
Considerations.

- •This document can be reviewed in its entirety from beginning to end or by individual section as needed.
- •The topic sections correlate to the graphic on the title page: EdTech Leadership; Staffing & Personnel; Professional Learning & Development; Data Management; Instruction; Infrastructure; and Funding Considerations.
- •Each section is clearly marked at the bottom of the page.
- •Key takeaways are listed at the conclusion of each section and in the Appendix.

Navigating the Document by Role

The document from beginning to end is intended to provide a wholistic picture of EdTech in a K-12 district. Depending on your role, however, you may find some sections more relevant to your work than others. The table below provides some suggestions based on your role.

Roles	EdTech Leadership Page 7	Staffing & Personnel Page 10	Professional Learning & Development Page 15	Data Management Page 18	Instruction Page 20	Infrastructure Page 24	Funding Considerations Page 31
EdTech Directors & Tech Teams	✓	✓	✓	✓	✓	✓	✓
Superintendents / Executive Directors	✓	✓	✓	✓	✓	✓	✓
School Business Officials	✓	✓		✓	✓	✓	✓
Special Education Directors	✓		✓	✓	✓		
Curriculum Directors/ Department Heads	✓	✓	✓	✓	✓		
Principals / Assistant Principals	✓	✓	✓	✓	✓		
Human Resources	✓	✓	✓				
Data Coordinators	✓			✓	✓	✓	
Professional Development Coordinators	✓	✓	✓				
School Committee Members	✓	✓	✓	✓	✓	✓	✓
Community Members	✓			✓	✓		

EdTech Leadership

EdTech Leadership is the first and arguably most critical key focus area of this guidance. The role of EdTech leaders may be filled by any combination of a Director of Educational/Instructional Technology, a Chief Information Officer (CIO), a Director of Digital Learning, or an Assistant Superintendent of Innovation. No matter the title, **visionary leadership** is crucial to the job requirements and expectations of the role. There are many national frameworks that outline important qualifications and skillsets for EdTech leaders. Whether you subscribe to [The National Educational Technology Plan](#), The International Society for Technology in Education (ISTE) [Standards for Education Leaders](#) or the [COSN Framework of Essential Skills](#), capable and qualified leadership is the first step of a district's EdTech journey. Effective EdTech leaders have the knowledge, tools, and personnel to bring the district's overall instructional vision to life.

In close partnership with Massachusetts EdTech Directors and various other stakeholders, DESE synthesized a set of strategic EdTech leadership responsibilities and priorities that can serve to promote and sustain innovation, close equity gaps, and meet new teaching and learning expectations that emerged from this past year. National frameworks, including the [CoSN Digital Leap Success Matrix](#) and the [ISTE Essential Conditions,](#) were used to inform these critical elements as well. **EdTech leaders within schools and districts should use these priorities to identify strengths and gaps in their overall EdTech strategy.** Sections of this guidance directly infuse each priority area and may be used to address identified gaps.

EdTech Leader Key Responsibilities and Priorities
1 Develop a shared vision for and commitment to using instructional technology to promote personalized, deeper learning experiences for all students. Ensure the vision is integrated into and represented in the overarching district strategic plan and budget.
2 Engage sufficient instructional/coaching and technology personnel with associated expertise to support the district's technology-related vision and goals.
3 Provide professional development and coaching for teachers and administrators to implement innovative, evidence-based use of technology and to support the academic, emotional, and social growth of each student.
4 Acquire digital access to high quality, culturally relevant instructional materials and assessments.
5 Identify and acquire a common, age-appropriate platform* that houses high quality, interoperable tools and applications to seamlessly support teachers, students, families, and administrators.
6 Adopt equitable 1:1 initiatives and device policies, including providing assistive technologies to address the needs of diverse learners.
7 Provide support, where needed, so that students and staff have safe, sufficient, and equitable access to the internet to support their instructional and learning needs.
8 Maintain cybersecurity and privacy policies coupled with the technology and expertise to protect data and provide safe and uninterrupted instruction.

*Platform can be a learning management system or other application (e.g., Google Workspace for Education or SeeSaw) where educators can organize curriculum, assessments, and instructional tools for students and their parents/guardians to access in a coherent manner in order to reduce confusion and frustration. It is not a Student Information System (SIS) but will ideally interoperate with one. Common means the same system across schools in a district - as age appropriate.

Identifying and Developing EdTech Leaders

EdTech leaders are essential for driving strategic planning in a district, which means they need to combine their knowledge of the educational ecosystem with their technological knowledge and expertise. There is no one set of qualifications for the role of the EdTech leader, and individuals interested in becoming an EdTech leader should research the various pathways aligned with their existing credentials for different certifications and specific administrative licenses.

EdTech leaders possess a unique blend of skills. Though there is no specific Massachusetts licensing option for EdTech Directors, there are several Massachusetts licensing options for individuals in district leadership roles, such as Superintendent, Assistant Superintendent, and Director. For more information about licensing in Massachusetts, please visit the Department's Educator Licensure webpage to explore the Licensure Requirements Tool. Apart from the state licensure pathways, there are a multitude of technology industry certifications in addition to a variety of EdTech certifications that may fulfill the role of EdTech leader in a district. Two possible options are the Chief Technology Officer (CTO) and the National Certified EdTech Leader

(CETL) Certifications. More information about these options is available in Appendix A.

Identifying and selecting EdTech leaders can be a complicated process, especially if the hiring team is not clear on what need they are trying to fulfill. ISTE Standards for Education Leaders lists key knowledge and behaviors an effective EdTech Leader in your district should possess. Another option is available through the COSN resources below. These links provide resources for individuals seeking to become EdTech leaders as well as for districts looking to fill the EdTech leadership role:
- Superintendent Self-Assessment,
- District Leadership Team Assessment,
- CTO Evaluation Rubric,
- CTO Interview Questions,
- CTO Job Description, and
- CTO Self-Assessment.

EDTECH LEADERSHIP KEY TAKEAWAYS

- EdTech leaders, who combine context of their district's mission, vision, and priorities for learning with their technological expertise, are a critical element for effectively integrating technology into student learning experiences and improving student outcomes.

- The eight priorities listed in this section should be considered in the course of strategic planning and used to identify where there are strengths and gaps in your overall EdTech planning for the district.

- EdTech leaders require a unique blend of educational and technical skills. There are several educator licensing options for individuals in leadership roles in Massachusetts districts (e.g., Superintendent, Assistant Superintendent), but there is no specific MA licensing option for EdTech Directors.

- Some EdTech leaders choose to pursue different certifications like the METAA CTO Certification or COSN National CETL Certification, however, neither are a requirement in the State.

A Letter from an EdTech Leader
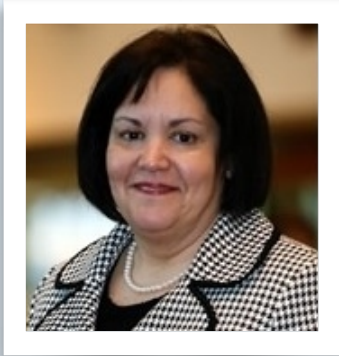
"During these challenging times, technology has been the 'connector' for the educational community and the world. Remote learning has relied heavily on video conferencing and an array of other technologies to stay connected with our students, colleagues, parents, and our community. We all agree this has not been ideal, nor is it the standard of practice we want to continue. However, as a result, educators have experienced and embraced many of the beneficial aspects of digital learning. Now more than ever, we have an opportunity to capture these experiences and use them to drive more personalized, engaging, and deeper learning experiences for our students moving forward. For many years, the education sector has been reluctant to embrace digital learning. However, this experience has shown us not only that we can adapt, but we also need to adapt for our students. There can be no turning back.

Teachers and administrators have experienced profound professional growth in digital skills during this past year, and for many of our colleagues, it has cultivated a new instructional path for the classroom. Our students have experienced the benefits of various technology resources and have developed a knowledge base and an understanding of how to apply these new digital skills to drive their learning in new ways.

How do we continue embracing the benefits of digital learning as we transition back to in-person learning? Effective use of educational technology is a complex system in schools and requires commitment and a significant investment of resources. Fortunately, many local and national organizations, including the Massachusetts DLAC (Digital Learning Advisory Council), METAA (Massachusetts Educational Technology Administrators Association), CoSN (Consortium of School Networks), ISTE (International Society for Technology in Education), and the US Department of Education's Office of Educational Technology, understand this complexity and interrelated components for success. More importantly, we are ready and eager to support schools and districts as they navigate the challenges – and opportunities – ahead."

Annamaria Pisari Schrimpf

Director of Educational Technology and Digital Learning, Shawsheen Valley Regional Vocational District
President and founding board member, METAA
Past President and current board member, New England ISTE
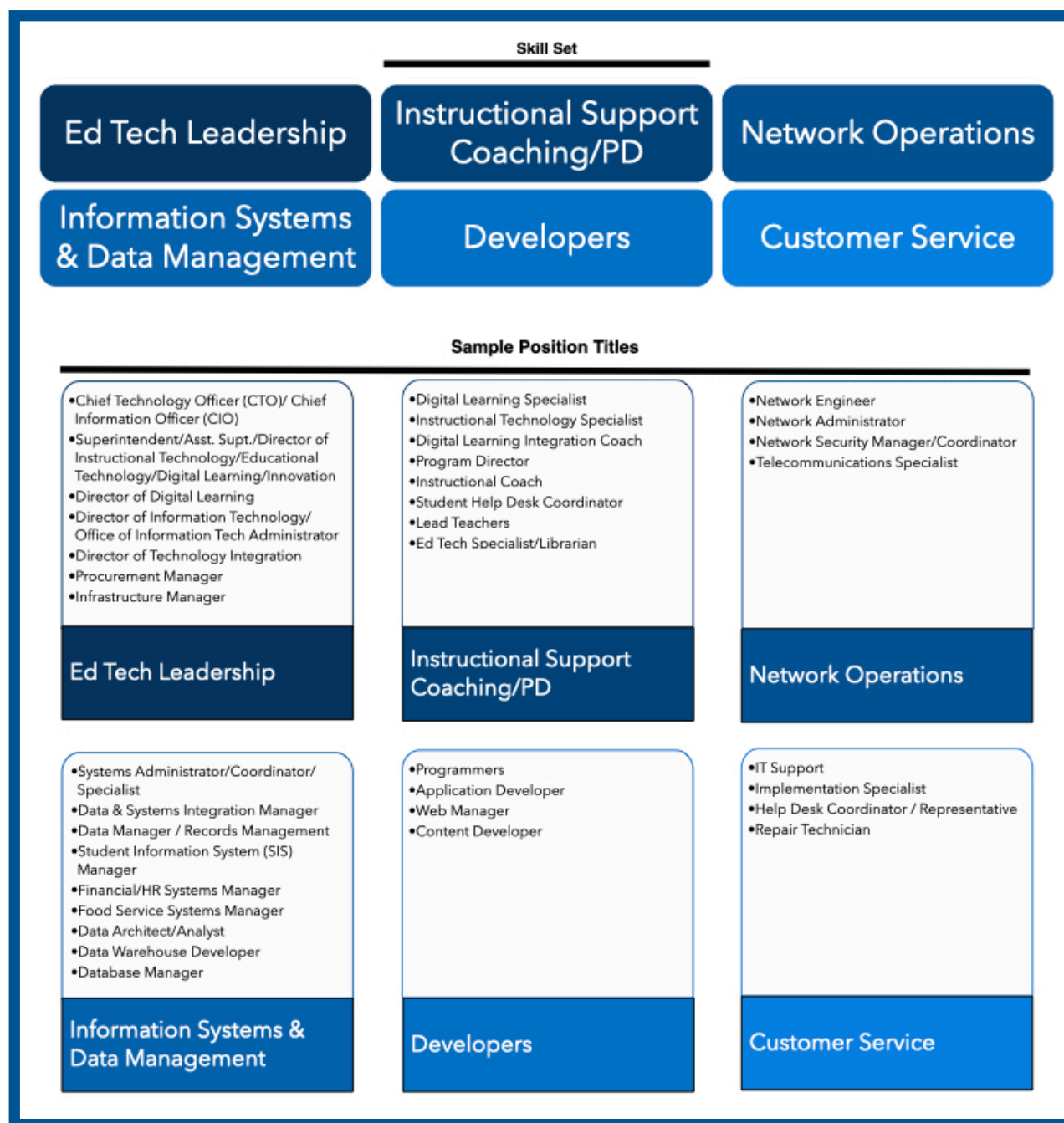*Former ETAC and DLAC Advisory Member*
Past President, MassCUE

Staffing & Personnel

As we look to sustain the EdTech momentum of this past year, it may be helpful to consider investing in sufficient instructional technology and coaching staff with associated expertise to support the digital ecosystem.

A variety of skill sets are required to implement a seamless operation of technology infrastructure, applications, and consistent student and staff experience. The graphic below lists various skill sets districts might seek to fill in order to build out their technology teams. Many job specialties are required to cover these critical areas, but schools and districts can **rarely** hire for all of them. Below is a sampling of the skill sets, with the potential roles that may be employed. Please note that a title and job description can vary significantly from district to district and that oftentimes, individual roles will cover multiple skill sets shown below. A full-size version of this graphic is available in Appendix B.

Skill Set

| Ed Tech Leadership | Instructional Support Coaching/PD | Network Operations |
| Information Systems & Data Management | Developers | Customer Service |

Sample Position Titles

Ed Tech Leadership	Instructional Support Coaching/PD	Network Operations
•Chief Technology Officer (CTO)/ Chief Information Officer (CIO) •Superintendent/Asst. Supt./Director of Instructional Technology/Educational Technology/Digital Learning/Innovation •Director of Digital Learning •Director of Information Technology/ Office of Information Tech Administrator •Director of Technology Integration •Procurement Manager •Infrastructure Manager	•Digital Learning Specialist •Instructional Technology Specialist •Digital Learning Integration Coach •Program Director •Instructional Coach •Student Help Desk Coordinator •Lead Teachers •Ed Tech Specialist/Librarian	•Network Engineer •Network Administrator •Network Security Manager/Coordinator •Telecommunications Specialist

Information Systems & Data Management	Developers	Customer Service
•Systems Administrator/Coordinator/ Specialist •Data & Systems Integration Manager •Data Manager / Records Management •Student Information System (SIS) Manager •Financial/HR Systems Manager •Food Service Systems Manager •Data Architect/Analyst •Data Warehouse Developer •Database Manager	•Programmers •Application Developer •Web Manager •Content Developer	•IT Support •Implementation Specialist •Help Desk Coordinator / Representative •Repair Technician

Staffing & Personnel: A Look at the Data

The Department is often asked about appropriate staffing ratios for technology support, instructional coaches, or instructional technology or integration specialists. Because each district brings a different context and will have varying technology-related needs, there is no definitive ratio for your district's particular staffing structure. You may find the DESE District Analysis Review Tools (DARTs) for Staffing and Finance helpful to explore staffing trends across comparable districts.

With many schools and districts newly forging into one-to-one device management, it may be helpful for districts to consider whether to plan for an increase in EdTech staffing to ensure necessary support and coaching is available. For example, the DART data for 2020 and 2021 technical support FTEs indicates an overall increase in technical support FTEs over the last year. However, as mentioned above, there remains great variation in the range of technical support FTEs by district. See **Table 1** for a summary:

Table 1: Technical Support FTE 2020 and 2021		
	2020	2021
Range (Minimum to Maximum technical support FTE)	.02 FTE – 47.58 FTE	.05 FTE – 55 FTE
Total FTE Technical Support Statewide	1390.10 FTE	1435.64 FTE
Average Technical Support FTE per district	4.37 FTE	4.49 FTE

Chart 1 shows districts with an enrollment of over 12,000 students and the number of schools in that district. In every case but one, there are more school buildings than there are FTEs for technical support in the district. Districts should consider the impact staffing will have in 1:1 environments in the coming years as EdTech departments are striving to support staff and students alike.

Chart 1: Tech Support FTEs to # Schools in the LEA (LEAs with more than 12,000 students enrolled)
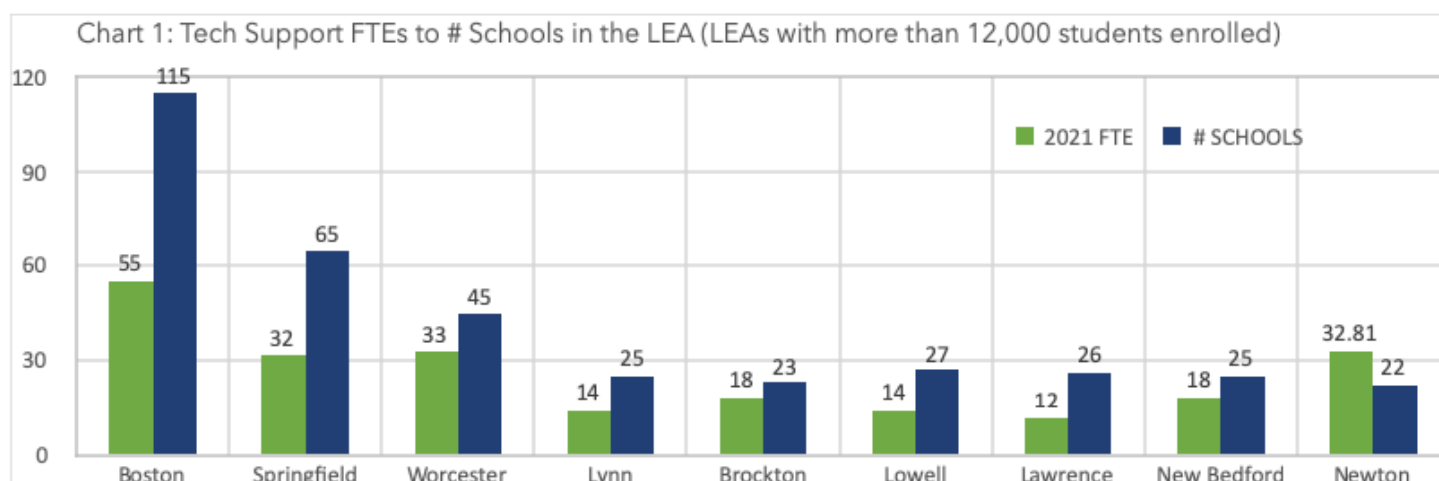
For districts where under 12,000 students are enrolled, there is far greater variation in technical support FTEs to the number of schools. See the distribution in Chart 2 below:

Chart 2: 2021 Tech Support FTEs to # of Schools in the LEA (LEAs with less than 12,000 students)
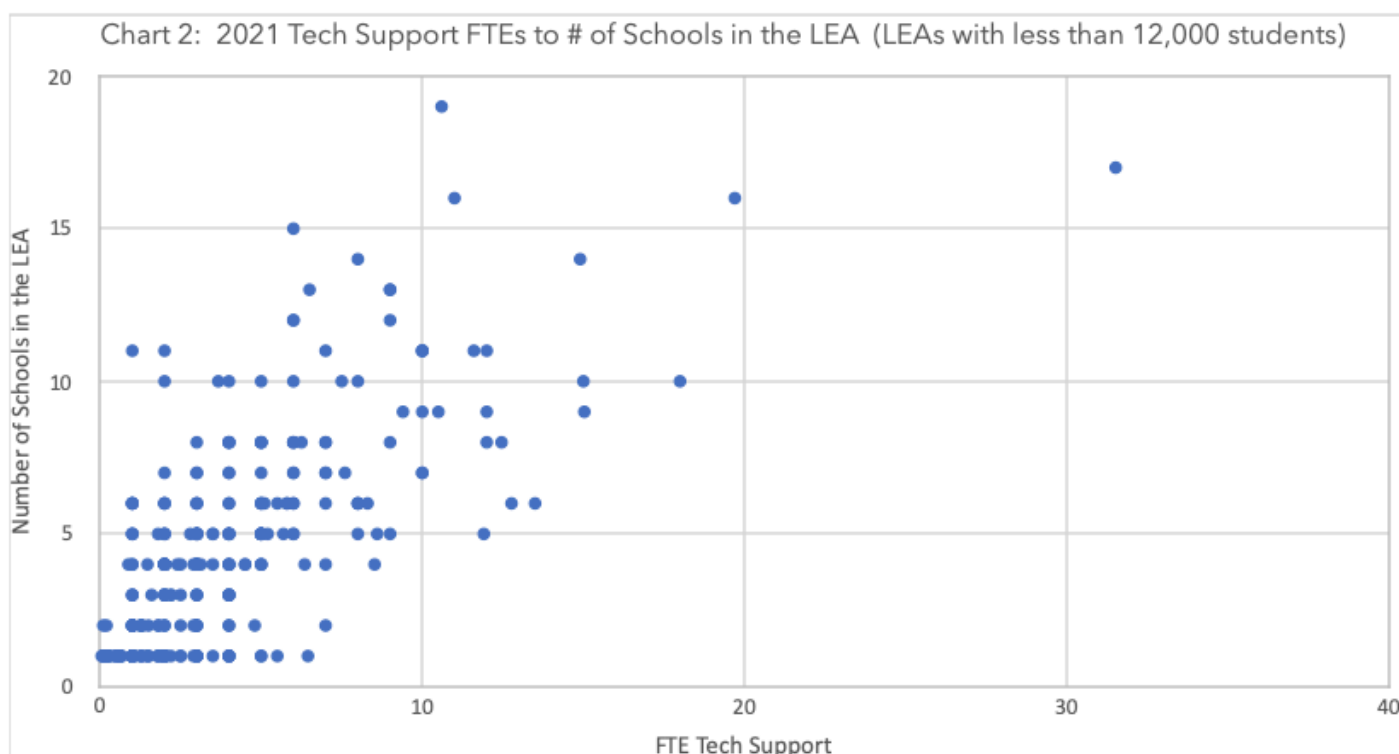
As we embrace the EdTech advances of the last year, it is important to evaluate current staffing in your district, identifying where it might be important to increase technical and instructional support for our educators and for our students.
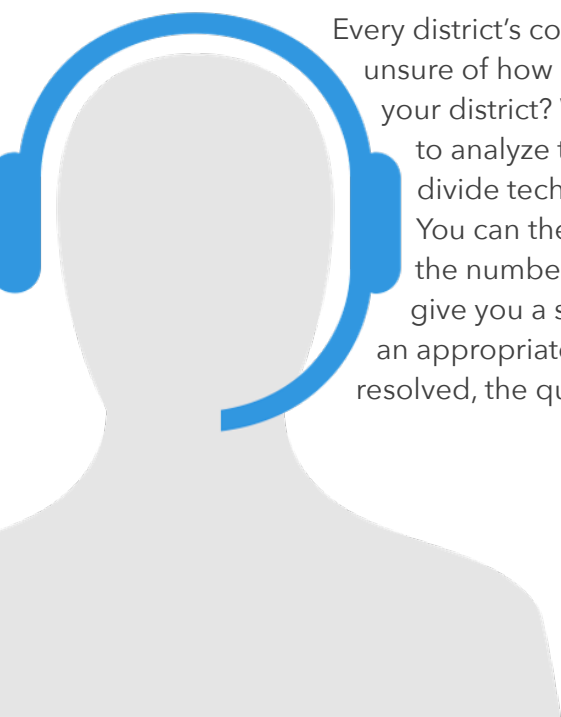
Every district's composition and staffing structure is different. What can you do if you are unsure of how many EdTech staff (technical support or instructional coaches) you need in your district? We suggest engaging in a needs analysis, such as using technology tickets to analyze the level of support needed on a regular basis. For example, you can divide technology tickets into requests from educators and requests from students. You can then track the response time and resolution time of each ticket and examine the number of tickets opened and closed over the course the school year. This will give you a sense of how much time may have been lost to technology issues and what an appropriate goal would be moving forward. The sooner technical requests can be resolved, the quicker your educators and students can focus on teaching and learning.

Additional thoughts to consider as you plan for staffing:

- How do the skill set needs listed in the chart on align to overarching district priorities and strategic plans? What are the most important roles and are they adequately and appropriately staffed?
- Do your educators have the skills and knowledge to fully execute the district's instructional vision and engage students in meaningful learning activities with the technology and digital tools available?
  - If they do not, is there a plan for developing the skills and knowledge that includes embedded instructional support and coaching?
  - Do you have sufficient instructional/coaching staff with associated expertise to support the digital ecosystem?
- Do you have a 1:1 device program?
  - If you do, what is your ratio of students to technology support professionals?
  - How long might it take for a student's device to be serviced? Is there a replacement plan? If not, how long will that student be without a device?
  - What happens when your network goes offline? How many staff members can be deployed to address the technical issue to mitigate the loss of instructional time?
- Does your district combine personnel resources with your local municipality?
  - Is there an overarching technology department for your town or city that works directly with the school system? If not, is there a way to combine resources?

Addressing Staffing and Personnel Needs

As mentioned above, there are a variety of skill sets necessary to staff an educational technology department that is fully responsive to all the district's needs. Two common solutions to address any type of staffing needs are to hire more staff or train existing staff. While hiring staff seems like the most direct option for schools and districts to cover all educational technology-related skill sets, it is not necessarily the most cost-effective route. Districts may need to consider a variety of alternative options to meet the needs of their EdTech staffing. **Aside from EdTech leadership, districts should prioritize two main areas for additional technology-related staffing and personnel allocation: 1) instructional support and coaching for educators, and 2) broad technical and IT support for all.**

Notes about Instructional Support and Coaching:

- Coaching goes well beyond having technical skills and expertise in a particular area. As noted in *The Art of Coaching* (Aguilar, 2013, 6), "Coaching is a form of professional development that brings out the best in people, uncovers strengths and skills, build effective teams, cultivates compassion, and builds emotionally resilient educators. Coaching at its essence is the way human beings, and individuals, have always learned best."[1]
- As noted in the School Leader Digital Learning Guide from the U.S. Department of Education, Office of Educational Technology, districts should "establish full or part time coaching positions or select a group of mentor teachers to provide ongoing professional development and instructional support for their peers."
- ISTE provides Standards for Coaches which include being a change agent, a connected learner, a collaborator, a learning designer, a professional learning facilitator, a data-driven decision maker, and a digital citizen advocate.

[1] Aguilar, E. (2013). The art of coaching: effective strategies for school transformation. San Francisco: Jossey-Bass, A Wiley Brand.
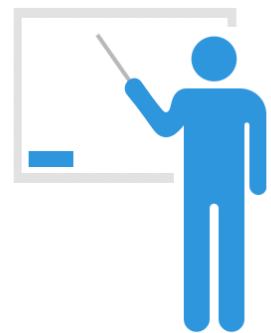
How can you add instructional support and coaching?

- Directly hire instructional technology coaches, instructional technology specialists, or integration specialists.
- Collaborate with and develop your district/school librarians and school library media specialists.
- Build capacity within your own system with mentor teachers, lead teachers, and train-the-trainer models.
- Think about cross training existing curricular areas coaches with EdTech coaches.

- Create opportunities or programs for principals/assistant principals to become the tech integration leaders in each building.
- Consider offering incentives for certifications and micro-credentialing, like the vendor-neutral ISTE Certification, or if you are a Google Work Space District, you may prefer the Certification from Google for Education.
- There are also competency based micro-credentials through Digital Promise to consider in Digital Equity and Student Data Privacy.

How can you add tech support?

- Think about using shared services, including sharing the cost of an employee or service contract with other schools in the district or your local municipality.
- Leverage existing partnerships with local educational collaboratives.
- Look to purchase managed services as part of a related agreement or contract.
- Use contractual services, when appropriate.
- Consider implementing self-service and automated applications.
- Build capacity within your district by employing students, volunteers, or community support.
- Provide opportunities for non-tech school staff to earn extra income during seasonal peaks (e.g., device refresh, imaging, deployment, etc.).

Notes about Technical and IT Support:

ISTE considers Technical Support one of their Essential Conditions: "Technology opens new doors for learning, but students can't walk through them if the technology is unusable or disruptive to the learning and teaching process. Consistent and reliable technical support removes these barriers and makes it possible for educators to better leverage their use of technology as an effective teaching and learning tool. It also minimizes the time and energy they spend on troubleshooting and problem solving."

STAFFING & PERSONNEL KEY TAKEAWAYS

- A variety of skill sets are required to implement a robust, functional, seamless operation of technology infrastructure, applications, and consistent end-user experiences.
- Districts should conduct a needs analysis to identify where there are specific technology-related pain points and where additional staffing may be required to ensure necessary support and coaching is available to meet the needs of staff, students, and families moving forward.
- Top priorities for EdTech staffing include EdTech leadership, instructional technology coaching, and tech/IT support.
- Schools and districts can rarely hire for all the EdTech positions needed, but there are a variety of alternative ways to add specific support and expertise.

Professional Learning & Development

Many teachers and administrators climbed a steep learning curve to deliver instruction digitally in response to the pandemic. As a result, some uncovered strategies and developed skills that they may wish to leverage in order to facilitate stronger student learning experiences – such as identifying engaging and relevant digital content, efficiently monitoring student understanding throughout a lesson, providing real-time progress updates to families, and maintaining all lesson materials online, for students to access before, during, or after class, if needed – among many others. As part of an EdTech strategic plan, districts and schools should reflect on which skills and instructional strategies are aligned with district goals and priorities and have demonstrated effectiveness with students. Once identified, EdTech leaders can leverage these newfound skills, support teachers in the use of these skills, and begin to build them into the fabric of the professional learning plan.

The Department has several resources to support districts in planning and delivering effective professional development, including the Massachusetts Standards for Professional Development. In a 2021 meeting of the Massachusetts' Digital Learning Advisory Council (DLAC), members discussed some of their current concerns with the access to and quality of professional development for EdTech and digital learning, along with recommendations for leaders planning to implement more technology-specific PD. These recommendations, along with the MA Standards for Professional Development with which they align, are listed on the following page. These may be helpful references as districts plan their professional development calendar for the next school year.

"Ongoing professional learning imbues educators with the confidence they need to use technology successfully. When educators have adequate time to build their networks and collaborate with each other, their ability to effectively apply digital tools in the classroom grows exponentially." ISTE

Standards for High Quality Professional Development and EdTech Considerations

S1. Has clear goals relevant to student outcomes
* ✳ Align digital learning goals with evidence-based instructional frameworks (e.g., deeper learning, personalized learning, project-based learning, etc.).

S2. Aligns with state, district, school, and educator goals
* ✳ Use digital learning PD to advance other district practices (e.g., SEL, middle school math, strengthening family partnerships, etc.).

S3. Design based on relevant data
* ✳ Aligned to the needs of the educators.
* ✳ Use staff surveys to differentiate and offer choice.

S4. Assess to ensure it's meeting targeted goals
* ✳ Leverage use of technology to collect data on implementation and impact.

S5. Promotes collaboration among educators to achieve identified goals
* ✳ Offer common planning time and encourage educators to join Professional Learning Communities for technology and digital learning.

S6. Advances an educator's ability to apply learnings to their particular context
* ✳ Embed time to practice using the technology in classrooms.

S7. Models good pedagogical practice and adult learning theory
* ✳ Offer multiple options in multiple modes aligned to school platforms and programs (e.g., Google for Education, Microsoft Teams, etc.).
* ✳ Offer self-paced modules and YouTube-like videos to support flexible and independent learning opportunities.

S8. Makes use of relevant resources
* ✳ Ensure PD is part of the planning for annual budgets.

S9. Is taught or facilitated by a qualified professional
* ✳ Select a professional organization or technology vendor to provide expert-level PD (sample costs included in chart below).
* ✳ Utilize instructional coaches and integration specialists to deliver and support.
* ✳ Leverage train-the-trainer programs to build internal capacity.

S10. Sessions connect and build upon one another
* ✳ Where appropriate, embed technology development in professional development not directly related to technology and hold staff drop-in sessions to support sustained implementation.

Districts may opt to develop their own professional development for educators using the Standards for High Quality Professional Development and EdTech Considerations on the previous page, however, districts may also decide to procure professional development. To assist districts in the budget planning process, see the curated sample pricing for related certifications and professional development below. Pricing information is based on information that is currently publicly available and is subject to change.

Sampling of Certification Costs	
Google 1 Certification	$99
Google 2 Certification	$199
Microsoft Exam: 62-193: Technology Literacy for Educators	$127
Apple Certification Exams	$250
ISTE Certification	$750

Apple Education – Institution pricing available via COMMBUYS ITC47	
Apple Professional Learning Virtual Support: Educator Coaching	$1450
Apple Professional Learning 1 day offering	$2900
Apple Professional Learning 3 day offering	$6500

PROFESSIONAL LEARNING & DEVELOPMENT KEY TAKEAWAYS

○ Educators developed many new skills delivering instruction remotely during the pandemic. Reflect on which skills and instructional strategies are aligned with overarching district goals and priorities and have demonstrated effectiveness with students to drive EdTech-related professional development.

○ Technology in a district or school will be more effective and provide better student outcomes with relevant, high-quality, job-embedded professional development and coaching.

○ Utilize the Massachusetts Standards for Professional Development when planning all professional development, with EdTech-specific considerations.
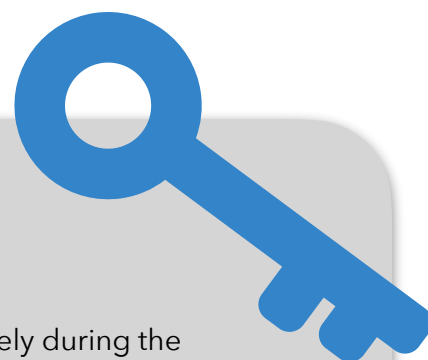
Data Management

Over the last several years, as schools and districts have incorporated more technology platforms and applications, they have become even more data rich than in the past. Student assessment data, personal demographics and information, course schedules, attendance/discipline records, and SEL survey feedback are just some of the data that accumulates about a student during their academic career. While this data can help schools more effectively support student growth and progress, there must be systems in place to protect the data belonging to these students and families. At a minimum, policies should ensure that proper notice is given to families regarding district data privacy policies, consent is received prior to sharing certain information about a student, and safeguards are in place to protect student data that may be shared to third parties, like websites and software apps. We strongly encourage districts to work with staff to provide education and information on the various protections listed below.

Student data privacy protections include:
The Family Educational Rights and Privacy Act (FERPA);
The Children's Internet Protection Act (CIPA);
The Children's Online Privacy Protection Rule (COPPA);
The Protection of Pupil Rights Amendment (PPRA); and
The Department's Student Records regulations.

> Each district should have clear, easily accessible, and well publicized local policies regarding app use, app procurement, and use of online tools outside of those purchased and supported by the district.

Investing in the education and professional development of your district staff and educators about student data privacy is essential. Well-intentioned individuals may inadvertently sign up for a new app or have students explore a new website without properly vetting its data privacy agreement. Are you aware of all applications district staff members are utilizing? Do your educators know what kind of information is being collected by the apps they use? Do they know what happens to the data once it is collected? Do they know if it is it being shared with third parties?

This past year has launched educators into a broader world of digital and online tools. Whether staff were using these tools prior to the pandemic or if they are just now venturing into digital learning, it is essential for the district to proactively educate staff and properly safeguard student data.

There are several resources to support districts in educating their staff on app vetting and student data privacy:

App Vetting

- The Student Privacy Compass offers a short YouTube video, "Ask before you App," to help inform your staff. This video may be effective for your staff PD time.
- If your district has not established a vetting policy for the use of apps, you may find this article helpful: What is App Vetting and Why is it Important?

Student Data Privacy

- The US Department of Education, Privacy Technical Assistance Center (PTAC), published a Data Governance Checklist that districts will find easy to use and extremely helpful for planning.
- The National Forum on Education Statistics produced the Forum Guide to Data Governance, which is a comprehensive document including effective practices and case studies.

Staying abreast of student data privacy for each and every digital learning website, app, or vendor seems like a daunting task for each of our 400+ districts in Massachusetts to tackle alone. That's where the [Massachusetts Student Data Privacy Alliance](#) can help.

Districts may opt to [join](#) the Massachusetts Student Data Privacy Alliance for access to resources, tools, and more. As a member of the Alliance you will have access to a number of Data Privacy Agreements (DPA) for a variety of the digital tools and applications being used across the state.

"The Massachusetts Student Privacy Alliance ([MSPA](#)) is a collaboration of Massachusetts school districts that share common concerns around student privacy. The goal of the MSPA is to set standards of both practice and expectations around student privacy such that all parties involved have a common understanding of expectations.

MSPA [has adopted and implemented] a common Student Data Privacy Agreement to be used by all member schools when implementing any online application. By adopting such a contract all vendors and schools have common expectations when entering into a relationship or implementation without having to renegotiate terms in every new instance."

Massachusetts Student Privacy Alliance

DATA MANAGEMENT KEY TAKEAWAYS

- Ensure your district is following all necessary Student Data Privacy laws and regulations.
- Well-intentioned individuals may inadvertently sign up for a new app or have students explore a new website without properly vetting its data privacy agreement.
- Whole-staff training is the first line of defense for safeguarding student data.
- Consider joining the Massachusetts Student Data Privacy Alliance for access to resources and tools.

A Note about Data in the Following Two Sections

State or national level EdTech data is not currently available to accurately estimate, compare, or recommend EdTech investments. *(There are several national initiatives underway to address this issue including the universal learning technology ID project and the EdTech genome project.)* To support districts' immediate needs, DESE informally surveyed several districts (see emergent themes in Appendix C) about what technology they would like to and/or plan to continue using beyond the pandemic, along with the estimated costs associated. We also used publicly available data via the DESE website. While we know more granular EdTech cost data is required, we used this sampling approach in order to provide a general spread of possible technology-related expenses districts may be considering in the coming years. The data is subject to a more detailed review and analysis at the district level before it should be used as a definitive reference.

The key to enhancing teaching and learning with technology is not the technology itself, but strategically integrating high quality digital tools and resources to deliver deeper, more personalized learning into the existing classroom curriculum.

Instruction

Spending on instructional software* has rapidly increased during the pandemic. It is difficult to estimate software costs as the category itself covers applications, digitally enabled curriculum, assessment programs, simulations, videos, practice/gamified apps, digital textbooks, and more. The demand and usage for particular applications and programs varies greatly from district to district and perhaps even school to school. According to a recent report from LearnPlatform, there are over 8,000 verified digital education technology tools.

8,000
verified digital tech tools

We use the terms software, applications, and apps interchangeably in this document.

EdTech Insights published the [2020 EdTech Top 40 School Year Report](#), which shows a visual distribution of the different software types used March through May 2020.

**In their report, the tools are classified by assessment (5%), curriculum (37%), operational (50%), and reference (8%).** As we seek to build on the momentum of digitally enhanced teaching and learning of the last year, it is important to emphasize that adopting more apps does not mean better teaching and learning. **The key to enhancing teaching and learning with technology is not the technology itself, but strategically integrating high quality digital tools and resources into the existing curriculum to deliver deeper, more personalized learning experiences.** This also allows for teachers and students to truly leverage the selected technology to enhance the teaching and learning experience. Instructional technology specialists, integration specialists, and instructional coaches are invaluable resources for helping educators integrate existing district tools into their ongoing classroom practices and for evaluating overall effectiveness of various platforms, programs, and applications.

Edmentum recently published an [Educational Technology Evaluation Guide](#) that provides a sample rubric for evaluating tool selection and use. While any evaluation tool should be tailored to the specific needs and priorities of the district, at a high level you might consider asking the following questions:

- ☐ Does it abide by student data privacy requirements?
- ☐ Does it directly connect to the overarching learning priorities in the district?
- ☐ Does it readily integrate with common technology platforms (such as a learning management system)?
- ☐ Can we afford it? What is included with the cost or subscription?
- ☐ Is it age-appropriate in both standards-aligned content and accessibility?
- ☐ Is it user-friendly and easy to implement for educators?
- ☐ Is it engaging for students?
- ☐ Will it provide useful information on student academic performance?
- ☐ Is there any evidence base that use of the tool is linked to improved student learning experiences or outcomes?

To assist districts in the budget planning process, we have curated some sample pricing for instructional software on [page 23](#).
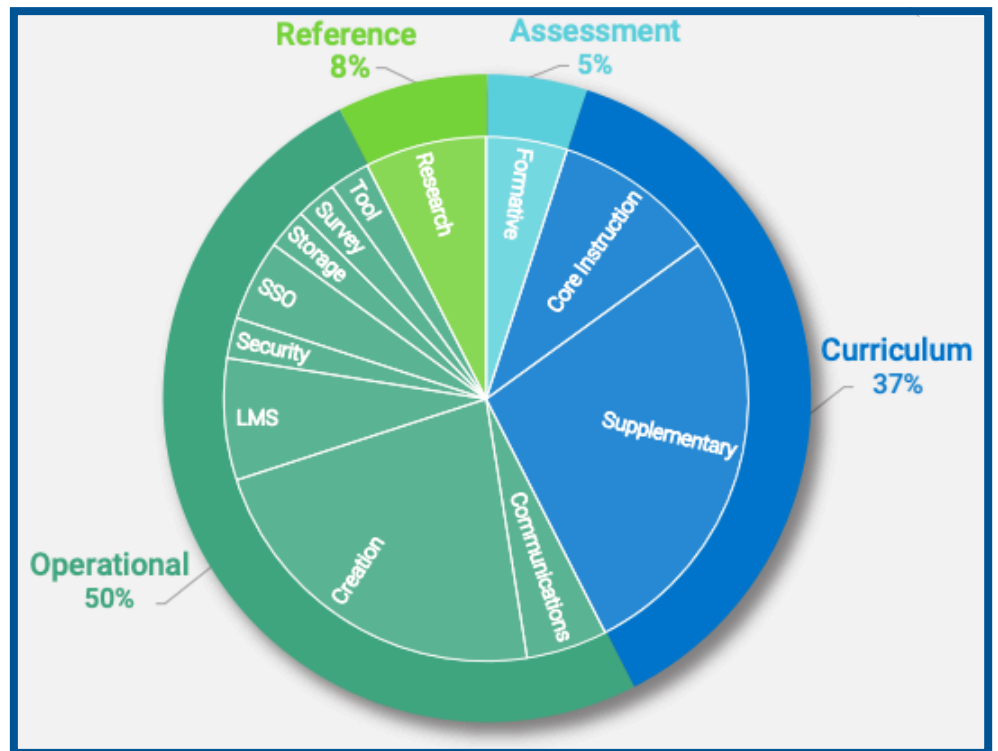
Assistive Technology (Device or Service)

Quality instructional design addresses the unique needs of each student in our classrooms. Many look to CAST's Universal Design for Learning Guidelines to assist in a lesson planning process that provides multiple means of engagement, multiple means of representation, and multiple means of action and expression. Some of our students may need assistance with engagement, representation, or expression in a method that is different from their peers.

Assistive Technology (AT) is not reserved solely for use in Special Education. **All eligible students** should have access to AT as needed per IDEA, ADA, and Section 504 of the Rehabilitation Act. See Appendix D for more information. School leaders may be tasked with guiding their staff in the selection of the appropriate assistive technology device or service for a student. There are several informational resources regarding assistive technology devices and services, assistive technology needs assessments, and the selection of the appropriate supports, also found in Appendix D.

Assistive technology devices and services can range from low tech, mid tech, and high tech. The cost varies greatly and is entirely dependent on the individual needs of the student. It is important for the EdTech Department to be in frequent communication with school leaders, guidance counselors, case workers, special education liaisons, and special education teams to ensure students receive the necessary supports. The open lines of communication between the groups of educators and the EdTech Department ensures that students receive the appropriate devices or services based on their individual needs. Coordinating with the EdTech staff on the procurement of devices or services can also confirm the device or service will have compatibility with existing district infrastructure and systems.

Leveraging and sustaining the momentum of EdTech in the classroom this past year means acknowledging the individual needs many of our students have in order to effectively utilize technology to access meaningful learning experiences. AT is an option for schools to explore to ensure students' equal access to the school's programs and services.

INSTRUCTION KEY TAKEAWAYS

- There are over 8,000 verified digital technology tools available.
- Adopting more apps does not mean better teaching and learning and does not ensure an impact on student outcomes. All tools should be strategically integrated into the existing classroom curriculum.
- Prices for digital tools range from free to district pricing. A key to the overall purchasing of tools is to ensure there is one person coordinating the purchase, deployment, and usage of the tools.
- Assistive Technology should be offered to eligible students for equal access to a district's curriculum and services. (See Appendix D for more information)

Annual Application, Software, and Content Provider Sample Pricing

Subject & Assessment Apps/ Software

Annual Per Student

English Language Arts Software

Elementary $5 - $35

Secondary $12 - $36

Mathematics Software

Elementary $5 - $20

Secondary $5 - $25

Science Software

Elementary $10 - $45

Secondary $15 - $45

Social Studies Software

Elementary $5 - $18

Secondary $10 - $18

Assessment Software/Programs

Diagnostic $6 - $15

Interim/Formative $10 - $15

High and low costs generated for a per student basis using publicly available cost databases.

General Instructional Apps/ Software

Annual Classroom / Teacher License

Interactive presentation - $150
(e.g. PearDeck)

Video creation, management - $50
(e.g. Screencastify)

Collaborative whiteboard –
($ included with Google Workspace)
(e.g. Jamboard)

Content creation - $140
(e.g. Edpuzzle)

Assessment/polling - $50
(e.g. Quizlet, Quizizz)

Instruction - $80
(e.g., Flipgrid, Nearpod)

Notes - $80
(e.g. Remind)

Behavior - $80
(e.g. Class Dojo)

Annotation - $100
(e.g. Kami)

Website/blog - $40
(e.g. Weebly)

Game-based creation - $120
(e.g. Kahoot)

Online Course Providers

These ranges are based on actual price quotes from approved providers but are not inclusive of teacher or professional development costs.

Elementary $199 - $200

Secondary $199 - $250

Virtual $199 - $350

Virtual Schools Courses and Bundles

Per Course $500 - $700

Per Student / Yr $2,300 – $2,540

Infrastructure

As described in detail in the [Building Technology Infrastructure for Learning Guide](#) from the US Department of Education, planning for "infrastructure" encompasses a broad range of areas that are necessary in order for technology in schools to be accessible, operable, smooth, and secure. In the following pages, DESE has included information and sample pricing (where available) for devices and classroom infrastructure, administrative technology, network and bandwidth, and cybersecurity. Pricing information included below is based on information that is currently publicly available and is subject to change.

Devices and Classroom Infrastructure

Over this past year, many districts moved quickly to provide one-to-one devices to students and staff all across the Commonwealth. Reliable access to well-equipped devices (such as laptops, Chromebooks, MacBooks, etc.) can open a world of opportunity to students and teachers alike, but were a necessity for many to be able to go to school during the 2020-21 school year. Now that most schools have become one-to-one, it will be important to consider ongoing expenses related to purchasing new or replacement devices, as well as maintenance and repair costs associated with each device. Table 2 below outlines some price ranges determined by sampling publicly available online sources.

(Note: District leaders should consult with their device providers/resellers ASAP to avoid protected supply chain backlogs heading into the 2021-22 school year.)

Table 2: Device and Classroom Infrastructure Sample Pricing

Student Devices*	Range	Teacher/staff devices	Range
Chromebook (including license)	$300 - $400	Chromebook (including license)	$350 - $450
Laptop (PC)	$500 - $700	Laptop (PC)	$700 - $900
MacBook	$800 - $1000	MacBook	$1,100 - $1,300
iPad	$350 - $500	iPad	$550 - $650
Classroom infrastructure	Range		
Printer		METAA developed a 2021 [Virtual Buyers Guide available online](#). This user-friendly guide includes State Contract information and vendor contact information for MA State Contracts for Hardware, Software & Services, Telecommunications, and Office and Educational supplies and Services.	
Projector	$1,500 - $1,700		
Interactive "Touch" Display - 75"			
Non-touch Display - 75"	$2,000 - $2,400		
Camera - auto-tracking			
Microphone - wireless	$350 - $450		
Student Headphones			
Instructor Headphones	$90 - $110		

*Many districts are exploring device leasing instead of purchasing as it is easier to represent as an operational experience that includes ongoing total cost of ownership.

Administrative Technology

School systems require a variety of tools and platforms to manage processes, software, and devices, many of which districts have been incorporating for the last several years (such as Student Information Systems and Individualized Education Program software). However, districts had to adopt several new administrative platforms and tools for the 2020-21 school year (such as Learning Management Systems and Single-Sign On platforms) in order to effectively plan for learning across multiple modes. Given some of the promising solutions these tools provided, many districts have expressed a desire to maintain use of these tools in the coming years, and are building these expenses into their budgets. Below is a chart that includes the most common administrative technology platforms, programs, and tools districts reported using this past year. Cost ranges were based on publicly available pricing for a sample set of products, but each provider may have different pricing structures, and prices are subject to change. Districts are encouraged to review all the information carefully and to contact each provider directly to determine what will best meet their needs.

Notes for the two tables below:
- District pricing varies based on district size.
- Costs do not include implementation, custom development, or training.
- The **sample district** used below has approximately 5000 students and 400 teaching and administrative staff.
- **Estimated costs are for annual licenses.**

Administrative Technology (per district)

Administrative Technology	Estimated Annual Cost
Finance/HR/Payroll	$35,000
Teacher Evaluation	$6,000
Website/CMS	$10,000
Nutrition/POS	$8,000
Communications (unified)	$4,000
Firewall	$5,000
Inventory	$5,000
Helpdesk	$5,000
Cybersecurity	See Cybersecurity Section

Administrative Technology (per student)

Administrative Technology	Estimated Annual Cost
Student Information Systems (SIS)	$10
Learning Management Systems (LMS) / (Google Workspace)	$5.00 – $10.00
Video/web conference	$1.00 – $5.00
Individualized Education Program (IEP)	$8.00 - $10.00
Single-Sign On (SSO)	$2.00 - $4.00
Multiple Device Management (MDM)	$3.00 – $10.00
Filtering	$4.00 - $6.00
Privacy	$2.00 – $4.00
Usage analytics	$3.00 - $4.00

Network and School Bandwidth

During the pandemic educators embraced a new normal for the delivery of their instruction via platforms like Google Meets, Zoom, and Microsoft Teams. Educators started using a myriad of new applications, software, streaming services, live instruction options, simultaneous instruction options, synchronous and asynchronous instruction, virtual courses, and learning management systems. Educators worked tirelessly to engage students and ended up transforming their own pedagogy and practice in the meantime. While we know there were a lot of trial-and-error moments with technology over the past year, we also know that educators have uncovered some new digital learning expertise that will persist into the coming years.

With the evolution of technology and the increase in digital technology use in the classroom, schools and districts will likely need to increase their bandwidth. Prior to the pandemic, industry standards suggested districts should plan for 1 Mbps per student as a minimum target (from external Internet Service Providers) for a media-rich educational experience. Current industry projections, like those included in SETDA's Broadband Imperative III, indicate districts should be planning for between 3.5 – 4.5 Mbps per student, increasing even more so in the years to come.

Many of our districts and schools are embracing a renewed use of digital learning to increasingly personalize and augment their evolving instructional pedagogies. Unfortunately, Connect K12 reports that out of 293 Massachusetts school districts, 177 are currently below 1 Mbps (based on FCC e-rate Form 471 (FY2020)).

31% of MA school districts are at 1 Mbps/student

Progress toward the FCC recommended bandwidth goal

% school districts   % students

● National   ● Massachusetts
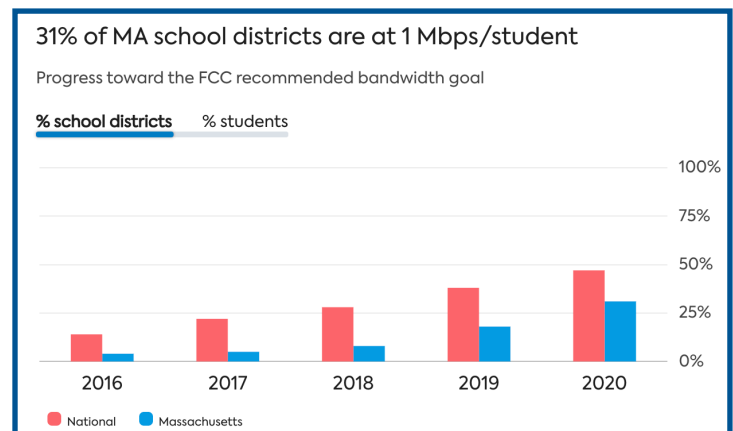
There is large variation in monthly costs for district bandwidth. For example, data available from the FY2020 FCC e-rate forms shows monthly average costs ranging from under $100 all the way up to $22,000 per month. The variation is indicative of different internet service providers, number of staff and students, and the amount of bandwidth requested. The bandwidth ranges in the FY2020 data were from 50 kbps all the way up to 17 Mbps per student. It is important to note the variation in the cost of Mbps here as well. Data shows a range of under $1 per Mbps all the way up to $17 per Mbps.

It is imperative that districts understand their network volume in order to purchase adequate bandwidth to support the demands. In addition to bandwidth, districts need to examine their wireless access point coverage across the district's buildings. If devices cannot access the network, bandwidth will not matter. Network monitoring in the coming year will be key to identify peak times and bandwidth requirements. The US Department of Education, Office of Educational Technology provides a Quick Reference Guide of Key Questions for Planning Technology Infrastructure.

Through the Federal Communications Commission (FCC), schools and districts can benefit from filing for E-Rate, the Universal Service Program for Schools and Libraries, to receive discounts on eligible services. With the expectation of an additional 7.17 billion dollars to be added to e-rate this year via the American Rescue Plan, districts are encouraged to 1) file for e-rate (if you don't do so already) and 2) increase your bandwidth. To learn more, view the "Get Started" video on the Universal Service Administrative Co. (USAC) website as well as the Application Process Flowchart.

Home Access and Connectivity

Over the last year, districts have employed a variety of creative, innovative, and pioneering solutions to address students' access and connectivity issues in the home. Even as we plan for full-time in-person learning for the 2021-22 school year, some districts are still exploring ways to continue supporting home access and connectivity. Though having access to high-speed, reliable internet is not a new issue or concern, it has received significantly more attention as a critical equity issue this past year. As such, system leaders, educators, students, and families have expressed a growing interest in seeing households remain adequately connected. Districts interested in continuing these efforts may consider various approaches, including leveraging state and federal programs directed towards home internet access or communicating to families ways they can directly access available internet benefits.

In the Fall of 2020, it was estimated that 1.5% of students were unable to access the internet at home, despite districts allocating funding for and providing available internet solutions (such as broadband packages and/or mobile hotspots). The Department, along with a number of other state agencies and organizations, will continue to explore local, state, and national efforts to identify effective and sustainable solutions for all households.

The Department has helped to identify and deliver some solutions to these connectivity issues:

- T-Mobile Project 10Million
    - Massachusetts schools and districts were eligible to receive nearly 42,000 free hotspots for the 2020-21 school year, each arriving with 100GB of data each year for 5 years. The program will renew and additional hotspots will be distributed each year for the next 4 years.
- Rural Internet Pilot Program
    - In partnership with Verizon Wireless and Quabbin Public Schools, DESE helped identify solutions for rural areas of the district where there was no access to broadband and limited-to-no cell service available. The findings from this pilot demonstrated that, for students unable to access the internet at home through broadband or a hotspot alone, pairing a Verizon 8800L jetpack with a weboost mini magnet mount antenna and related adapter was an effective solution for 83% of these households. A summary of the pilot is available online.
- Internet Data Collection Pilot
    - The Department has launched an Internet Data Collection Pilot in partnership with Education Superhighway and approximately 18 districts representing over 100,000 students. This Bridge-to-Broadband pilot seeks to help districts identify homes in their district who are still unable to access broadband. The results of the pilot will be available this summer.

In March 2021, Education Superhighway published the Federal Funding for K-12 Home Connectivity, which contains a summary of federal funding available for K-12 home connectivity.
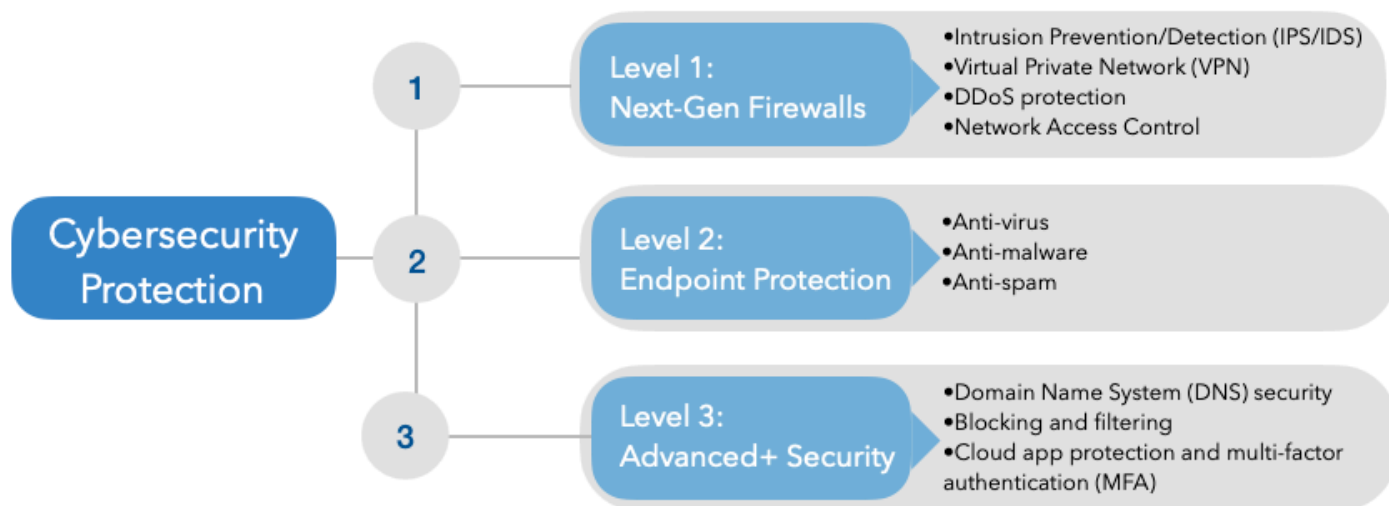
Cybersecurity

"As our society and K-12 education increasingly use email, online tools, applications, and platforms, we also increase our collective risks for cyberthreats and cyberattacks. We encourage school leaders to proactively protect their infrastructure and work to increase individual user awareness of cybersecurity and how to prevent cyberattacks in school and out of school." Excerpt from [DESE Practice Profiles: Cybersecurity](#)

Cybersecurity has always been a concern in our data-rich K-12 environment. However, this past year has turned cybersecurity into a critical concern. With the vast majority of instruction moving to remote or hybrid over the pandemic, districts became the focus of increased cybersecurity attacks. (See the [K-12 Cyber Incident Map](#) for related cyberattack data.) As schools and districts plan to continue incorporating technology into the learning environment, they must stay vigilant. Cyberthreats pose a range of extensive and costly damages to a district. Without investing in cybersecurity planning, prevention, mitigation, awareness, and action, districts run the risk of detrimental costs to repair devices or recover data after an attack. Threats can include: Distributed Denial of Service (DDoS), ransomware attacks, email spoofing and phishing, and various malware.

According to the [December 2020](#) Cyber Threats to K-12 Remote Learning Fact Sheet, "The Cybersecurity and Infrastructure Security Agency

(CISA) has seen an increase in malicious activity with ransomware attacks against K-12 educational institutions. Malicious cyber actors are targeting school computer systems, slowing access, and rendering the systems inaccessible to basic functions, including remote learning."

Planning for cybersecurity is expensive. For this reason, many advocates nationwide are seeking to have cybersecurity included in E-Rate reimbursements. [In February 2021, COSN filed a report with the FCC](#) advocating for allowing the additional use of E-Rate funds for K-12 cybersecurity. In part, they noted, "Achieving broadband equity for students will not be possible if school networks and sensitive student and employee data remain at the mercy of cyber attackers." In the same report, COSN and Funds for Learning co-authored an addendum detailing cost estimates for cybersecurity and three levels of network defense.

Cybersecurity Protection

1 — Level 1: Next-Gen Firewalls
- Intrusion Prevention/Detection (IPS/IDS)
- Virtual Private Network (VPN)
- DDoS protection
- Network Access Control

2 — Level 2: Endpoint Protection
- Anti-virus
- Anti-malware
- Anti-spam

3 — Level 3: Advanced+ Security
- Domain Name System (DNS) security
- Blocking and filtering
- Cloud app protection and multi-factor authentication (MFA)

Districts should confer with their local internet service providers or local municipality to research and procure sufficient cybersecurity mitigation measures as well as considering cybersecurity insurance protection where appropriate. Table 3 details the average annual cost per student for districts of varying sizes.

| Table: 3 Average Cybersecurity Cost Calculations: Annual Per Student Expense for Various School District Enrollments						
Level of Security			**School District Enrollment**			
Level 1: Next-Gen Firewall	Level 2: Endpoint Protection	Level 3: Advanced+ Security	3,000 Students	4,750 students	12,550 students	>20,755 students
X			$43.22	$37.36	$31.49	$29.67
X	X		$67.09	$60.05	$52.88	$50.34
X	X	X	$89.23	$80.78	$70.92	$67.20

As Norton Public Schools' Technology Director, Karen Winsper, recently commented during the 2021 METAA CTO Clinic,

"You really need to feel the pain [of a cyberattack] to realize how important [mitigation] is." Her suggestion to all Tech Directors, "If you don't have protection yet, go to your Superintendent and Business Manager to request it immediately. We had nine attacks yesterday and four already this morning. Luckily, we have mitigations in place."

Cybersecurity Resources

- For more information and resources for planning, prevention, awareness, and required actions for cybersecurity, review DESE's Practice Profiles: Cybersecurity.
- Districts are welcomed to request a free Cybersecurity Health Check through the Massachusetts Office of Municipal and School Technology.
- The Cybersecurity and Infrastructure Security Agency (CISA) Ransomware Guide includes ransomware prevention best practices and a ransomware response checklist.
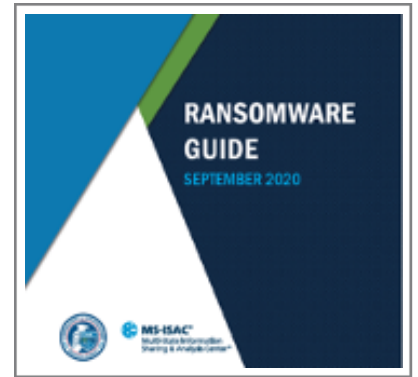
Districts are encouraged to reach out to their Business Managers or School Business Officials to inquire whether the school/district's insurance policy has cybersecurity protection and coverage.

INFRASTRUCTURE KEY TAKEAWAYS

- ○ Infrastructure is essential for accessible, operable, smooth, and secure use of technology and encompasses devices and classroom technology, administrative technology, bandwidth considerations, and cybersecurity.
- ○ Leverage the METAA Virtual Buyer's Guide, OSD state contracts, and collaborative purchasing for technology-related expenses.
- ○ You will likely need to increase your bandwidth next year and can utilize E-Rate to do so.
- ○ There are many resources available for districts to continue supporting student internet access at home.
- ○ Cybersecurity (including protection, prevention, and mitigation) in K-12 is of critical importance. Cyberattacks can cripple districts and impact instructional time. Build it into your budget; do it now.

Funding Considerations

We do not yet have the full, detailed picture on how the pandemic impacted school technology spending in 2020, but we know it rose sharply in many categories. For example, DESE provided a $33 million grant to provide targeted funding to support Local Education Agencies (LEAs) in addressing remote learning technology needs and to ensure that every student had adequate access to technology for use in remote learning environments during the 2020-21 school year. This grant funding supplemented more than $39 million LEAs had already spent on technology essentials (devices and internet) between March 15th and July 1st, 2020, and only scratched the surface of other education technology-related expenses incurred during the 2020-2021 school year. Over the past year, the vast majority of MA districts invested in technology platforms such as Learning Management Systems, communication tools, and new instructional tools and applications, many of which had not been widely used prior to the pandemic.

In order to meet the priorities detailed in this guidance document, many schools and districts will likely need to reconsider ongoing technology spending for hardware, software, infrastructure, professional development, staffing and services. Funding for technology remains fluid and subject to change with varying accessibility. Included in this section are some insights and recommendations for strategic ongoing procurement that may be helpful.

Recommendations for Strategic Ongoing Procurement

Map spending toward sustainable, year over year operational budget line items.

Do not rely on one-time spending, but have tentative plans and priorities to maximize opportunities such as federal and state grants, as they arise.

Begin planning to support ongoing expenses in future operating budgets.

Consider lease-to-own programs that would allow for the purchase of equipment while maintaining a sustainable budget line item.

When feasible, stagger technology purchases or leases through multiple fiscal years to avoid single-year large budget items.

Additional Considerations

- ❑ [File for eRate](#) annually, which includes discount ranges from 20 percent to 90 percent of the cost of eligible Category 1 and Category 2 services
- • Discounts for support depend on the category of service requested, the level of poverty and the urban/rural status of the appropriate school district.
- • Category One services include Data Transmission Services and/or Internet Access.
- • Category Two services include Internal Connections (IC), Managed Internal Broadband Services (MIBS), and Basic Maintenance of Internal Connections (BMIC).
- ❑ Automate and analyze technology and application usage data to conduct a needs analysis (Read more: [How K-12 Schools can Measure EdTech ROI](#)).
- ❑ **More is not always better.** Try to use fewer, but better applications with increased adoption and best practice coaching and implementation (Read more: [Glimpse K12 Analysis of School Spending Shows that Two-Thirds of Software License Purchases Go Unused](#)).
- ❑ Look for product features and functions that will allow you to eliminate other or additional purchases.
- ❑ Advocate and negotiate for better product rating and pricing, better data, more use of available procurement vehicles, and access to educational technology marketplaces.
- ❑ Procure through state contracts available in [COMMBUYS](#).
- ❑ Collaborate with local districts, local education collaboratives, and local businesses for economies of scale purchases.
- ❑ Monitor [national initiatives](#) and available [grant](#) opportunities.
- ❑ Evaluate all possible funding streams available (See Table 4 on the following page) and consider using an EdTech budget workbook to assist in the planning process like [COSN: Using Value of Investment (VOI) to Guide EdTech Purchasing and Sustainability Planning Decisions.](#)

Note about the Use of Federal Funds for Equipment

Equipment purchased with federal dollars must follow the [Federal Uniform Grant Guidance (UGG)](#) equipment management rules for decommission or disposal. The full language of the regulation (2 CFR §200.313) is available in the Electronic Code of Federal Regulations [here](#).

FUNDING CONSIDERATIONS KEY TAKEAWAYS

- ◉ EdTech leaders, school business officials, and district administrative teams must work closely to align on budget priorities, purchases, and funding streams to support technology-related goals and priorities in the coming years.
- ◉ EdTech funding is all encompassing: leadership, technical and instructional staffing, professional development, data privacy, digital content and tools, devices, classroom technology, assistive technology, administrative technology, bandwidth, and cybersecurity.
- ◉ Explore all funding opportunities: federal, state, national initiative, or grants.
- ◉ Consider using an EdTech budget workbook to assist in the planning process.
- ◉ Maximize one-time funding but begin planning to support those purchases in future operating budgets.
- ◉ File for e-rate.

Table 4: Potential funding streams to consider as school leaders plan for supplementing their EdTech budget		
• The following list includes FEDERAL funding sources. • Districts may use their state and local funds as appropriate. • Use of federal funds may require the need to follow some additional rules for capital expenditures (typically for purchases over $30,000). See the capital expenditures form and contact your DESE federal grant liaison with any questions.		
	Funding Source:	Examples of Related Allowable Expense(s): *Be sure to verify all allowable expenditures with your DESE grant liaison.
	ESSER I	• Educational technology (internet connectivity, hardware, devices, software, tech support services, etc.) • Supplies and services that enable remote learning (printing, telephonic support, translation services, etc.)
	ESSER II	• Operations: to address on-going planning, coordinating, and provision of services related to COVID-19: • Educational technology (connectivity, hardware, devices, software, technology support services, etc.)
	ESSER III	• ESSER III allowable costs are the same as ESSER's I and II. • All information for ESSER III is available on this site.
	Title I	• Academic/Instructional coaches • Supplies and materials needed to carry out Title I activities • Academic assessments to gauge impact of Title I initiatives • Computers and software for use by Title I students • Supplies for students experiencing homelessness • Memberships/subscriptions • Equipment costing more than $5,000 per unit and having a useful life of more than a year. All equipment must be used for Title I programs.
	Title IIA	• Program Administrator/Grant Manager/Professional Development Coordinator – only the portion of the salary dedicated to Title II, Part A administration • Academic/Instructional Coaches for any subject • A variety of stipends • Consultants for HQPD to improve content knowledge and/or classroom practice for any subject • Supplies to be used strictly for HQPD such as books, software, instructional technology • Conference registration for HQPD • Course reimbursement for HQPD • Career advancement opportunities for current staff members, such as paraprofessionals
	Title III	n/a
	Title IV	• Most commonly used funding source for EdTech related expenditures to date. • Improve the use of technology to improve academic achievement. • Program Administrator/Grant Manager • Stipends for staff to coordinate, implement activities and/or engage in high quality professional development related to the effective use of instructional technology • Software, hardware and other instructional technology • Supplemental curriculum materials
	IDEA (Fund Code 240 & 262)	• Supplies and Materials for students with disabilities: • Items costing less than $5,000 per unit or having a useful life of less than one year. • Software and instructional technology • Curriculum materials • Assistive Technology (equipment must be inventoried and discretely labeled as an IDEA purchase)
Additional Funding		
FY2021: Remote Learning Technology Essentials (RLTE) Fund Code 117/118		• Priority 1: Internet • Priority 2: Devices
Districts can use their state and local funds as appropriate for EdTech purchases. Other funding sources can include eRate and other available grant opportunities.		

Final Thoughts

We hope that this guide is a helpful part of the many strategic planning efforts that are underway and that it clearly communicates the opportunity before us. With intentional planning, we can leverage the significant investments in EdTech that made the 2020-21 school year possible in order to make the 2021-22 school year and beyond more meaningful and powerful for our students and school communities.

We have heard you want to carry these things into the future. Let's support EdTech together!

Embracing change and adjusting pedagogy

Holding district faculty meetings virtually to reduce staff travel times

Investing in Single-Sign On (SSO) for ease of access and use

Increased cross-school and cross district-collaborations

Integrating tech into curriculum with daily use

Video conferencing with families

More, relevant professional development received in new and different ways

Keep new apps we have tackled, have mastered, and have grown to love

Digital access to streamed classes, coursework, etc.

Strengthening cybersecurity and student data privacy

Providing technology training for families and students

Exploring digital portfolios

APPENDIX

Appendix A: EdTech Certifications

EdTech Certifications	
METAA CTO Certification	**COSN CETL Certification**
• METAA offers the METAA Chief Technology Officer Certificate Online Course through Framingham State University. • 14-week online course • Build an understanding of the essential skills and knowledge in the three primary areas of: Leadership & Vision, Understanding the Educational Environment, and Managing Technology & Support Resources as outlined in the Consortium for School Networking (CoSN) Framework of Essential Skills of the K-12 Chief Technology Officer (CTO). • Individuals often use the METAA CTO Certificate Course as preparation for the CETL exam. Cost: $1500	• COSN offers a credential for Certified Educational Technology Leaders, or CETLs. • Practice-based certification program available to education technology leaders that bridges technical knowledge, understanding of the educational environment, leadership and vision, and the management of technology and support resources needed to integrate technology across the curriculum to advance student outcomes. • Certification requires satisfaction of eligibility criteria, passage of a rigorous multiple-choice exam, adherence to a Code of Conduct, and a recertification process every three (3) years. • COSN also created an Administrators Guide with tips and information on how the CETL® program can help your district achieve its 21st-Century technology goals. Cost: $649.00 (exam only)

*Pricing information is based on information that is currently publicly available and is subject to change.

Appendix B: EdTech Department Essential Skill Set & Sample Position Titles

Skill Set

Ed Tech Leadership	Instructional Support Coaching/PD	Network Operations
Information Systems & Data Management	Developers	Customer Service

Sample Position Titles

Ed Tech Leadership

- Chief Technology Officer (CTO)/ Chief Information Officer (CIO)
- Superintendent/Asst. Supt./Director of Instructional Technology/Educational Technology/Digital Learning/Innovation
- Director of Digital Learning
- Director of Information Technology/ Office of Information Tech Administrator
- Director of Technology Integration
- Procurement Manager
- Infrastructure Manager

Instructional Support Coaching/PD

- Digital Learning Specialist
- Instructional Technology Specialist
- Digital Learning Integration Coach
- Program Director
- Instructional Coach
- Student Help Desk Coordinator
- Lead Teachers
- Ed Tech Specialist/Librarian

Network Operations

- Network Engineer
- Network Administrator
- Network Security Manager/Coordinator
- Telecommunications Specialist

Information Systems & Data Management

- Systems Administrator/Coordinator/ Specialist
- Data & Systems Integration Manager
- Data Manager / Records Management
- Student Information System (SIS) Manager
- Financial/HR Systems Manager
- Food Service Systems Manager
- Data Architect/Analyst
- Data Warehouse Developer
- Database Manager

Developers

- Programmers
- Application Developer
- Web Manager
- Content Developer

Customer Service

- IT Support
- Implementation Specialist
- Help Desk Coordinator / Representative
- Repair Technician

Appendix C: Findings from Sample Survey of Districts' Future Investment Needs

The Department informally surveyed a small number of districts with different demographics from across the state to learn more about their unique future EdTech investment needs and estimates. While there are many differences between them, some of the following themes emerged across all of them.

General Themes

- School leaders lack the means to see and produce actionable data about app usage and related student outcomes.
- EdTech spending in 2020 increased considerably in response to the pandemic.
- EdTech spending is too often dependent on one-time or episodic funding from grants or capital programs instead of recurring operating funds.
- Due to the nature of funding, total cost of future ownership and replacement are not fully addressed.
- District leaders do not have a source to benchmark costs or spending.
- An Amazon-like tool does not exist to research EdTech tools, ratings, and pricing.
- There is no efficient way to ideally leverage scale across purchasing districts.

Category-Specific Themes

Staffing and Professional Development

- Staffing and access to employees with the needed expertise is the greatest concern.
- Districts suffer from expertise gaps and having enough staff to meet the demands of the district.
- The overwhelming majority of districts with enrollment under 10,000 have the same employment needs to fill as the larger districts but lack the budget to be able to address the need.
- School tech support has generally been understaffed in comparison to non-education organizations on a per employee basis. The gap widens when you multiply the support needs by 15X to cover students.
- EdTech roles - instructional or administrative – cannot be clearly defined. Therefore, supporting professional development resources, certification expectations, etc. vary from district to district.

Software (aka applications or apps) - Instructional and Administrative

- App usage is not clearly visible - especially for "free" apps.
- Per pupil spending varies greatly from district to district without the detail available to determine why.
- LMS/platforms are now widely used and expected to be used, but implementation, training, and licensing have not been sufficiently factored into budgets.
- Administrative app funding is currently less of a concern to districts, but many can still benefit from migration to cloud-based, state of the art administrative apps (SIS, Finance, Transportation, Nutrition, Library, IEP, etc.) that are more interoperable and provide better data analytics.
- Many districts are struggling to fund their district-wide diagnostic, formative, and summative assessment strategies that leverage technology. The use of assessment software could provide invaluable data analytics, yet investments in assessment programs are undetermined and unplanned for many right now.

Devices

- A large urban district tripled device spending in 2020-21 with purchases to meet the required 1:1 threshold. Now they want to transition to a device leasing model with annual funding of approximately $150 per student device in order to sustain equitable access but are uncertain of long-term funding.
- Districts report a need to invest another $200-$300 per student to fill remaining device gaps as well as to prepare to refresh devices.
- Districts are not able to effectively share information and leverage purchasing power at a state-level.

Classroom Infrastructure

- Teachers increasingly see the benefits of digital learning including creating instructional materials, curating materials, and being able to provide multimodal instructional delivery.
- Districts see a need to make significant investments in classroom infrastructure to meet teachers' new expectations for delivering instruction. This includes being able to provide their instruction in and outside of the classroom both synchronously and asynchronously.

Network infrastructure, Internet Access, and Privacy/Cybersecurity

- Districts have identified a need to further upgrade networks to meet increased bandwidth demands but are unsure of the funding mechanisms to do so. Many are hopeful the expanding e-rate funds will be available to them.
- District leaders recognize the need to increase the number and quality of access points and related wireless infrastructure to support increased digital activities in schools.
- Cybersecurity is a major concern with emergency response costs of $20,000 or more.
- There is concern from districts about insufficient managed services available from ISPs to provide the required services regarding cybersecurity prevention and mitigation.
- A significant "homework" Internet access gap existed pre-pandemic which was exposed by the crisis. Districts responded creatively with solutions like hot spots. However, those solutions often do not provide stable and sufficient bandwidth. While new e-rate and emergency broadband provisions hold promise for some districts and families, the future of expanded home connectivity is still uncertain - especially in rural areas and some urban settings.

Appendix D: Assistive Technology

DESE's [Access to Learning: Assistive Technology and Accessible Instructional Materials](#) document (2012), provides helpful information about assistive technology for districts regarding students with and without IEPs. The following is an excerpt from that document:

> "The [Individuals with Disabilities Education Act (IDEA),](#) a federal law on special education that was reauthorized in 2004, requires schools to consider a student's possible need for assistive technology devices and services whenever an Individualized Education Program (IEP) is developed.
>
> In addition, the [Americans with Disabilities Act (ADA)](#) and [Section 504 of the Rehabilitation Act](#) require schools to provide assistive technology for students with disabilities, if needed to assure equal access to the school's programs and services. Both of these laws also require that schools provide instructional materials in accessible formats to students who need them."

Resources:

- DESE Office of Special Education Planning and Policy, [Technical Assistance Advisory SPED 2018-3](#)**:** Addressing the Communication Needs of Students with Disabilities through Augmentative and Alternative Communication (AAC), is a memo providing guidance on when a referral for AAC may be appropriate; it explains how AAC may help students with disabilities to enhance their communication skills; it references applicable laws and best practices; and it direct IEP Teams and other relevant parties to additional AAC resources. AAC is a type of assistive technology that can assist students with disabilities that impede their ability to communicate.
- [Quality Indicators for Assistive Technology Services (QIAT)](#)**:** The QIAT Consortium provide information in [eight areas important](#) to the development and delivery of assistive technology (AT) services including: Consideration of AT Needs, Assessment of AT Needs, AT in the IEP, AT Implementation, Evaluation of Effectiveness of AT, AT in Transition, Administrative Support for AT, and AT Professional Development.
- [Wisconsin Assistive Technology Initiative (WATI)](#)**:** The [free publications](#) available on the WATI site include [guidance](#) on [assessing a student's needs](#) for assistive technology, information about specific subject area needs, and communication needs as well as guidance on AT funding.
- CAST: In addition to the UDL Framework, CAST provides information on *[Accessibility and Inclusive Technology.](#)* This site includes information about CAST's work on [Accessible Educational Materials (AEM).](#)
- DESE also has information about [Providing Accessible Instructional Materials](#) like braille and large print through the [Massachusetts Accessible Instructional Materials Library (AIM Library)](#). There is also guidance on providing digital text through Bookshare and providing audiobooks through [Learning Ally](#).
- Family Connection: The [Center for Technology and Disability](#) houses informational materials and videos to assist parents in learning the basics of assistive technology.

Appendix E: Key Takeaways by Section

EDTECH LEADERSHIP

- EdTech leaders, who combine context of their district's mission, vision, and priorities for learning with their technological expertise, are a critical element for effectively integrating technology into student learning experiences and improving student outcomes.
- The eight priorities listed in this section should be considered in the course of strategic planning and used to identify where there are strengths and gaps in your overall EdTech planning for the district.
- EdTech leaders require a unique blend of educational and technical skills. There are several educator licensing options for individuals in leadership roles in Massachusetts districts (e.g., Superintendent, Assistant Superintendent), but there is no specific MA licensing option for EdTech Directors.
- Some EdTech leaders choose to pursue different certifications like the METAA CTO Certification or COSN National CETL Certification, however, neither are a requirement in the State.

STAFFING AND PERSONNEL

- A variety of skill sets are required to implement a robust, functional, seamless operation of technology infrastructure, applications, and consistent end-user experiences.
- Districts should conduct a needs analysis to identify where there are specific technology-related pain points and where additional staffing may be required to ensure necessary support and coaching is available to meet the needs of staff, students, and families moving forward.
- Top priorities for EdTech staffing include EdTech leadership, instructional technology coaching, and tech/IT support.
- Schools and districts can rarely hire for all the EdTech positions needed, but there are a variety of alternative ways to add specific support and expertise.

PROFESSIONAL LEARNING AND DEVELOPMENT

- Educators developed many new skills delivering instruction remotely during the pandemic. Reflect on which skills and instructional strategies are aligned with overarching district goals and priorities and have demonstrated effectiveness with students to drive EdTech-related professional development.
- Technology in a district or school will be more effective and provide better student outcomes with relevant, high-quality, job-embedded professional development and coaching.
- Utilize the Massachusetts Standards for Professional Development when planning all professional development, with EdTech-specific considerations.

DATA MANAGEMENT

- Ensure your district is following all necessary Student Data Privacy laws and regulations.
- Well-intentioned individuals may inadvertently sign up for a new app or have students explore a new website without properly vetting its data privacy agreement.
- Whole-staff professional development is the first line of defense for safeguarding student data.
- Consider joining the Massachusetts Student Data Privacy Alliance for access to resources and tools.

INSTRUCTION

- There are over 8,000 verified digital technology tools available.
- Adopting more apps does not mean better teaching and learning and does not ensure an impact on student outcomes. All tools should be strategically integrated into the existing classroom curriculum.
- Prices for digital tools range from free to district pricing. A key to the overall purchasing of tools is to ensure there is one person coordinating the purchase, deployment, and usage of the tools.
- Assistive Technology should be offered to eligible students for equal access to a district's curriculum and services. (See Appendix D for more information)

INFRASTRUCTURE

- Infrastructure is essential for accessible, operable, smooth, and secure use of technology and encompasses devices and classroom technology, administrative technology, bandwidth considerations, and cybersecurity.
- Leverage the METAA Virtual Buyer's Guide, OSD state contracts, and collaborative purchasing for technology-related expenses.
- You will likely need to increase your bandwidth next year and can utilize E-Rate to do so.
- There are many resources available for districts to continue supporting student internet access at home.
- Cybersecurity (including protection, prevention, and mitigation) in K-12 is of critical importance. Cyberattacks can cripple districts and impact instructional time. Build it into your budget; do it now.

FUNDING CONSIDERATIONS

- EdTech leaders, school business officials, and district administrative teams must work closely to align on budget priorities, purchases, and funding streams to support technology-related goals and priorities in the coming years.
- EdTech funding is all encompassing: leadership, technical and instructional staffing, professional development, data privacy, digital content and tools, devices, classroom technology, assistive technology, administrative technology, bandwidth, and cybersecurity.
- Explore all funding opportunities: federal, state, national initiative, or grants.
- Consider using an EdTech budget workbook to assist in the planning process.
- Maximize one-time funding but begin planning to support those purchases in future operating budgets.
- File for e-rate.