

FY23 - FY27
District Technology Plan



Marblehead Public Schools

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EXECUTIVE SUMMARY

This document describes the Marblehead Public School's Five-Year Technology Plan. In designing this plan, the focus was on three key areas – infrastructure, curriculum/instruction and professional development – learned from schools and districts from across the country. Information and resources from the MA Department of Elementary and Secondary Education, the National Research Council, the Bill and Melinda Gates Foundation, GSV Asset Management and the MA Business Alliance for Education all helped to inform this plan.

“Students’ long-term success is tied to their preparation as lifelong learners, world-class communicators, competitive and creative knowledge workers, and contributing members of a global society.” – Shapley, et al. (2011)

This plan looks forward to the next Five years to forecast the necessary steps to reach our goals as the success of our plan will rest on the allocated resources. Funding for the budgetary requirements of the plan will be from the school district's budget, capital expenses, and federal, local and state grants.

Through long-term planning we can spread out resources and still be assured that, our programs remain viable. The proposed plan will require additional personnel, hardware, software, materials and training. The Technology Committee is confident that the plan will result in an enhancement of student learning and the enrichment of the programming made available to the students of the District.

“Technology requires robust access, adequate technical and pedagogical support, effective professional development and curricular and assessment resources that support the foundational curriculum.” – Shapley, et al. (2011)

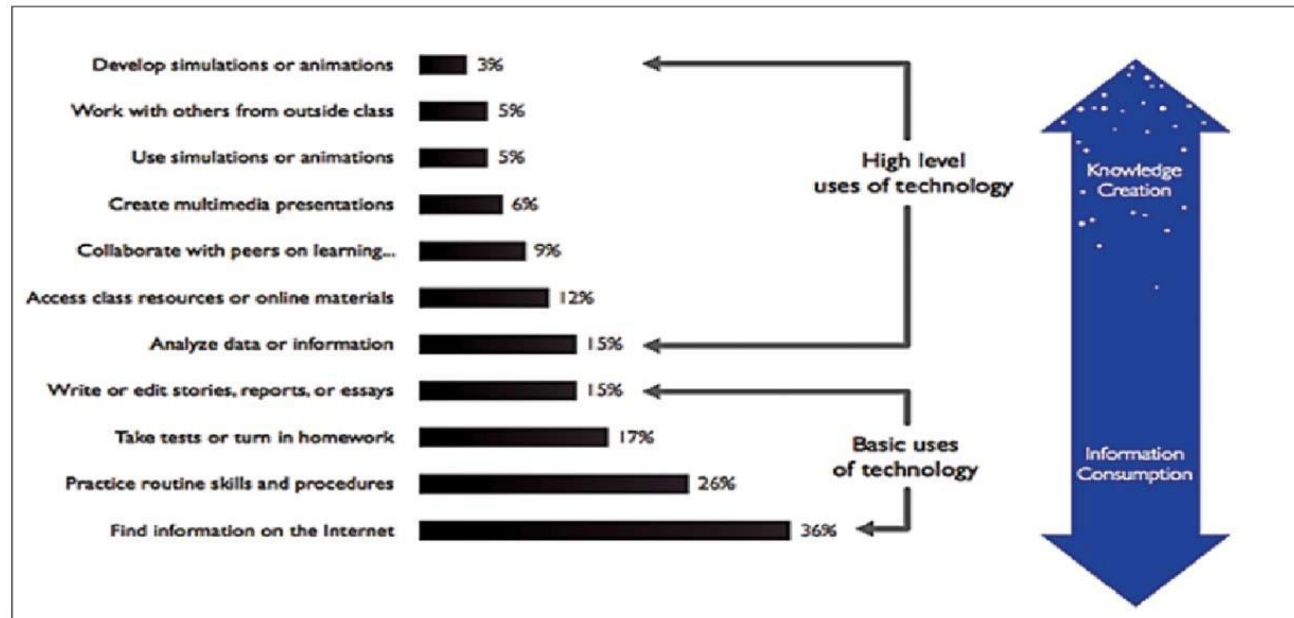
VISION

Our vision is for all students to utilize technology to become critical thinkers, effective problem solvers and life-long learners. In a world of rapid innovation and change, technology is the bridge that connects what the National Research Council (2012) identifies as “the three broad domains of competence – cognitive (critical thinking, reasoning, innovation), intrapersonal (flexibility, initiative, metacognition) and interpersonal (communication, collaboration, responsibility)” (p. 16). Consequently, technology integration must be an ongoing, seamless and inherent part of everything we do as educators.

“Technology is transforming our lives. The skills needed in the future will be very different from those needed today...education is therefore a key factor in our success.” – Barber & Day (2014)

- Students will have access to, and use, technology to enhance learning across the curriculum
- All teachers will have access to, and use, technology to enhance teaching, planning, assessing, reporting, and personal professional development
- The District will provide and support the technology infrastructure necessary to enable adequate video, voice and data communication within, between buildings, and to the Internet
- The District will provide adequate financial support to secure and support the necessary personnel and technologies to sustain ongoing new initiatives.
- The District will establish short and long term maintenance, upgrading and acquisition plans for all technology equipment and support materials
- The District will provide faculty and staff training to ensure current and future uses of technology in education

Adoption of technology across international school systems¹⁷



The preceding chart is from the **Innovative Teaching and Learning Research project** shows how teachers across seven countries report on the way that they ask their students to use information and communications technologies.

PERSPECTIVES ON DEEPER LEARNING

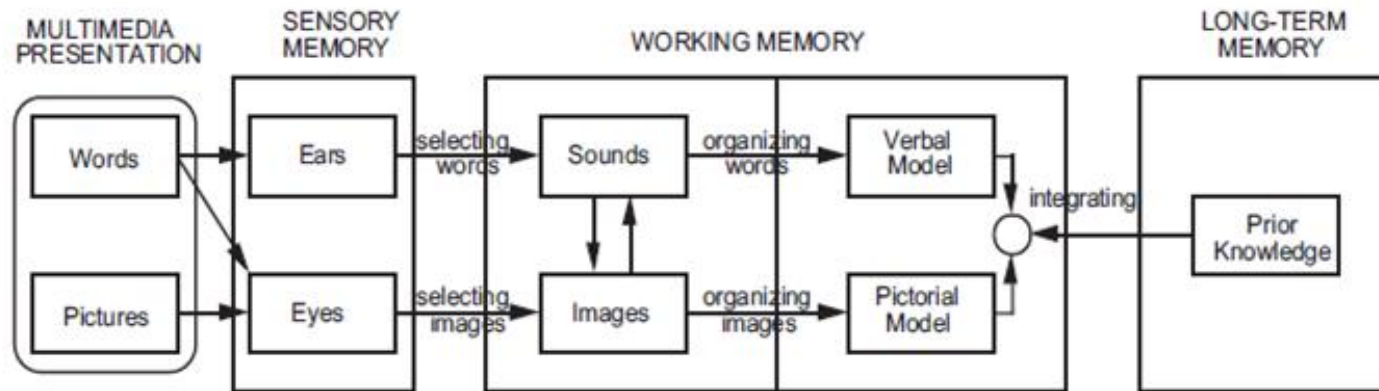


FIGURE 4-1 An information processing model memory.

SOURCE: Mayer, Heiser, and Lonn (2001). Copyright 2001 by the American Psychological Association.

Smart panel technology used in our classrooms helps to enhance our students learning using not just visual and auditory but allows kinesthetic-tactile learning with interactive classroom lessons.

Replacement Schedule

Devices - Laptops, Ipads, Chromebooks

Device	Device Count	Replacement cycle	Replacement Cost per device	Total Cost	Replacement Total
July 2019 to Dec 2019 - Dell Laptop Latitude E7450 - 14	14	FY24	\$ 700.00	\$ 9,800.00	
July 2019 to Dec 2019 - Dell Laptop Latitude E7470	1	FY24	\$ 700.00	\$ 700.00	
July 2019 to Dec 2019 - iPad A1893 - 21 devices	21	FY24	\$ 330.00	\$ 6,930.00	\$ 17,430.00
July 2019 to Dec 2019 - Dell Chromebook 3100 - 50 devices	50	FY25	\$ 250.00	\$ 12,500.00	
Nov 2019 - Dell Chromebook 3100 2-1 - 12 devices	12	FY25	\$ 250.00	\$ 3,000.00	
June 2021 - Dell Chromebook 11 3100 500 devices	500	FY25	\$ 250.00	\$ 125,000.00	
Jan 2020 to Dec 15, 2020 - Dell Latitude 5510 - 2 devices	2	FY25	\$ 800.00	\$ 1,600.00	
Jan 2020 to Dec 15, 2020 - Dell Latitude 3510 - 379 devices	379	FY25	\$ 800.00	\$ 303,200.00	
Jan 2020 to Dec 15, 2020 - Dell Latitude 3301 - 9 devices	9	FY25	\$ 800.00	\$ 7,200.00	\$ 452,500.00
Jan 2020 to Dec 15, 2020 - iPad A2197 - 10 devices	10	FY26	\$ 330.00	\$ 3,300.00	
Jan 2020 to Dec 15, 2020 - iPad A2270 - 260 devices	260	FY26	\$ 330.00	\$ 85,800.00	
Jan 2020 to Dec 15, 2020 - iPad Minis- 2 devices	2	FY26	\$ 330.00	\$ 660.00	
Jan 2020 to Dec 15, 2020 - iPad A2197 - 70 devices	70	FY26	\$ 330.00	\$ 23,100.00	
Jan 2019 to Dec 15, 2020 - Dell Chromebook 3100 2-1 - 700 devices	700	FY26	\$ 250.00	\$ 175,000.00	
June 2021 - Brown Dell Chromebook 11 3100 - 180 devices	180	FY26	\$ 250.00	\$ 45,000.00	
September 2021 - Dell Chromebook 11 3100 600 devices ECF	600	FY26	\$ 250.00	\$ 150,000.00	\$ 482,860.00
June 2021 - Glover Apple Ipad 10.2 inch 400 devices	400	FY27	\$ 330.00	\$ 132,000.00	
June 2021 - Brown Apple Ipad 10.2 inch 520 devices	520	FY27	\$ 330.00	\$ 171,600.00	
June 2021 - Desktops	107	FY27	\$ 550.00	\$ 58,850.00	
September 2021 - Apple Ipad 10.2 inch 300 devices ECF	300	FY27	\$ 330.00	\$ 99,000.00	\$ 461,450.00

Replacement Schedule Cont.

Servers and Networking					
Device	Device Count	Replacement Cycle	Replacement Cost per device	Total Cost	Replacement Total
Servers					
5-8 Year Replacement with extended warranty support to be purchased after year 5					
June 2021 VXRAIL	1	FY27-FY30		\$ 52,541.00	
June 2021 HPE ProLiant DL380 Gen10	5	FY27-FY30	\$ 2,016.00	\$ 10,080.00	\$ 62,621.00
WiFi					
5-8 Year Replacement with extended warranty support to be purchased after year 5					
June 2021 - Extreme Wireless AP - ERATE		FY27-FY30		\$ 126,515.00	\$ 126,515.00
Firewall/Security appliance					
5-8 Year Replacement with extended warranty support to be purchased after year 5					
July 2021 - Palo Alto Networks PA-3250 - Security appliance		FY27-FY30		\$ 21,741.00	\$ 21,741.00
Switches					
10-15 Year Replacement					
June 2021 - Extreme - ERATE		FY32-FY37		\$ 245,281.00	\$ 245,281.00

Smart Panel					
Device	Device Count	Replacement Cycle	Replacement Cost per device	Total Cost	Replacement Total
Smart Panel 7075s - 2019 - MHS	9	FY30	\$ 4,350.00	\$ 39,150.00	\$ 39,150.00
Smart Panel 7275s - 2021 - Brown	33	FY32	\$ 4,350.00	\$ 143,550.00	
Smart Panel 7275s - 2021 - MHS	20	FY32	\$ 4,350.00	\$ 87,000.00	
Smart Panel 7275s - 2021 - Village	5	FY32	\$ 4,350.00	\$ 21,750.00	
Smart Panel 7275s - 2021 - MVMS	4	FY32	\$ 4,350.00	\$ 17,400.00	\$ 269,700.00
Smart Panel 6075S-V3 - 2023 - MHS	37	FY34	\$ 4,350.00	\$ 160,950.00	
Smart Panel 6075S-V3 - 2023 - MVMS	32	FY34	\$ 4,350.00	\$ 139,200.00	
Smart Panel 6075S-V3 - 2023 - Village	34	FY34	\$ 4,350.00	\$ 147,900.00	
Smart Panel 6075S-V3 - 2023 - Glover	30	FY34	\$ 4,350.00	\$ 130,500.00	\$ 578,550.00

2022-2023 PILOTS/IMPLEMENTATIONS (as of 9/23/22)

Glover/Brown

- ASPEN Standards Based Report Card
- Carousel Digital Signage
- Raptor Security

Village

- ASPEN Standards Based Report Card
- Carousel Digital Signage
- Raptor Security

Middle School

- Carousel Digital Signage
- Raptor Security

High School

- MyFlex Learning
- SmartPass
- Carousel Digital Signage
- Raptor Security

District

- 133 Smart Panels


TECHNOLOGY GOALS (FY23 – FY28)

The District understands that achievement of the proposed plan is an ongoing process and is subject to modification in the context of an evolving technology landscape. The Director of Technology will report annually on the current status of the goals and recommend adjustments to the five-year plan.

Individual schools may meet these goals at different times. Factors such as building projects, enrollment, funding, hardware, staffing, and technology issues will influence attaining these objectives.

FY23-FY28 Technology Goals			
Goals	Timeline	Planning for Success Plan Connection	
Hire an additional 1.0 FTE Technology Integration Specialist for the school district	FY23 ↓	<i>PD opportunities for technology. Pfs 4.4</i>	
Add/Replace Projectors with Smart panel technology		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>	
Review DESE Computer Science and Coding Standards to determine next steps		<i>Review current curriculum for technology to align K-12. Pfs 4.5</i>	
Expansion of Google Apps for Education		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>	
Provide Technology PD through TIS and outside vendors.		<i>PD opportunities for technology. Pfs 4.4</i>	
Cyber-Security Trainings		<i>PD opportunities for technology. Pfs 4.4</i>	

FY23-FY28 Technology Goals

Goals	Timeline	Planning for Success Plan Connection
Expansion of Hour of Code programming	FY24	<i>Review current curriculum for technology to align K-12. Pfs 4.5</i>
Technology / STEAM Staffing		<i>Review current curriculum for technology to align K-12. Pfs 4.5</i>
Replacement of Staff Laptops purchased 2020		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>
Replacement of Student Chromebooks purchased 2020		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>
Security Systems Review-Updates		<i>Review of security systems and protocols. Pfs 4.1</i>
Provide Technology PD through TIS and outside vendors.		<i>PD opportunities for technology. Pfs 4.4</i>
Cyber-Security Trainings		<i>PD opportunities for technology. Pfs 4.4</i>
Expand and exploratory options both during the day and after school (STEM, Coding, a “21 st Century Skillsclass”)		FY25
Technology / STEAM Review-Updates		<i>Review current curriculum for technology to align K-12. Pfs 4.5</i>

FY23-FY28 Technology Goals

Goals	Timeline	Planning for Success Plan Connection
Security Systems Review	FY25	<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>
Provide Technology PD through TIS and outside vendors.		<i>PD opportunities for technology. Pfs 4.4</i>
Cyber-Security Trainings		<i>PD opportunities for technology. Pfs 4.4</i>
	FY26	
Review Wi-Fi infrastructure - Replacement or extension warranty coverage		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>
Replacement of staff laptops purchased 2021		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>
Replacement of student chromebooks purchased 2021		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>
Technology / STEAM Review-Updates		<i>Review current curriculum for technology to align K-12. Pfs 4.5</i>
Security Systems Review-Updates		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>
Provide Technology PD through TIS and outside vendors.		<i>PD opportunities for technology. Pfs 4.4</i>
Cyber-Security Trainings		<i>PD opportunities for technology. Pfs 4.4</i>

FY23-FY28 Technology Goals

Goals	Timeline	Planning for Success Plan Connection
Technology / STEAM Review-Updates	FY27	<i>Review current curriculum for technology to align K-12. Pfs 4.5</i>
Security Systems Review-Updates		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>
Provide Technology PD through TIS and outside vendors.		<i>PD opportunities for technology. Pfs 4.4</i>
Cyber-Security Trainings		<i>PD opportunities for technology. Pfs 4.4</i>
	FY28	
Technology / STEAM Review-Updates		<i>Review current curriculum for technology to align K-12. Pfs 4.5</i>
Security Systems Review-Updates		<i>Develop and implement a comprehensive, long-term technology plan. Pfs 4.1</i>
Provide Technology PD through TIS and outside vendors.		<i>PD opportunities for technology. Pfs 4.4</i>
Cyber-Security Trainings		<i>PD opportunities for technology. Pfs 4.4</i>



BUDGETARY OVERVIEW

ACCOUNT	ACCOUNT NAME	FY23 BUDGET	FY24 REQUEST	FY25 ESTIMATE	FY26 ESTIMATE	FY27 ESTIMATE
01.101.3.4230.43.99.800	Maint of Equip (Copiers/Postage Meter)	\$ 98,271.00	\$ 98,271.00	\$ 98,271.00	\$ 98,271.00	\$ 98,271.00
01.101.3.2451.43.90.420	Computer Maint Expense	\$ -	\$ -			
01.101.3.2451.69.90.420	IT Hardware Exp	\$ 15,000.00	\$ 24,000.00	\$ 24,000.00	\$ 24,000.00	\$ 24,000.00
01.101.3.2455.59.90.420	IT Software Exp	\$ 113,316.00	\$ 113,538.01	\$ 113,538.01	\$ 113,538.01	\$ 113,538.01
01.101.3.4450.40.90.420	IT Contract Services	\$ 88,454.00	\$ 113,278.58	\$ 113,278.58	\$ 113,278.58	\$ 113,278.58
01.101.3.4450.50.90.420	IT Supplies	\$ 31,000.00	\$ 31,000.00	\$ 31,000.00	\$ 31,000.00	\$ 31,000.00
01.101.3.4450.60.90.420	IT Travel Exp	\$ 600.00	\$ 600.00	\$ 600.00	\$ 600.00	\$ 600.00
01.101.3.4450.80.90.420	IT Equipment	\$ 67,400.00	\$ 67,800.00	\$ 452,500.00	\$ 482,860.00	\$ 461,450.00
TOTAL		\$ 414,041.00	\$ 448,487.59	\$ 833,187.59	\$ 863,547.59	\$ 842,137.59

FURTHER READING/SUPPLEMENTARY INFORMATION

Digital Literacy/Coding

<https://www.doe.mass.edu/STEM/standards.html>

<https://edu.google.com/code-with-google/>

<http://www.edutopia.org/blog/scratch-programming-drawing-2d-shapes-dylan-ryder>

Future Ready

<https://design39campus.com/>

General Resources

<http://www.cosn.org/Framework>

<http://www.ck12.org/>

<https://www.digitallearningcollab.com/blog/2019/1/16/using-technology-to-teach-critical-thinking-skills>

SOURCES

Barber, M., Day, S. (2014). The new opportunity to lead: A vision for education in Massachusetts for the next 20 years. *MassachusettsBusiness Alliance*, 1-120.

National Research Council. (2012). Education for life and work: Developing transferable knowledge and skills in the 21st Century.

Committee of Defining Deeper Learning and 21st Century Skills, 1-204.

Shapley, K., Sheehan, D., Maloney, C., & Caranikas-Walker, F. (2011). Effects of technology immersion on middle school student learning opportunities and achievement. *The Journal of Educational Research*, 104(1), 299-315.

Vinter, S. (2013). *Computing education: Driving the Massachusetts innovation economy* [PowerPoint slides], Legislative Tech Hub Caucus.