School Technology

Overall structure

The School's Department of Education Technology (DET) is supported by the Town's IT Department as regards networking and some infrastructure. The DET is composed of

- Ed Tech and Library Department, which consists of 1 FTE Director, 9 FTE Educational Technology Specialists (1 per school) who provide coaching and job-embedded professional
- Development, and 12 FTE Librarians
- The Help Desk, which consists of 1 FTE Help Desk Manager and 4 FTE Technicians
- The Data Team, which consists of 3 FTE Data Support specialists
- On an ongoing basis, the DET engages IT contractors as needed.

Evaluation of the PSB Technology Plan

The School Programs Subcommittee embraces the use of technology and recognizes that a strong plan driven by curricular goals is critical for the community's schools. It is important for Brookline's public schools to secure high-quality resources and programs to ensure access to and coherent use of digital learning opportunities.

Several concerns have been raised by the School Programs Subcommittee regarding:

1. Lack of an incremental and detailed plan to provide professional development; here, concerns are that the PD envisioned is an "all-at-once" approach for all grades.
2. Lack of specificity around the programmatic implementation of digital learning; e.g., related to a plan to "flip" classrooms or not based on subject and grade;
3. The lack of a clearly and publicly articulated set of measurable goals associated with the PSB technology plan (after observing in media and scholarly reports on the lack of positive impact as a whole emanating from significant technology investments across the country).
4. The lack of cost savings identified by the School Department resulting from a large investment in technology. This concern is heightened by the significant investment envisioned by the technology plan, especially as the Override Study Committee's priority lies in addressing the issue of enrollment growth.

The Subcommittee recognizes that investment in technology, having addressed these concerns, could have important benefits for student achievement and formation. Several members of the Subcommittee also underscored their view that a technology plan implemented over all grades (K-12) is important. The following suggestions were discussed to address these issues:

1. Prioritizing the investment in technology is important so that staff can focus on results, building expertise in the teaching corps and learn from any early missteps before expanding the investments across the spectrum of grades. There is general consensus on the subcommittee that the PD component is not clear enough. There is also recognition that the curriculum is structured, which is a significant positive factor in thinking about implementing a technology investment to drive academic goals. That said, experience in other communities suggests that a strategy around specific classroom formats (such as flipped classroom or similar) is also important. There is no feeling that teachers should be forced into teaching methods, but that teachers and administrators would be wise to

discuss and set goals for classroom formats in advance of finalizing a technology plan in order to ensure a coherent approach for students. Getting that right will take planning but also experimentation. As a result, some on the subcommittee would like to see the plan phased in as follows:

- 100% Network Infrastructure in accordance with the technology plan's schedule
- Device hardware for grades 6-8 and 9-12 in accordance with the PSB technology plan's schedule; for grades 4-5 with a one-year delay in order to facilitate a learning process within the schools; and for grades K-3 with a two-year delay in order to facilitate a learning process within the schools.

Phasing of the technology plan would have these important benefits:

- It would make the plan more easily presented to the public from the perspective of increasing the school budget dramatically.
- (see #2 below) It would allow education technology staff in each of the schools to focus on training teachers in a more concentrated fashion. It would also allow for teachers receiving more intensive professional development to serve as advisors to those teachers receiving professional development in a second and third phase of implementation, potentially relieving the need for new tech hires.
- It would allow for administrators to adjust and refine measurable goals related to student achievement and other educational purposes that they would set for the implementation of the technology plan.
- It would also allow for early reporting to the public on the benefits of the technology investment made, or an opportunity for a course correction.

2. It is important for the schools and districts to articulate plans, policies and procedures that will enhance the probability of success in implementing the technology initiative. Paramount in this effort must be a professional development plan that is tied to curricular and pedagogical goals, but there are also other planning efforts that are necessary. E.g.,
    - Rather than having individual teachers define on a case-by-case manner how the technology will be used in the classrooms, it is important for schools and the district to define the grades and subjects (or more likely segments of specific courses) in which a teaching format (e.g., so-called "flipping of the classroom") will be promoted and in those in which greater flexibility and choice by individual teachers will be promoted. Such determinations will need advance planning and the strong input of teachers in discussion with curriculum coordinators.
    - For the sake of curricular coherence and long-term viability, it is important for teachers and administrators to define which materials will be developed (or at least are likely to be developed) *sui generis* by teachers and which will be purchased or leased by the schools.
    - An incremental approach will allow Education Technology Specialists (ETS) in each of the schools to train specific teachers more intensively, such that a rollout over a few years will be aided by the additional knowledge of those teachers who have been trained first.
    - Greater clarity should be forthcoming about the impact on textbook purchasing budgets and online program licenses, as well as other curricular materials to be purchased.
    - It is important for the DET's leadership to develop together with teachers a set of policies, procedures and guidelines for the implementation of technology.[1]

3. The public and the schools will need clearly articulated and measurable student achievement goals for the proposed investment. The public will need these in order to evaluate the proposal put before them. The district, school administrators and teachers will need these goals in order to understand best practices; that is, if certain schools or teachers are having greater success in achieving the goals, it will be easier to share those practices that are driving toward those results.
4. In addition to the cost benefits of phasing in the technology plan, the Subcommittee identified as a source of savings
    - The potential elimination of computer labs, which would free up 6 classrooms across the K-8 system. The subcommittee recommends
        - site visits to identify whether the labs can be used as classroom space;
        - a review of the Baker and Lawrence schools to understand whether labs were removed to create additional classroom space.
        - Finally, as a space consideration, it is worth understanding whether the library can also serve the function of the lab
    - Neither the Department nor the Subcommittee discussed the elimination of teaching or support staff positions through the implementation of the technology plan. That said, the Subcommittee notes that national models for district schools implementing technology in the classroom, such as Mooresville, NC, have matched high and improving student performance with budgetary savings.
    - A reduction in the number of new staff members suggested in the PSB tech plan budget.

Review of the Technology Plan Budget

The current breakdown of the technology plan budget is as follows:

Network Infrastructure	**FY15**	**FY16**	**FY17**	**FY18**	**FY19**
Network Hardware	$ 190,150	$ 196,100	$ 196,100	$ 213,246	$ 221,389
Bandwidth Delivery	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000
Device hardware					
5- to 4-year lifecycle	$ 244,000	$ 244,000	$ 244,000	$ 244,000	$ 244,000
Increase to 2400 mobile devices (support for BYOD)	$ 200,000	$ 400,000	$ 600,000	$ 600,000	$ 600,000
Administrative Tools	$ 100,000	$ 100,000	$ 150,000	$ 175,000	$ 240,000
Teaching/Learning Tools	$ 45,000	$ 91,000	$ 122,000	$ 154,000	$ 157,000
Student Digital Content	$ 48,000	$ 78,000	$ 108,000	$ 138,000	$ 168,000
Promoting Innovation	$ 100,000	$ 110,000	$ 121,000	$ 133,100	$ 146,410
Staffing					
Project Manager	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000
Online Learning Specialist	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000
Assistive Technology Specialist	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000
Systems Administrator	$ -	$ 70,000	$ 70,000	$ 70,000	$ 70,000
Help Desk- Senior Technician	$ -	$ 55,000	$ 55,000	$ 55,000	$ 55,000
Building-based Technical Support	$ 105,000	$ 175,000	$ 350,000	$ 350,000	$ 350,000
Mounted Projection					
K-8	$ -	$ -	$ 250,000	$ 250,000	$ 250,000
BHS	$286, 250	$ 143,125	$ 143,125	$ -	$ -
	$1,307,150	$1,937,225	$2,684,225	$2,657,346	$2,776,799
					$11,362,745

It is worth reviewing the current Network Infrastructure's adequacy. Currently, the Town and School network infrastructure has a 500M Internet Connection (half of the recommended 1 Gig the School's consultant endorsed). Usage stats from September through December suggest that the Town and Schools' normal usage is approximately 80M daily (maxing out periodically at 150M). That is well below the current capacity. On that same point it is worth noting that all of the documents shared with the subcommittee during the 1/10/14 School Programs Subcommittee meeting were accessible with the Town's 500M Internet Connection. Certainly greater throughput will be needed in the future, but currently there is ample WiFi connectivity throughout the schools for learning purposes. It is worth a second opinion on the consultant's recommended bandwidth goals for the Schools.

With a phasing in of the technology plan,

- Network Infrastructure would be budgeted in accordance with the PSB plan.
- Device hardware would be reduced by approximately half in year one, during implementation for grades 6-12, grow to address the needs of grades 4 and 5 in year 2 of implementation, and reach across the grade span in year 3. That said, it is important for the OSC to analyze more deeply whether after three years 2400 devices or fewer are necessary, given the concerns raised by members of the broader OSC.

More analysis is needed as regards the rising costs associated with administrative tools, teaching and learning tools and student digital content.

As regards the position assigned to "promoting innovation" is perhaps an unnecessary position given that there are currently 9 Education Tech Specialists, one in each school, whose job includes advocacy of innovation. Should these individuals not be able to perform the duties associated with the "promoting innovation" position, then perhaps the Department may want to evaluate whether it needs to alter its ETS team before making an additional hire.

Similarly there is concern that the "staffing" positions are unnecessarily additive. It is important for the committee to review the organization chart implied by the staffing proposal, which includes many new positions. By taking a phase-in approach the need for an Online Learning Specialist, Assistive Tech Specialist, additional Help Desk positions and a Building-based Tech Specialist may not be necessary or at least fewer of these positions will be necessary. A phasing in of the plan would allow the ETS to work with teachers in a more focused manner up front and create a corps of "ambassadors for technology" among the teachers themselves rather than to hire additional positions. As regards the Help Desk additions, the Efficiency Committee report in 2008 already highlighted the seasonal focus of their work (in the summer) and also potentially duplicative roles (more on that in a section to follow). It is worth reviewing the position descriptions and also the possibility of consultants to do this work.

As regards Mounted projection, these costs are likely to be implemented in line with the budget schedule outlined by PSB.

Phasing in implementation might ultimately lower the four-year (FY15 to FY19) by several million dollars, which is not an inconsequential impact on the viability before the Town's residents.

Help Desk

As noted above, the Town/School Help Desk consists of 5 FTEs (1 FTE Manager and 4 staff FTEs) who work together with 1contractor. The Schools pay for the Help Desk, so any savings from consolidations or reductions would accrue to the School budget. The Schools run thousands of Mac devices, though the new technology plan aims to be device neutral; the Town tends to use PC equipment, though its mobile devices increasingly vary. The greatest demand for Mac Help Desk support is not during the school year, but rather during equipment switchovers.

Building on the 2001 Town Strategic Plan mandate to consolidate technology, the Efficiency Committee in 2008 urged greater consolidation through "a uniform support model that includes outsourcing School user support as it has done with Town user support." Specifically,

- "Mac Help Desk and break/fix support should be put out for bid. This should be accomplished in FY10," and
- "The reduction in Mac Help desk personnel should be considered," with Mac contractors used to meet increased demand during the summer switchover period."

There has been reduction in 1 FTE on the Mac Help Desk, but there is likely room for the elimination of 1 or 2 more positions, especially if support is bid out. After the Efficiency Committee recommendations, an attempt to cost out outsourcing the help desk did not provide a lower cost. It is worth reviewing the requirements defined for the bid (poor definition of requirements can often lead to high bids).

Town/School Relationship and DET Governance Issues

An additional opportunity for savings lies in the DET's operation. The Town's IT Department works closely with various departments (in some cases through MOUs) with the goal of ensuring compatibility of equipment purchases and strategic alignment. There is significantly less coordination between the Town IT department and DET personnel on device purchases and strategy, though there is coordination on networking and infrastructure.

The schools may want to work on policy governance, to optimize the efficiency and organization of the purchases of applications and end devices. The current reporting structure for school-based ETS personnel is via a solid line to principals and the Superintendent, but a weaker reporting line to Scott Moore's position. Given the somewhat bottom-up organization of ETS personnel, where there are only monthly coordinating meetings with school-based ETS, there are good reasons to question whether implementation of the tech plan will be achieved in the most efficient and effective manner.

It may be worthwhile for DET and its school-based ETS personnel to review the manner in which the Town IT Department ensures compatibility of equipment purchases and strategic

alignment with the various Town departments. The CIO is the chair of the Information Management Governance Committee, the group of senior department heads (Police, Buildings, Finance, Recreation, Public Health, Town Administrator, HR) which discusses the role, needs and goals of technology within the Town. There is more limited coordination and strategy with the Brookline schools, with the bulk of such cooperation limited to the network and infrastructure. Creation of such a structure may be beneficial to the refinement and the successful implementation of the technology plan.

[1] Included below is a sample of the policies and procedures used in association with the Mooresville Graded School District Technology Plan

Policies, Procedures, & Guidelines	LEA Policy Code or Procedure
Policies Required NOTE ALL MGSD CURRENTLY UNDER REVIEW (2012)	
A. Materials Selection Policy including internet resources (GS §115c-98(b))	BP 3200
B. Disposal or Replacement of Obsolete Equipment (GS §115c-518)	BP 6560
C. Hardware and Software Procurement (GS § 115c-522, 115c-522.1)	BP 6400 6450
D. Copyright and Plagiarism Policy (PL §94-553, 90 Stat. 2541),	BP 3230/7330
E. Acceptable Use Policy (PL §106-554)	BP 3225/7330
F. Equipment/Materials Donation Policy (GS §115C-518)	BP 6523
G. Data Privacy Policy (20 U.S.C. § 1232g; 34 CFR Part 99 (FERPA))	BP 4700
H. Inventory Control Policy (GS §115c-539, 115c-102.6A-C(5))	BP 6500 6510
I. Access to Services Policy (GS §115c-106.2)	BP 3520
J. Online Assessment and Instruction Policy	BP 3220 3225
K. Advertising and Commercialism Policy (GS §115c-98)	BP 5210 5250
L. Internet Safety and Ethical Use incl. Cyberbullying,Harassment (Protecting Children in the 21st Century Act, CIPA, FERPA, GS 115C-407)	BP 3225/7330
Procedures	
A. Hardware and Software Deployment	Guide
B. Equipment maintenance and repairs	Guide
C. Outdated Resources and Equipment Replacement	Guide
D. Disaster Recovery of Data and Hardware	Guide
E. Administration of Online Courses	Guide
F. Administration of Online Assessment	Guide
Guidelines	
A. Policy Translation	Personnel Guide
B. Use of Digital Media and Resources	BP 3000 3230 7330
C. Instructional Use of Videos	BP 3000 3230 7330
D. Development of Online Resources	Guide