INSTRUCTIONAL TECHNOLOGY MODELING GROUP

BELMONT PUBLIC SCHOOLS

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Technology Vision Statement

Students and staff will have ubiquitous access to the tools of technology and the skills to effectively use them for the process of innovative education. We also envision that the school administration will leverage technology to enable the most efficient and effective means of managing the business of schooling.

Technology Progression

In order to project future needs and direction, we need to understand the continuum of technology advances and compliance demands. Since 2008, budget demands, as well as significant increases in state and federal compliance requirements have been met by increases in technology support and the introduction of more sophisticated systems. Without the ability to increase staff, the district has come to rely on technology underpinnings in order to solve budget and administrative shortfalls. Although this approach has merit, it tends to mask the costs associated with meeting such demands. Examples of such technological underpinnings are many and reach across all parts of the district. Take for example, just a few instances where technology has been introduced in order to effect administrative and educational progress, budget savings, and efficiencies.

Electronic Data Collection

Historically, student and staff information was gathered and hand entered consuming hundreds of staff hours. This system eliminates the manual entry of hundreds of thousands ofdata fields; all while reducing data entry errors.

Online Fee Payments

Online bill pay was introduced in order to reduce the staff time involved with processing registrations and payments, allow more payment options for parents, and to lengthen the time period during which payments could be received.

Electronic Forms and Substitute Scheduling

Dozens of paper forms have been converted to electonic versions and as a result, have created a system though which all types of data collection and administrative processes have become more efficent. This includes transitioning a manual substitute calling system to an electronic one which reduces the need for manual scheduling.

Attendance and Announcement Calling

Once a manual process, calls to homes of students missing from school are now automated and reduce the calling window to just seconds while freeing school staff to perform other duties.

Edline Classroom System

This learning management system serves as a repository for classroom materials, progress reports, and report cards; each of which were previously done on paper, and now result in the savings of thousands of dollars in postage and printing costs annually.

Online Food Service Payments

The district's food services operations has been challenged by the need to secure and process thousands of daily transactions. A system of paper tickets and check deposits requiring hours of accounting work and manual entry of reporting data has been replaced by an electronic process.

Building Security

Rising security concerns and mandated protocols have given rise to access control systems in all schools, each of which require badging, database control, hardware maintenance, and new procedure adoption. Ongoing costs are comprised of annual support agreements, staff support, and supplies.

Costs Associated with Technology Supports

Each of the gains associated with the implementation of technology supports come with certain cost offsets. Systems require technology staff support, repairs, supplies, equipment, increased network capacity and 3rd party maintenance agreements. Although the district realizes cost savings in many areas, these costs are not reduced to zero. On average, the actual cost savings is closer to 70% when associated technology-related costs are factored in.

Reductions in postage, printing and personnel costs are shifted in part to other budget cost centers such as equipment, supplies, network management, and contractual services. Furthermore, technology has been called upon to create systems where none existed. For

example, new district mandates have demanded the creation of teacher evaluations systems and interconnected hardware and databases supported by a reliable security platform.

Equipment Demands

The Massachusetts Department of Elementary and Secondary Education, as a goal for all schools, has set a ratio of 5:1 for the number of students per computer. To achieve this goal, it is prudent to budget for the replacement of 5-8% of existing inventory each year. The district works towards providing a maximum over-all ratio of five students per each fully-functional computer and with a five year device refresh cycle. Currently, the refresh rate is seven to eight years.

Curriculum Integration

The process of integrating educational technologies into the Belmont Public Schools' curriculum can be achieved through the thoughtful linking of curriculum goals to appropriate technologies and delivery. Integration efforts will be focused on systemic projects with multi-year goals following the curriculum benchmarks and frameworks. The planning and implementation model for student-focused technologies within each school building is a collaborative process, adjusted for each school's requirements, and involving the schools' teachers, Principals, and the Director of Technology, who will review all curriculum integration initiatives for continuity, impact, and efficiency of time and money.

Successful integration projects will become the focus of future staff development and appropriate budget planning for its dissemination. Evaluating of the use of technology for instructional goals shall be an item reviewed during the curriculum review process for each discipline.

Professional Development

Staff need to be provided with professional development opportunities as well as limited mandatory training during scheduled work time. This year, members of the Google Apps and iPad pilots attended workshops during which they learned strategies for redesigning curriculum and increasing student engagement. Several staff have used the pilot as the basis for this year's Professional Learning Team work. Experience has shown that continued innovation relies heavily on staff access to quality professional development.

In a recent survey, only 25% of staff indicated they knew how to employ web tools such as blogging, wikis, and classroom websites. The goal of staff development in technology will be to ensure that our staff will be able to proficiently:

- Utilize technology tools for instructional management and personal productivity.
- Employ technology tools for delivery of instruction and communication.
- Provide skills instruction in technology literacy where called for in the curriculum.
- Guide students in academic and productive uses of technology.

Administrative Efficiency

Technology will continue to be used to increase communication between and among staff. Information systems for record keeping and reporting will be explored for implementation throughout the system. The Commonwealth has mandated the use of online forms for various reports system wide. All administrative and appropriate support personnel will be given the access and training needed to meet the state reporting requirements while administrative software, such as student information systems, special education database systems, personnel records systems, and financial systems will be upgraded as needed to meet the needs of the school system.

Support Personnel

The district should continue to employ a variety of staff to ensure the thoughtful integration of technology. This will include technical support personnel central to the maintenance and productive use of technology, as well as expertise in the integration of technology tools into the curriculum. Central to integration is the Technology Integration Specialist; a position which has not been a part of the district. Although progress has been made over the years, the technology landscape has changed to the point where any proficient technology program requires staff skilled in technology integration.

Creating Capacity

As technology use increases; be it in the classroom or administratively, one of the greatest challenges has been to create technology capacity in order to improve access. The two factors which contribute most to capacity are physical space and time. Since each of these are finite and well defined, capacity can only be increased by utilizing different tools, such as iPads and other mobile devices which can help introduce more learning opportunities at the building level.

At Belmont High School, as cited in the NEASC report, there is a critical and ongoing need for additional access to devices for research and other work. Due to the physical constraints of the high school, this means either adding lab space (or eliminating classroom space) or providing a structure where students do not need to be in a physical space to do their work. Second, due to the nature of the high school schedule, students have a significant amount of free time. It makes a great deal of sense to address both the lack of physical space and the abundance of unscheduled time by providing a framework which leverages both. This model began three years ago with the introduction of Edline which provides access to course materials regardless of space or time restrictions and continues with the iPad adoption.

During teacher focus groups in October at Chenery, teachers cited the need for additional student access capacity, in the form of mobile computing devices and the ability to keep students in the classroom and able to use devices allowing for greater flexibility in developing curriculum units that would save valuable teaching time by limiting transitions, while at the same time honing students digital and technical literacy skills. In addition, while the labs continue to be a

necessary resource, the school's burgeoning population is simply too large to satisfy the increasing need for computer based curriculum and learning.

Innovation

iPad Program

All teachers with an iPad, and who had completed training, are working at integrating the many facets of the device into their teaching. English and Social Studies teachers have achieved the highest level of integration so far, with Science and Physical Education not far behind. Of the 20 teachers who teach classes of only 9th graders, 50% of them have integrated the device in ways that are transforming their teaching, 25% are making great strides, 25% are experimenting and working on it, but are not as far along and would benefit from additional training and support.

In a recent focus group and associated survey of 285 students, 90% cited approval of the use of iPads and the leveraging of ancillary technologies such as electronic texts and AppleTV technology. Student participation in this innovative program reaches into all content areas with students indicating iPads were used on a regular basis in most of their core classes.

Google Apps Program

Google Apps for Education is a suite of web-based programs providing e-mail, word processing, spreadsheet, presentation, calendaring, research, and collaboration tools. Google Apps provides a number of advantages for the district. In fact, Google Drive is the storage system being used by the high school and Chenery iPad programs, and has quickly become a comprehensive platform for student work. In a staff focus group held in November, many participants cited their students' use of the iPad with Google Apps and its positive impact on student work.

Google Apps for Education is a system separate from the one commonly used by individuals. All accounts and account settings are provisioned within a new internet domain owned by the district through a console specific to Belmont. The district can grant and remove user access and control other settings to ensure a secure collaboration environment for students and teachers. Because Google stores information for business as well as education, they must conform to the most stringent security requirements.

Because it is a web-based system, students and staff can access their work anywhere and work together virtually on documents, presentations and projects, from any computer, and without having to purchase new software. Increased interaction is achieved via Google's commenting feature and works well for instructor and collaborator feedback.

Planning for present and future innovation centered on iPads, other mobile tools and Google Apps will be central to technology use by teachers.

Budget Implications and Funding Structure

- Personnel (administrative and technical)
- Staff development
- Hardware
- Software
- Infrastructure (including contractual services)
- Consumable technology supplies

Although the move to Google Apps and iPad adoption is not driven primarily by cost savings, the systems provide a significant amount of online storage space, thus reducing district for storage and backup costs, a reduction in the number of Microsoft Office licenses purchased, and it will also, over time, eliminate the need to support the current remote access network. Migrating documents to an online environment reduces the need for printing and copying and reduces costs associated with toner purchases, printer purchases, and maintenance.

Efforts continue to identify areas for cost reductions, including seeking multiple price quotes for purchases, tight inventory control, and renegotiating contracts at renewal. Additionally, the adoption of a new work order system and other workflow changes has increased the productivity of district technology staff.

Online Testing

As the Commonwealth enters into online assessments, there is much work to do in preparation for this effort. School districts, for various reasons, have traditionally been slow to make significant departures from existing practice. For this reason, it will take time to make the necessary adjustments, both programmatically and financially, to support online assessments.

Additional costs would be incurred supporting infrastructure improvements capable of providing sufficient redundancy required to ensure reliable access to the assessment system during testing periods. Recent years have seen a significant reduction in technology expenditures. As a result, the average age of devices available for online assessments has increased, resulting in a decreased capacity of existing devices to support testing. It has also reduced the number of devices available as older units have aged out and fallen below minimum specifications.

Educators need systems that they can rely on, or they cannot be expected to invest heavily in digital content and online assessment. If the infrastructure and access are not reliable, it will mean always having a paper and pen backup plan. Therefore, schools need to provide sufficient technical support to guarantee reliable networks, devices, and connectivity. The increased demands on technical staff will quickly outpace capacity as exhibited by the most recent administration of the Foreign Language AP exam, which due to its increased complexity, required a significant increase in technical support time.

Summary

Technology has become a part of all aspects of the district; and as the district moves forward, technology is expected to contribute significantly to that advancement. The Instructional Technology Modeling Group has identified the following areas for consideration and action:

1. Continue planning for projects which are aligned with our goal of universal access to technology including the one-to-one iPad program at Belmont High School.
2. Investigate the creation and delivery of a Digital Citizenship program on the secondary level.
3. Begin a multi-year project to provide a minimum of 2 PCs for each classroom K-4.
4. Work to identify ways to increase access to mobile computing devices at all levels.
5. Sequence the implementation of hardware capacity within classrooms based on curriculum needs and goals and the districts' adoption of the Common Core standards.
6. Advocate for staff trained to assist teachers in their technology integration efforts.
7. Implement a multi-year plan to purchase and install SMARTboards in the remaining classrooms without boards.
8. Investigate and work toward the purchase of additional mobile computing devices for classroom instruction.
9. Expand the wireless infrastructure to support increased mobile device use.
10. Develop staff technology literacy skills document based on DESE standards.
11. Explore additional ways to safely leverage web tools.
12. Continued improvement of the Student Information System as the central database from which other systems interact.