



# **Technology Plan**

**The Maine Educational Center for the**

**Deaf and Hard of Hearing /**

**The Governor Baxter School for the Deaf**

**July 1, 2011 – June 30, 2014**

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## **1. COMMUNITY AND PARENT INVOLVEMENT**

*Involve a broad representation of the school community in the planning process. Include a description of how the technology will be used effectively to promote community and parental involvement and increase communication with parents, including a description of how parents will be informed about the technology and its proper use.*

The MECDHH administration and faculty recognize the value of parental involvement in education. They have made and continue to make efforts to include parents as much as possible in their child's education with minimal success. The organization faces three challenges to including parents in a process such as the development of a technology plan.

The first unique challenge is logistical. Our students come from a geographic area far greater than any covered by a single RSU or school district. With few exceptions, each student comes from a different town. Our student body comes from a number of counties with travel distances to the school ranging from a few miles to several hundred miles. Convening a meeting of parents with any degree of regularity has proven virtually impossible. This year, for example, the first Tuesday evening of every month was devoted to meetings intended to revive the school's Parent/Teacher Organization. Meals were provided and teachers were required to be in attendance. The first meeting there was 6 families in attendance out of a potential 26. At subsequent meetings, only one or two attended.

The second challenge is the parents' lack of personal experience with technology. A Family Technology Survey conducted during the second semester of the 2004 - 2005 school year, revealed that 3 of the 24 students who will be returning to GBSD in the fall of 2005 still do not have computers in their home. Of the 21 families who do have a computer, 8 do not have high speed Internet service perhaps due to the rural location of their homes. Nine or 38% of GBSD families do not yet own digital cameras. See Appendix A (page 20) for survey results.

A third and unique challenge that GBSD faces exacerbates the other two. It has to do with the extraordinary impact that hearing loss has on language development. 95% of children with hearing loss do not develop language naturally because they are born to parents who do not know sign language. These children do not even begin to acquire language until their parents arrange for some form of auditory or visual input to trigger the language learning process. If the input is auditory, usually a hearing aid, it is most often incomplete, intermittent and a poor substitute for normal hearing. If the input is visual, usually signs from parents just learning sign language themselves, it is also most often incomplete, intermittent and a poor substitute for normal hearing. Thus, the majority of students who are born deaf enter Kindergarten with severe language delays. As they progress through their education, their school hours are language-rich, but their after-school hours are not. Their parents, siblings, and neighbors do not sign at all or well enough to act as language models.

For this reason two of the activities funded by GBSD for the NCLBA Title IID Competitive Grant in 2004 – 2005 were aimed specifically at using technology to improve the educational quality of our students' non-school hours. One of the two activities was the production of signed videotapes and DVDs to be used in the classroom and at home. These kinds of tapes/DVDs are not available commercially. Because our students currently score low on comprehension of common sight vocabulary, we developed DVDs of the Fry Word List Grades 2 and 3 in ASL. The DVDs were distributed to parents free of charge on either VHS videotape or a DVD. Parents were informed that their children are assessed on their comprehension of the Fry Word List twice every year and were encouraged to master the signs themselves for frequent reinforcement at home.

The second activity supported by the '04 – '05 NCLBA Title IID Competitive Grant was the expansion of MECDHH's *ASL for Families* program. This program offers sign language classes in the evenings over Maine's Distance Learning Network commonly referred to as ATM. These classes are offered free of charge throughout the state to "families" of students served by MECDHH either at the Center School or through Statewide Educational Services (SES). To clarify, "families" are defined for this program as anyone who comes in frequent contact with a deaf child. Classes have included childcare providers, Sunday school teachers, extended family, close neighbors and the principal of a school where a Deaf child is mainstreamed. The program has proven successful with families who have not benefited from traditional community sign classes and hence are not signing at home. In *ASL for Families* classes, the teacher customizes lesson plans to meet the needs of the families enrolled. Since its inception in the fall of 2002, the program has grown from 2 classes offered 2 nights over 5 ATM sites to 4 classes offered 4 nights over 8 ATM sites around Maine. Over 130 people took advantage of these classes during the 2004 – 2005 school year. Some were connected to children who attend GBSD while other were related to Deaf and hard of hearing students who are mainstreamed in public schools

ATM is often cited as a potential solution to the logistical challenges to parental involvement mentioned above. In the 2005 Family Technology Survey, only 9 of the 24 GBSD Center School families responded that they had any experience with distance learning. If the state's Distance Learning (DL) Network is to be a part of the formula for attracting more parental involvement, more opportunities need to be in place for parents to experience the advantages of the network, i.e. parent teacher meetings can be scheduled to include participation from DL sites around the state.

Using the MECDHH website as a link to families has also been suggested as a strategy for communicating with families. This also would require education of parents as the 2005 Technology Survey revealed that only 6 or 25% of GBSD families have visited its website. This could be because the site is designed primarily for families who do not already know what GBSD has to offer. Making the website a source of information useful to families whose children are enrolled in the Center School could be a valuable way to attract them. GBSD will take one step in this direction during the 2005 – 2006 school year when one of its teachers becomes a teacher/leader through the Title IID Enhancing Education through Technology Grant. This teacher will participate in 100 hours of professional development in the area of educational technology culminating in the design and implementation of a website. It is anticipated that this website will contain information of interest to parents and will be promoted as an avenue of ongoing home/school communication.

One promising solution to the geographic challenges MECDHH faces in reaching parents and other stakeholders is the school's new Pegasus media server. This server allows GBSD to stream or make available any digitized information over the World Wide Web to anyone with any type of computer who has high speed Internet access. This potential has far reaching applications, which will be explored in depth over the course of this Technology Plan. One application is communicating with parents of GBSD students about the work their children do in school. A recent culminating activity for the school's interdisciplinary study of Mexico affords us an excellent example of how the video streamer can be used to educate parents about the important role technology plays in education today. At the Mexico Unit Celebration, all grade clusters presented their work on a SMART Board while all but the Kindergarten class included an iMovie. Only one parent was able to attend the celebration but now through the media server, all families with access to high speed Internet can use links from the MEDCHH website to see a digital video of their students proudly describing and exhibiting what they learned about Mexico this year! For families without high speed Internet access, DVDs or VHS videotapes can be made and sent home for the families' enjoyment.

In conclusion, the MECDHH School Board and Superintendent Larry Taub have made strengthening connections with families a high priority for the coming school year. A strong core of involved parents is

currently connected to the school's Parent/Infant Toddler and Preschool programs and plans are underway to capitalize on their momentum to sustain their involvement through the elementary and secondary grades. The energy generated by these parents will be coupled with the power of the technology available at GBSD to implement and maintain this Technology Plan.

## **2. VISION**

*Establish a vision statement linking the tools of technology with areas such as curriculum content, instructional practices, professional development strategies, and enhanced services. (If you have already established a school or district-wide vision statement you may use it rather than establishing a separate statement, so as long as it encompasses the requirements above.)*

We believe the knowledge and use of technology and telecommunications is fundamental to the ability of students who are deaf or hard of hearing to be lifelong learners and involved, responsible citizens in a technological society.

Technology allows for clear, effective and direct communication between deaf individuals and the larger non-deaf community. Technology supports collaboration, ensuring success in personal, education and workplace settings.

We believe educational technology must be supported in all content areas in order to ensure and enhance student achievement in the Maine Learning Results at each grade span. We believe when technology is implemented correctly and directed toward specific student achievement goals, it facilitates positive change in the learning environment.

Competencies such as the ability to collaborate, communicate, critically analyze problems and construct meaning are valuable skills to bring to the future workplace. These skills are developed when learning is active and interactive.

Technology is successful when proper training through professional development is provided to teachers, residential advisors and support staff. GBSD is committed to providing professional development both on campus and in off-campus environments through workshops and classes.

## **3. GOALS**

*Articulate specific goals, aligned with the Maine Learning Results, for using advanced technology to improve student academic achievement.*

The administration and teaching staff at MECDHH believe strongly in the importance of advanced technology in improving the academic achievement of Deaf and hard of hearing students they serve. Teachers are expected to incorporate technology into their teaching strategies whenever possible therefore, at GBSD, technology contributes to the successful completion of all of Maine's Learning Results. Some Results, however, can be particularly influenced by the use of technology. These are outlined in Appendix B (pages 21-27) as they pertain to the four broad goals this plan is designed to achieve:

1. Students will use technology to write.
2. Students will use technology to communicate.
3. Students will use technology to learn.
4. Students will use technology to create.

#### **4. IDENTIFY NECESSARY TECHNOLOGY**

*Include a technology assessment. Gather information about technology currently in use so that what will be needed to meet new goals can be determined. (Include a list of the equipment and telecommunication services that are necessary to reach the goals.)*

##### **Overview of Infrastructure**

MECDHH consists of multiple sites serving multiple audiences. One site, the Governor Baxter School for the Deaf (GBSD) on Mackworth Island, houses the elementary school, the Statewide Resource Center, the GBSD library and residential program as well as the entire organization's administration, operations, and student support services, and the staff of southern Maine's Statewide Educational Services (SES). The GBSD local area network (LAN) serves this site. The Fort Fairfield and Brewer SES satellite program offices, one staff member working from her home in the mid-coast region, and the Portland High School program constitute additional sites which, along with the Guardhouse and Garage on Mackworth Island, have access to email and GBSD web servers via the Internet, but receive no other LAN services. Internet connections are as follows:

- Mackworth Island – ATM connection to Maine School and Library Network (MSLN) shared between the LAN and the Distance Learning Room, with SPAM and CIPA internet filtering provided by MSLN
- Caribou and Bangor offices – Time-Warner connection to the MSLN
- Mid-coast region staff member – connection via local internet service provider, paid for by MECDHH
- Portland High Program – connection via the Portland Public School's LAN/WAN, with SPAM and CIPA internet filtering provided by the Portland school system

The two branch offices and the employee who works out of her home connect to the Internet via independent accounts. They are able to connect to GBSD's FC email and web servers, which are outside the LAN's firewall, but cannot access anything inside the firewall. The same is true of the Garage, Guardhouse, and Portland High Program. In addition, there are employees who occasionally work from their homes. They also are able to access only the school's website and email when they are away from campus. GBSD has purchased software known as Virtual Private Networking to resolve this issue and the IT Department is in the process of obtaining the necessary skill to install and maintain it. Inside the firewall, there are three servers: Novell Netware, FileMaker Pro, and a multi-media server.

The Netware and First Class email servers are backed up to tape nightly, 5 days a week. The FileMaker Pro server writes its data to the Netware server. Netware also hosts payroll and other personnel data. The multi-media server is currently being used to record ASL classes provided over Maine's Distance Learning network and is not backed up.

In total MECDHH has 105 computers: forty with 400-700 MHz, twenty-five with 700-1000 MHz, and forty with 1000-3000 MHz. These computers, a combination of 88 desktops and 27 laptops, interface with one color and eight black-and-white network printers as well as numerous local printers (mostly inkjets ranging in age from less than a year to over 6 years). In addition, GBSD has 8 student and 3 faculty laptops provided by the Maine Laptop Initiative.

In Brewster Hall, the new building that opened fall 2004, five elementary classrooms are equipped with SMART Boards and LCD projectors. Two middle school classrooms in Greenlaw Hall and the resource room at Portland High School that is staffed by GBSD faculty are also equipped with SMART Boards and LCD projectors. Brewster Hall houses a two-room media production suite used for student assessment and the production of educational DVDs in ASL. A Macintosh G5, which was purchased with Educational Technology grant funds during the 2004 –2005 school year, is housed in this suite. In addition, five teachers have their own digital cameras for classroom use and the library loans an additional digital camera and a digital video camera. This plan calls for the purchase of additional digital video cameras with tripods for individual classroom use.

Over the summer of 2005 MECDHH will install cable television throughout Brewster and Greenlaw Halls with money from FY05. This plan calls for the purchase of television sets with built-in DVD and VHS players for classrooms for ready access to educational programming during the school day.

There are several i2eye web cameras around campus, primarily used by deaf staff and students to place telephone calls, although they can be used for small-group video conferencing. Currently videoconferencing is accomplished through 3 PolyCom units on loan to MECDHH from the Maine Point project and the DL classroom. The PolyComs, located on the Mackworth Island campus and the Fort Fairfield and Brewer offices, allow for frequent interaction among SES colleagues. Staff meetings, professional development and committee work are regularly accomplished from a distance reducing travel costs and increasing communication within this widespread department.

In 2004, Sprint donated 4 Video Relay stations to MECDHH each consisting of a television set and a D-Link i2eye unit connected to high speed Internet. These stations allow Deaf staff members to make phone calls in their native language, ASL. The stations allow for video relay calls to people who do not sign and videophone calls to those who do. The stations are currently located in the Superintendent's office, the dormitory, Carter Hall and the Portland High School resource room.

MECDHH's Distance Learning (DL) Site, commonly referred to as the ATM Room, is one of Maine's busiest. The site is used every school day morning to broadcast ASL instruction for foreign language credit to high school students around the state. Three evenings a week the site is used for the *ASL for Families* program, which provides free instruction in ASL to the families and friends of students served by MECDHH throughout the state. In between this steady usage, the DL room is used for a wide variety of purposes such as interviewing potential employees, inservicing parents and staff, participating in meetings and capturing programs broadcast by other DL sites. This site is also used regularly to connect GBSD with the Wisconsin School for the Deaf for collaboration on an ongoing project related to assessment.

The MECDHH DL site is the only one in the state that has a Universal Access Room, which allows closed captioning and sign language interpreting to be added to distance learning sessions. See Appendix C (page 28) for a schematic of the MECDHH LAN, Appendix D (page 29) for a diagram of the MSLN network, and Appendix E (page 30) for a description of the Internet filtering provided by MSLN.

Finally, MECDHH is also an ITV site and is used typically by one or two students a semester to access college courses.

## **Infrastructure Needs**

### **1. Servers**

The current Novell server is nearing the end of its life. It will tolerate the Netware software upgrade planned for this summer but will probably need to be replaced before the next round of upgrades. It just barely has the horsepower for the coming version of Netware.

As is the nature of web serving computers, the demands placed on the MECDHH web server will increase over time. The current hardware and operating system/web service application is designed to meet only the existing requirements. As plans for more content and capability become reality, the web server computer will need to be upgraded to handle the extra load. Installing large hard drives with more RAM, increasing processing power and upgrading software will need to be completed before the full demand is realized.

The First Class and FileMaker Pro servers are fine for the duration of this Technology Plan. First Class hardware was upgraded during Summer 2004 and demands on the FileMaker Pro server are minimal right now. Plans are underway, however, to add a Student Communication System to the FileMaker Pro server for documentation of the Comprehensive Local Assessment System and centralization of student information. The impact of this installation on the server will be assessed but is not expected to be problematic.

## **2. Backup Capacity**

The Netware server is backed up remotely to a workstation in the IT Department. This workstation has a 6-tape autoloader, which is being challenged by storage of student assessment video clips. On occasion the amount of data exceeds capacity and disrupts the backup process. When this happens a full backup can take as many as 6 days. This displaces all incremental backups for a week, meaning that essentially we are able to do one complete backup per week. A solution to this problem needs to be worked out possibly with the purchase of an external hard drive for the media production/assessment suite.

The capacity of the self-contained tape drives used to back up First Class appear to be adequate for the duration of this Technology Plan.

## **3. LAN Hardware**

As we push more and more data through the LAN, we may have to replace some local hubs that are rated for only 100 Mbs. Pushing data this fast may also expose weaknesses in the oldest wiring on campus. The connection between buildings or backbone of the system is fiber optic and rated for 1000 Mbs so it should serve us well for the duration of this Technology Plan.

We should tie the Garage and Guardhouse into the LAN. The IT Department is exploring making this connection by either fiber or wireless means.

## **5. COLLABORATION WITH ADULT LITERACY SERVICE PROVIDERS**

*Describe how the program will be developed, where applicable, in collaboration with adult literacy service providers.*

As has been the case for several years, MECDHH stays abreast of efforts to establish an Adult Literacy program in Maine. In the recent past, the MECDHH Director of Communications has been involved in meetings with the Adult Education Office of the Maine Department of Education, Adult Education departments of Portland and Bangor, the Maine Division of the Deaf, the Maine Center on Deafness and Alpha One, an agency that promotes independent living. These meetings have also included two educators who are Deaf themselves and have expertise in the area of teaching with Deaf adults. In 2003, MECDHH closely monitored a pilot program for Deaf adults begun through Portland Adult Ed and was disappointed when it was discontinued. Currently MECDHH stays on top of issues related to Adult

Education by attending monthly meeting of the Deaf Rights Group, which includes representatives from many of the aforementioned stakeholder groups.

Also, MECDHH has consistently offered an array of assistance to all parties involved in Adult Education in Maine including classroom space, a distance learning site complete with captioning and interpreting capabilities, clerical support, and assistance with promoting programs. Furthermore, MECDHH is exploring an adult literacy pilot program with New York's LaGuardia Community College to deliver instruction to Deaf adults by Deaf instructors from a distance.

## **6. STRATEGIES FOR IMPROVING ACADEMIC ACHIEVEMENT AND TEACHER EFFECTIVENESS**

*Describe how funds, specifically Ed Tech funds wherein applicable, will be used to improve academic achievement, including the technology literacy of all students attending schools served by the SAU/LEA; and describe how funds expended will improve the capacity of all teachers in schools served by the SAU/LEA in to integrate technology effectively into curriculum and instruction.*

In 2004, MECDHH was in the fortunate position of having a new academic building constructed on its campus. This building, known as Brewster Hall, was designed specifically for children who are Deaf or hard of hearing. The building's architects, one of whom is Deaf himself, took numerous factors into consideration such as acoustics for hearing aid users and sight lines, lighting and space for faculty and students who use American Sign Language (ASL).

Another major consideration in the design of Brewster Hall was educational technology. Care was taken to include state-of-the-art technology in every classroom specifically a SMART Board on the wall, an LCD projector suspended from the ceiling and wireless Internet capability. Shortly after the new building was complete, MECDHH also purchased a video streamer whose potential is just beginning to be tapped. Finally, during the 2004-2005 school year, a G-5 Macintosh computer was purchased with Title IID grant money and installed in a two-room suite dedicated to educational media production and student assessment. The unique nature of the media produced and the assessment performed at GBSD is that both are done through digitized videotape in ASL. In addition to this hardware, MECDHH purchased appropriate software to support the curriculum, specifically iDVD and Final Cut Pro for the G-5 computer.

The technological infrastructure built into Brewster Hall complemented the hardware that already existed at GBSD. Fourteen students grades 4 – 8 each have their own laptop computers, some provided through Maine's MLTI program and others purchased by the school. Every K-12 teacher at GBSD has his/her own Mac iBook along with the school librarian, occupational therapist and the curriculum coordinator. In addition, every K- 6 teacher has his/her own digital camera. MECDHH employs 1 full-time and one part-time Information Technology specialists to support this extensive network, which includes a classroom at Portland High School and two Outreach staff satellite offices in Brewer and Fort Kent.

Demonstration copies of hardware and software were also obtained this year for experimental use with students who have vision, cognitive and motor disabilities through a non-profit organization called Computer Explorations Institute of Maine, a program of Husson College. Some of these software products proved to be appropriate for GBSD's special needs students and are therefore included in Section 8, Technology Type and Costs and Coordination with Funding Resources. Participation in this loaner program, which costs \$300 for a 12-month subscription, will continue for the foreseeable future.

As for improving the capacity of teachers to integrate technology effectively into curriculum and instruction, MECDHH annually dedicates a large percentage of its Teacher Inservice Days and Early Release Days to professional development in the area of educational technology. It should be noted that

MECDHH employees benefit from a total of 9 Teacher Inservice Days, considerably more than their colleagues in other SAUs.

For example, during the 2004 – 2005 school year, the K – 12 teachers participated in 12 hours of training on the use of the SMART Board. This instruction was provided by a combination of manufacturer representatives and ALLTech, a division of the Spurwink Institute. This training began in August, was continued in November and expanded upon in March so that teachers could gradually improve their skills. Also during '04 – '05, staff was offered a whole day of training on Power Point in ASL in one of the sophisticated classrooms at VTECH in South Portland. Finally, MECDHH arranged for teachers to receive iMovie training from a consultant from the Scranton State School for the Deaf who is fluent in ASL.

In addition to training teachers, GBSD worked with their Educational Technicians on downloading and manipulation digital images with iPhoto. Finally, two academic staff members will take a course this summer through the University of Southern Maine's Professional Development department entitled, "Digital Video in the Mac Classroom: An Introduction to iMovie."

A similar emphasis on professional development aimed at improving the academic staff's skill and comfort level with educational technology is planned for the next three years at MECDHH. The major difference in future years will be a decreased emphasis on the acquisition of new hardware and software and an increased emphasis on improving proficiency with what we currently have. See Section 12, Professional Development for additional details.

## **7. INTEGRATION OF TECHNOLOGY WITH CURRICULA, INSTRUCTION AND ASSESSMENT**

*Describe how technology (including software and electronically delivered learning materials) will be integrated into curricula, instruction, and assessment and include a timeline for this integration.*

Students attending GBSD communicate freely using American Sign Language (ASL), their native language and the language of instruction. English is a second language for GBSD students. They face similar challenges in learning English and content, as do other Limited English Proficient (LEP) students. ASL is a visual language and does not have a written form. The vocabulary and grammatical structure of ASL vary greatly from those of the English language. Unlike their peers who can hear, the Deaf students only access to English is the printed word. English is a linguistically complex language with an extensive vocabulary, which makes it difficult to learn. For most students with normal hearing, exposure to their native language occurs as they "listen" to the world around them: in the classroom, on the radio and TV, and in conversations heard or participated in during their daily lives. To facilitate this "listening" process for Deaf and hard-of-hearing students, GBSD seeks to continually provide state-of-the-art visual accessibility to written English through technology. Teachers at GBSD continually search for new tools and methods to make the English language more visual and thus accessible to Deaf students.

The No Child Left Behind Act (NCLB) of 2002 clearly states all LEP students must meet the same challenging state academic achievement standards and state academic content standards expected of all students. Additionally, the law states that every student should be technologically literate by the eighth grade. These two requirements lead to the logical conclusion of technology integration being tightly woven within every curricula supported by GBSD.

The International Society for Technology in Education (ISTE) 2000, defines curriculum integration as follows: "Curriculum integration with the use of technology involves the infusion of technology as a tool to enhance the learning in a content area or multidisciplinary setting.

Technology enables students to learn in ways not previously possible. Effective integration of technology is achieved when students are able to select technology tools to help them obtain information in a timely manner, analyze and synthesize the information, and present it professionally. The technology should become an integral part of how the classroom functions-as accessible as all other classroom tools.”

For many students, technology is motivational and nonjudgmental. It provides immediate feedback, individualizes their learning, and tailors the instructional sequence. Technology can meet specific student needs, increase their autonomy, allow for more responsibility, and promote equal access to learning. Each GBSD student has an Individualized Education Plan (IEP) and educational technology supports and promotes individualized learning at the child’s own rate and style.

GBSD has established a timeline for the implementation of educational technology. (See Appendix F. [page 31]) The GBSD Technology Curriculum, which will be implemented in the 2005-2006 school year, focuses on three central activities: online collaboration nationally and internationally; Web based applications such as e-mail, online bulletin boards, interactive websites, and information searching; and the use of multimedia projects.

Maine’s Department of Education requires an extensive and integrated assessment system that addresses Maine’s Learning Results while honoring local decision-making. Technology offers endless possibilities for using performance assessments that are accessible and equitable for second language learners, as well as learners with multiple learning challenges. Performance based assessments can be as simple as using graphics or as complex as a multimedia learning portfolio. Technology provides multiple strategies for language learners to communicate their learning and understanding of content areas. Technology removes the language barrier for Deaf children who can be videotaped signing what they know rather than limited to print forms of assessment. GBSD’s Comprehensive Local Assessment System (CLAS) currently contains some assessments that allow for the use of technology, however, more common assessments using technology will be added over time to meet both student need and to adapt to changes in the Maine Learning Results in 2008.

In its ongoing effort to integrate technology into its curricula, instruction and assessment, GBSD has established specific goals for its principal, curriculum coordinator, teachers and students. These goals are outlined in Appendix G. (pages 32-33)

## **8. TECHNOLOGY TYPE AND COSTS, AND COORDINATION WITH FUNDING RESOURCES**

*Develop a step-by-step action plan, with timeline, which includes goals, activities, required hardware and software, costs, and funding sources. Describe the type and costs of technology to be acquired and how it fits within the current structure. Designate sources of funding, specifically Ed Tech funds, E-Rate funds, and coordination with funds from other Federal programs, and state and local sources, that support technology acquisition and integration*

See Appendices H, I, J. (pages 34-37)

## **9. SUPPORTING RESOURCES**

*Describe the supporting resources such as services, software, other electronically delivered learning materials, and print resources that will be acquired to ensure successful and effective uses of technology.*

MECDHH makes every effort to build-in sufficient resources to support its relatively high-tech environment. The school employs one full and one part-time Informational Technology (IT) support staff to keep its ever-expanding network of educational technology operating. This staff maintains a widespread network of classrooms on campus and at Portland High School as well as an even more widespread network of offices and satellite offices for staff. MECDHH also devotes a large percentage of a third employee's time to support the school's First Class email system.

There are three areas, however, in which MECDHH networks with other service providers – distance learning, professional development and some areas of technology. GBSD's Distance Learning Program has been thriving for the past several years through a unique arrangement with the University of Maine System Network. MECDHH provides an employee of the Network with office space in return for her oversight of a program that offers American Sign Language for high school foreign language credit over the state's Distance Learning Network, commonly referred to as ATM. Each year GBSD negotiates a Memorandum of Understanding with high schools across the state to provide ASL instruction, which emanates from the GBSD Distance Learning site. Beginning in the fall of 2004, this memorandum included a phased-in fee for service, which is expected to continue throughout the duration of this Technology Plan.

The second area in which MECDHH relies heavily on outside resources is professional development related to technology. MECDHH has partnered with technology vendors such as Headlight Audio/Visual, hardware manufacturers such as SMART Board, technology training centers such as VTECH and ALLTech and the Independent Living Agency, Alpha One, to keep its staff's technology skill levels high. Alpha One is of particular interest because it is able to provide a technology instructor who is Deaf himself and able to teach classes in ASL. It is anticipated that this same level of networking with outside resources for technology-related professional development will continue.

Certain aspects of installing or maintaining technology for MECDHH fall outside the ability of its IT staff or are better suited for outside service agencies because of their urgent or time consuming nature. Some technical repairs, for example, are contracted out by MECDHH, as will be the LAN connection planned for the garage and guardhouse. MECDHH has technical support contracts with its firewall, virus protection and email service providers. Ongoing upgrades are purchased for various organization-wide and educational software programs. It is recommended that, early on in the implementation of this Technology Plan, a contract be purchased with Tapeware the company from whom MECDHH purchased its back-up system.

## **10. STEPS TO INCREASE ACCESSIBILITY**

*Describe the steps being taken to ensure that all students and teachers have increased access to technology. The description must include how Ed Tech funds, if applicable, will be used to help students in high-poverty and high-needs school, or in schools identified for improvement or corrective action under Section 1116 of Title I; and how the steps taken will ensure that teachers are prepared to integrate technology effectively into curricula and instruction.*

MECDHH has consistently taken steps to ensure that all students and teachers have access to technology. In the recent past these steps have included:

1. Purchasing laptops for students who did not qualify for them under the MLTI.
2. Purchasing 9 laptops for teachers who did not qualify for them under the MTLI.
3. Purchasing sufficient digital cameras so that each classroom teacher has one.
4. Providing a laser color printer networked to the school's laptops and located in a central location.

5. Expanding the ATM site to include a Universal Access Room.
6. Providing faculty and staff with professional development in educational technology.
7. Installing SMART Boards and LCD projectors in every classroom in its new Brewster Hall.
8. Purchasing a media server.
9. Applying for and receiving a 2004 NCLBA Title IID Competitive Educational Technology Grant which included monies to
  - a. Purchase a MAC G5
  - b. Produce educational DVDs in American Sign Language
  - c. Expand ASL classes over the state's Distance Learning Network

Looking ahead to the next three years, MECDHH intends to of increase accessibility by:

1. Participating in the 2005 NCLBA Title IID Competitive Educational Technology Grant with a consortium of regional SAUs by providing one Teacher/Leader to attend 100 hours of professional development in educational technology.
2. Continuing professional development in the area of technology for all faculty.
3. Increasing the use of the media server.
4. Increasing the RAM on student laptops.
5. Upgrading the MECDHH library staff and patron computers.
6. Upgrading the patron computers in the MECDHH library.
7. Annually reviewing the technology needs of the academic staff and students.
8. Budgeting and seeking grant support for the new hardware and software outlined in Section 8 of this plan.
9. Seeking grant support to continue producing educational media in ASL

## **11. PROMOTION OF VARIOUS CURRICULA AND TEACHING STRATEGIES THAT INTEGRATE TECHNOLOGY**

*Describe how various curricula and teaching strategies that integrate technology effectively into the general curriculum and instruction will be identified and promoted based on a review of relevant research, and promoted to leading to improvements in student academic achievement.*

Robert Marzano, in his text *Classroom Instructions that Work*, emphasizes nine broad teaching strategies that have positive effect on student learning:

1. Identifying similarities and differences
2. Summarizing and note taking
3. Reinforcing effort and providing recognition
4. Homework and practice
5. Nonlinguistic representation
6. Cooperative learning
7. Setting objectives and providing feedback
8. Generating and testing hypothesis
9. Question, cues, and advance organizers.

The State of Alabama outlines five indicators to improve learning through the use of technology:

1. The curriculum must be designed to actively involve the student in the learning process through the use of technology
2. Instruction includes a variety of technology tools and online resources.

3. Instruction prepares students for the real world
4. Technology is used to attain curricular goals
5. Technology is used to gather and analyze data for improving student achievement.

Gallaudet University outlines nine areas of literacy, critical for the development of reading and writing skills in Deaf children:

1. Guided reading and writing
2. Shared reading and writing
3. Reading logs
4. Reading in the Content Areas
5. Independent Reading
6. Dialogue Journals
7. Research reading and writing
8. Writer's workshop
9. Reading to students

These three groups of strategies can easily be woven together to foster the mastery of written English through vision that is so critical for Deaf children. The combination of these educational strategies with the technology available at GBSD, results in an extremely powerful and Deaf-friendly learning environment. Using the SMART Boards and reading CDs, for example, teachers project books onto the Board enabling the storybook to become a touch screen. They highlight text; project writing samples; create and save an infinite variety of templates and visit interactive websites as a group.

Students download graphics to support their writing journals and Venn Diagrams to compare and contrast. Students do research and summarize their findings on their iBooks, then send them to peers for review, promoting immediate recognition of work. Students work collaboratively on projects knowing their section can be combined into a single PowerPoint presentation. Students use software such as Inspiration to represent learning in a wide variety of graphic organizers.

Using the Internet, teachers take students on virtual field trips to museums, landmarks and far away lands, use interactive content area websites and participate in WebQuests. Teachers as well as students have access to tens of thousands of lesson plans posted by teachers locally, nationally, and globally. The Internet is used for writing process activities, thematic units, response journals, jigsaw groupings and activity centers.

Through the use of the software, iMovie, students are learning to manipulate and fine tune their visual language, edit presentations, create poetry or analyze a familiar frozen text interpreted into ASL. Students create iMovies that could be shared with other schools for the Deaf.

Technology, through Distance Learning, allows Deaf students to interact with each other using their native language at a much deeper level than does the written word. Through these conversations, students gain more knowledge than can then be transferred through their second language, English. These kinds of activities are sometimes referred to as 'social contexts' encourage students to scaffold each other. This type of interaction encourages students to become effective communicators in both languages.

In the past, the news of the day was updated once daily through the morning newspaper and presented from a single point of view. Now the Internet updates us continuously. This capacity allows teachers and students ongoing access to current events from a multiple sources. They can then compare information, discuss it among themselves and come to their own conclusions. Teaching students to use browsers such

as AskJeeves and Yahoo!igans allows them to pose questions and find solutions to hypothesis or problems. Thus schools become an opportunity for the application of what's learned, rather than a place that simply passes on information.

Through websites and emails, students are able to gain immediate access to deaf students in other countries. Through the use of online translators students can become immediate pen pals, comparing and contrasting their lives growing up deaf in a hearing society on different parts of the globe. Each spring, GBSD students learn about a different country. This year, for example, they studied Mexico. They used the Internet to locate and contact schools for the Deaf in Mexico as part of this school wide unit. This led to email contact with one school followed by an exchange of letters and cultural artifacts.

Many ideas, strategies, concepts and explanations come from a text that is often used by teachers at GBSD, *Teaching with The Internet: Lessons from the Classroom* (2000) Donald Leu and Deborah Diadiun Leu.

## **12. PROFESSIONAL DEVELOPMENT**

*Describe how ongoing, sustained professional development for teachers, principals, administrators, and school library media personnel will be provided to further the effective use of technology in the classroom and/or library media center.*

At MECDHH the Director of Communications coordinates professional development with input from the school's administrative team, its faculty and staff. Nine full days and 11 early-release days are devoted to professional development each year. Several of these in-service slots are slated for technology-related professional development each year. In the 2004-2005 school year, for example, five of the 11 early-release days were devoted to mandatory technology training for the academic faculty. For the 2005 – 2006 school year, a GBSD teacher/leader will receive 100 hours of technology-related professional development under the NCLBA Title IID Competitive Educational Technology Grant and 75 additional hours in the 2006 – 2007 school year, if the grant is renewed. A mechanism for sharing this knowledge with the students and faculty will be incorporated into the professional development plans for every school year covered by this Technology Plan.

In revising this plan, the MECDHH Director of Communications surveyed GBSD's faculty to determine the level of progress and proficiency that had been accomplished since the previous Technology Plans were written in 2002 and 2003. The teachers were administered a self-assessment of their skills on 5 pieces of hardware and 11 software programs. The results verify the tremendous progress that has been made over the past few years as well as areas where additional training is needed. The results of this survey will inform professional development activities related to teachers for the duration of this Technology Plan. See Appendix K (page38) for results of this self-assessment survey.

Because several of MECDHH employees are Deaf, providing technology-related professional development poses some unique challenges. Deaf staff members have expressed a strong desire for technology instructors who are fluent in ASL. MECDHH has located one such instructor who is Deaf himself and works at Alpha One, an organization that promotes independent living for people with disabilities. This instructor provided lessons in Power Point to several staff members in the fall of 2004 and will do so again fall 2005. In addition to Alpha One, MECDHH has also partnered with VTECH in South Portland for both instruction and facility rental and with ALLTech, a division of the Spurwink Institute for instruction. MECDHH provides sign language interpreters for all professional development activities led by non-signers.

MECDHH employees routinely take advantage of the University of Southern Maine and other metropolitan Portland institutions of higher learning for professional development. MECDHH reimburses its employees a percentage of their college tuition as part of its Professional Development Policy. In the Fall of 2005, the MECDHH librarian will begin a Masters of Library Services program through the University of South Carolina over ITV and online. Library staff also routinely takes advantage of professional development activities provided through Athena, the Maine State Library, the Southern Maine Library District and the Falmouth Librarians' Group. When InfoCentre is installed, the library staff will receive training via E-learning modules before providing orientation and training to the faculty and students. The faculty will be expected to incorporate teaching InfoCentre into their subsequent lesson plans as soon as possible so that students can begin web-based searches of the MECDHH collection.

### **13. INNOVATIVE DELIVERY STRATEGIES**

*Describe how the development and use of innovative strategies for the delivery of specialized or rigorous courses and curricula through the use of technology, including distance-learning technologies, will be encouraged, particularly in areas that would not otherwise have access to such courses or curricula due to geographical distances or insufficient resources.*

As one of the original sites in Maine's Distance Learning (DL) Network, MECDHH has long been involved in efforts to creatively deliver courses and curricula through technology. As mentioned earlier in this plan, the Maine Point Project Director has her office on the GBSD campus and MECDHH's Distance Learning or ATM site is one of busiest in the DL network. Each year since the fall of 1999, MECDHH has broadcast American Sign Language instruction over ATM five mornings a week to numerous high schools around the state. These courses provide an opportunity for foreign language credit for hundreds of Maine high school students annually. Three evenings a week, MECDHH broadcasts additional ASL instruction aimed at families of Deaf and hard of hearing children served by MECDHH. This program known as *ASL for Families* was expanded during the 2004 – 2005 school year with Title IID grant funds. MECDHH has found other federal flow through money and additional general funds to support the expanded program throughout the time period covered by this Technology Plan.

Another innovative delivery strategy that MECDHH has used more and more each year is through Polycom units on loan from University of Maine System Network. Polycom units are used on a regular basis in MECDHH's Statewide Educational Services for department meetings and to include staff from satellite offices in All-Staff events. Polycom has been used to bring together GBSD students with students from other New England schools for the Deaf and certainly will again.

Finally a major innovation was completed since the MECDHH Technology Plan was last submitted: A Universal Access Room was added to MECDHH's DL site. The additional space and equipment in this room make possible two accommodations essential to providing equal access to Deaf and hard of hearing students, i.e. captioning and sign language interpretation.

In short, MECDHH will continue its longstanding commitment to innovative delivery strategies for specialized programming for Deaf and hard of hearing children and their families.

### **14. ACCOUNTABILITY MEASURES**

*Describe the process and accountability measures which will be used to evaluate the extent to which the plan activities are effective in integrating technology into curriculum and instruction, increasing the ability of teachers to teach, and enabling students to reach Maine's Learning Results.*

To evaluate the success of this Technology Plan in increasing the ability of GBSD teachers to utilize technology in teaching and their students to achieve the Maine Learning Results, a Technology Plan Review Panel will be convened in the fall of 2005 and charged with responsibility for reviewing the implementation of the plan four times during each school year. The panel will be made up of the following employees:

1. Both IT staff members
2. Both of the MECDHH library staff
3. The MECDHH Curriculum Coordinator
4. The Maine Point Project Director
5. The First Class Administrator
6. One K – Middle School Teacher
7. One High School teacher

The Director of Communications will oversee the panel and act as the panel's liaison to the MECDHH administrative team. Each quarterly review of the plan will answer these questions:

- Has the technology been ordered according to the prescribed time lines?
- Have appropriate grants that could cover the cost of the necessary technology been identified and applied for?
- Are there provisions in the GBSD operating budget for any of the needed technology expenses?
- What student achievement data can be reviewed at this time to look for improvement?
- Is the plan still on target or does it need revision?
- Have any professional development needs arisen related to the use of new technology? If yes, how will these needs be addressed?

The Review Panel will submit answers to these questions in writing to the Superintendent and copies will be added to Section 14 of the master copy of this Technology Plan.

## **EPILOGUE**

The MECDHH School Board's Strategic Planning Committee has recently adopted the April 2005 publication of the Conference of Educational Administrators of Schools and Programs for the Deaf, *The National Agenda: Moving Forward on Achieving Educational Equality for Deaf and Hard of Hearing Students*, as a guidebook for its organizational future. One of the eight goals outlined in the agenda relates to technology. The MECDHH Administrative Team recently selected Proposed Goals number 6.1, 6.2, 6.2 and 6.5 as among their highest priorities for the coming school year. See [www.ceasd.org](http://www.ceasd.org) for a copy of The National Agenda. See Appendix L (pages 39-40) for the agenda's technology goals.

# Appendices

## Appendix A

**GBSD Home Technology Survey**  
of the families of kindergarten through 12th grade students anticipated to return for the 2005-2006 school year  
Completed June 2005

#	Family	VCR	DVD	Computer	Color Printer	High Speed Internet	Visited Website	Digital Camera	Video Camera	Exp. w/ D.L.
1	Bigsby	1	1	1	-	-	-	-	-	-
2	Chastel	1	1	1	1	1	1	1	1	1
3	Dennis	1	1	-	-	-	-	-	1	-
4	DePeter	1	1	1	1	-	-	1	1	-
5	Duran*	1	1	1	1	1	1	-	-	-
6	Eaton	1	1	1	1	-	-	-	-	1
7	Gagnon	1	1	1	1	1	-	-	-	1
8	Gorton	1	1	1	1	1	1	1	-	-
9	Greenleaf	1	1	1	1	1	-	1	-	-
10	Kennagh	1	1	1	1	-	-	-	-	1
11	Larrivee	1	1	1	1	-	-	1	-	-
12	Lavallee	1	1	1	1	-	-	1	1	-
13	Long	1	1	1	1	1	-	-	1	1
14	Luksha	1	1	1	1	1	1	1	1	1
15	Macolini	1	1	1	1	-	-	-	-	-
16	Marr*	1	1	-	-	-	-	1	-	-
17	Marr	1	1	1	1	1	-	1	-	-
18	McCarn	1	1	1	1	-	-	1	1	1
19	Muise	1	1	-	-	-	-	1	-	-
20	Nadeau	-	1	1	1	1	1	1	-	1
21	Taylor	-	1	1	1	1	-	1	1	1
22	Thompson	1	1	1	1	1	1	1	1	1
23	Wilson	1	1	1	1	1	-	1	-	-
24	Yanga	1	1	1	1	1	-	-	-	-
		VCR	DVD	Computer	Color Printer	High Speed Internet	Visited Website	Digital Camera	Video Camera	Exp. w/ D.L.
TOTALS		22	24	21	20	13	6	15	9	10

\*These families have two students anticipated to attend GBSD in the fall of 2005.

## Appendix B

### GBSD's goals for advancing technology and their corresponding Maine Learning Results (MLR)

#### 1. Students will use technology to write.

##### MLR - English Language Arts (ELA) – E. Process of Writing and Speaking

- |        |                                                                                                                                                                                                                                                                                                                                                                        |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PreK-2 | 1. Respond to stories orally and in writing                                                                                                                                                                                                                                                                                                                            |
| 3-4    | 1. Identify strengths and weaknesses in their own writing and seek effective help from others.<br>2. Improve their finished product by revising content from draft to final piece.<br>3. Use planning, drafting and revising to produce, on-demand, a well-developed, organized piece that demonstrates effective language use, voice and command of mechanics.        |
| 5-8    | 1. Identify specific personal strategies, strengths and weaknesses in writing, and use direct feedback from peers and teachers to revise and polish the content of their finished pieces.<br>2. Use planning, drafting and revising to produce, on-demand, a well-developed, organized piece that demonstrates effective language use, voice and command of mechanics. |
| 9-12   | 3. Use planning, drafting and revising to produce, on-demand, a well- developed, organized piece that demonstrates effective language use, voice and command of mechanics.                                                                                                                                                                                             |

##### MLR - ELA – G. Stylistic and Rhetorical Aspects of Writing and Speaking

- |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3-4  | 1. Write stories (or other pieces) that show a definite beginning (introduction), middle (body), and ending (conclusion).<br>2. Write stories that include major events, develop settings, and deal with problems and solutions.                                                                                                                                                                                                                                                                               |
| 5-8  | 1. Write stories that show a definite beginning, middle and ending.<br>2. Write stories that include major events, develop settings, and deal with problems and solutions.<br>3. Write pieces and deliver . . . presentations, which identify a clear topic and reliably support that topic.<br>4. Write essays and deliver . . . presentations, which identify a clear topic and reliably support that topic.<br>6. Write and deliver . . . presentations that achieve distinct purposes (e.g., to summarize) |
| 8.   | Write pieces and deliver . . . presentations that include a variety of sentence structures appropriate to the purpose.                                                                                                                                                                                                                                                                                                                                                                                         |
| 9-12 | 1. Write stories that effectively develop such elements as setting, major events, problems and solutions.<br>2. Write pieces and deliver . . . presentations the ( <i>sic – that?</i> ) effectively use descriptively ( <i>sic – descriptive?</i> ) language to clarify, enhance and develop ideas.<br>3. Write pieces and deliver . . . presentations that include a variety of sentence structures and lengths.<br>4. Write pieces and deliver . . . presentations that are targeted for various audiences.  |

5. Write pieces and deliver . . . presentations that effectively employ explicit transitional devices in order to change a situation or to move the reader/listener through the piece.
6. Write pieces and deliver . . . presentations in which the organization of the work follows from the purpose.
8. Write pieces and deliver . . . presentations in a personal style, with a discernable voice and effective wording.
9. Write pieces and deliver . . . presentations that reliably support and provide details for the explicitly stated generalizations.
10. Make effective use of a variety of techniques to provide supporting detail (e.g., analogies, anecdotes, illustrations, detailed description, restatements, paraphrases, examples, comparisons) in written work and . . . presentations.

MLR - ELA – H. Research-Related Writing and Speaking

- |      |                                                                                                                           |
|------|---------------------------------------------------------------------------------------------------------------------------|
| 3-4  | 3. Present information obtained from research in a way that combines various forms of information (maps, charts, photos). |
|      | 5. Demonstrate initial understanding of how to site ( <i>sic – cite?</i> ) sources.                                       |
| 5-8  | 2. Demonstrate information collected for research topics into major components based on relevant criteria.                |
| 9-12 | 12. Report, . . ., using a variety of technological resources to present the results of a research project.               |

**2. Students will use technology to communicate.**

MLR – Career Preparation – Integrated and Applied Learning

- |        |                                                                                                                                                                                   |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PreK-2 | 2. Demonstrate the effect of technology on where people choose to live, how they communicate, how they travel and how they acquire goods and services.                            |
| 3-4    | 2. Identify the major components of a technological system (input, process, output, feedback) and cite examples in the school and/or community.                                   |
| 5-8    | 1. Research the need for ethical and legal standards concerning the application of technology (including communication systems, product liability, copyright/patent/ and safety). |
| 9-12   | 3. Demonstrate an understanding of how humans change and adapt technology to their benefit.                                                                                       |

MLR – ELA – Stylistic and Rhetorical Aspects of Writing and Speaking

- |     |                                                                                                            |
|-----|------------------------------------------------------------------------------------------------------------|
| 3-4 | 7. Use a variety of media and technological resources to make creative and expository . . . presentations. |
|-----|------------------------------------------------------------------------------------------------------------|

MLR – ELA – Research-Related Writing and Speaking

- |        |                                                                                                           |
|--------|-----------------------------------------------------------------------------------------------------------|
| PreK-2 | 3. Record and share information gathered.                                                                 |
| 9-12   | 3. Record significant information from events attended and interviews conducted.                          |
|        | 12. Report . . . using a variety of technological resources to present the results of a research project. |

MLR – Mathematics – Mathematical Communication

- |        |                                                                                         |
|--------|-----------------------------------------------------------------------------------------|
| PreK-2 | 1. Use numerals and symbols (>, <, =, +, -) to report numerical data and relationships. |
|--------|-----------------------------------------------------------------------------------------|

- 3-4 1. Use simple tables and graphs to communicate ideas and information in presentations in a concise and clear manner.
- 5-8 2. Use statistics, tables, and graphs to communicate ideas and information in convincing presentations and analyze presentations of others for bias or deceptive presentation.

MLR – Modern and Classical Languages – Person-to-Person Communication

- 3-4 1. Express personal information by using learned patterns in short sentences.  
3. Express feelings about familiar situations.  
4. Make and respond to simple requests.
- 5-8 1. Exchange information about personal events or familiar situations by using strings of short sentences.  
2. Ask for and give directions and simple instructions.
- 9-12 2. Clarify and ask for clarification in conversation or brief written exchanges.  
3. Present and exchange information about current, past and future events regarding issues of personal interest.

MLR – Modern and Classical Languages – Oral and Written Presentations

- 3-4 1. Produce simple stories about everyday events or activities by using single words and phrases (pictures may be used to supplement the stories).  
2. Describe daily life or personal likes and dislikes in short narratives.  
3. Present information on a specific topic in short written or ... sentences.
- 5-8 1. Write notes or short letters, on topics of personal interest, by using a series of connected sentences.  
2. Use strings of short sentences to make informative ... presentations on topics of personal interest.  
3. Prepare stories or brief written reports on daily life or on a topic studied in another subject area.  
5. Write about their feelings regarding a special person or event.
- 9-12 2. Write effective letters for various purposes.  
3. Write an explanation supporting an opinion on a topic of personal importance.  
4. Describe past, present, or future events in areas of public interest.  
5. Give directions for carrying out a multi-step task  
6. Plan and deliver a report on a self-selected topic.

MLR – Science and Technology – Communication

- 3-4 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas.
- 5-8 4. Make and use scale drawings, maps, and three-dimensional models to represent real objects, find locations, and describe relationships.  
5. Access information at remote sites using telecommunications.
- 9-12 2. Use journals and self-assessment to describe and analyze scientific and technological experiences and to reflect on problem-solving processes.  
3. Make and use appropriate symbols, pictures, diagrams, scale drawings, and models to represent and simplify real-life situations and to solve problems.  
7. Use computers to organize data, generate models, and do research for problem solving.

### 3. Students will use technology to learn.

#### MLR – ELA - Informational Texts

- 3-4 1. Use information contained in chapter and sections headings, topic sentences and summary sentences to construct the idea.  
4. Summarize informational texts (i.e., the main idea).
- 5-8 2. Identify useful information organizing strategies

#### MLR – ELA – Research-Related Writing and Speaking

- 3-4 2. Use print and non-print resources (e.g., encyclopedias, dictionaries, people, indexes) to gather information on research topics.  
3. Present information obtained from research in a way that combines various forms of information (e.g., maps, charts, photos).  
5. Demonstrate initial understanding of how to cite sources.
- 5-8 1. Collect and synthesize data for research topics from interviews and field work, using note taking and other appropriate strategies.  
3. Create bibliographies.  
7. Use search engines and other Internet resources to collect information for research topics.
- 9-12 3. Record significant information from events attended and interviews conducted.  
4. Identify and use library information services.  
6. Use CD-ROM, microfiche, and similar resource media for research.  
8. Use search engines and other Internet resources to do research.  
12. Report ... using a variety of technological resources to present the results of a research project.

#### MLR – Career Preparation – Integrated and Applied Learning

- PreK-2 1. Identify examples of technology being applied at home, school, or work.
- 3-4 1. Illustrate how products evolve as a result of technological systems.
- 5-8 2. Research recent technological developments and predict their possible spin-offs.
- 9-12 4. Use mathematical, scientific and technological tools to design and apply solutions to a community problem.

#### MLR – Mathematics – Data Analysis and Statistics

- PreK-2 1. Formulate and solve problems by collecting, arranging, and interpreting data.  
2. Make tallies and graphs of information gathered from immediate surroundings.
- 3-4 1. Make generalizations and draw conclusions using various types of graphs, charts, and tables.  
2. Read and interpret displays of data.
- 5-8 1. Organize and analyze data using mean, median, mode and range.  
2. Assemble data and use matrices to formulate and solve problems.
- 9-12 2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.

#### MLR – Mathematics – Patterns, Relations, Function

- 5-8 Describe and represent relationships with tables, graphs and equations.

#### MLR – Science and Technology – Ecology

- 3-4 4. Investigate the connection between major living and non-living components of a local ecosystem.
- 5-8 4. Generate examples of the variety of ways that organisms interact (e.g., competition, predator/prey, parasitism/mutualism).
- 9-12 1. Illustrate the cycles of matter in the environment and explain their interrelationships.

#### MLR – Science and Technology – Structure of Matter

- 5-8 7. Investigate the similarities and differences between elements, compounds and mixtures.
- 9-12 1. Trace the development of models of the atom to the present and describe how each model reflects the scientific understanding of their time.

#### MLR – Science and Technology – Cells

- 5-8 4. Identify the causes and effects of diseases, explain their transmission, and identify prevention strategies.
- 9-12 2. Illustrate how cells replicate and transmit information, including the roles of DNA and RNA.

#### MLR – Science and Technology – Implications of Science and Technology

- 3-4 1. Explore how cultures have found different technological solutions to deal with similar needs or problems (e.g., construction, clothing, agricultural tools and methods).  
2. Investigate and describe the role of scientists and inventors.  
3. Explore how technology (e.g., transportation, irrigation) has altered human settlement.
- 5-8 1. Research and evaluate the social and environmental impacts of scientific and technological developments.  
5. Identify factors that have caused some countries to become leaders in science and technology.
- 9-12 6. Research issues that illustrate the effects of technological imbalances and suggest some solutions.

#### MLR – Social Studies – Geography

- PreK-2 1. Use and construct maps and other visuals to describe geographic location, direction, size, and shape.
- 3-4 1. Construct and compare maps of Maine, the United States, and regions of the world to interpret geographical features and draw conclusions about physical patterns.  
2. Develop maps, globes, charts, models, and databases to analyze geographical patterns on the earth.
- 9-12 1. Use mapping to answer complex geographic and environmental problems.

#### MLR – Social Studies – Economics

- 9-12 1. Conduct a cost benefit analysis of a personal or business decision.

#### MLR – Visual and Performing Arts

- 5-8 5. Investigate the work of a professional who has an arts component within his/her work environment.

MLR – Visual and Performing Arts – Criticism and Aesthetics

- 3-4 7. Investigate how the elements, principles, and structures of the arts can be manipulated by communication media to persuade and to influence.
- 9-12 2. Research the work of critics, historians, aestheticians, and artists to analyze and interpret works and compare differing critiques of the same visual and performing arts works.

**4. Students will use technology to create.**

MLR – Visual and Performing Arts – A. Creative Expression

- PreK-2 2. Experiment with art forms.
- 3-4 1. Develop personal expression in works in each of the visual (2-D and 3-D) and performing arts (music, theater, and dance).  
4. Create original works using different media, techniques and processes to communicate ideas, feelings and meaning.  
7. Listen to and/or view a dramatic, musical, dance or visual art work and provide feedback to the artist (peer).
- 5-8 4. Use a variety of resources, materials and techniques to design and execute art works.
- 9-12 1. Create a visual or performance piece to communicate an idea, feeling, or meaning, using: a distinct style; imagination and technical skill; and the creative process, reflection and self-evaluation.  
3. Create a piece in one art form which complements one of the other art forms (e.g., music to complement poetry).

MLR – Visual and Performing Arts – B. Cultural Heritage

- PreK-2 4. Experiment with works exhibiting variety in style/technique, trends, and culture.  
5. Create original works that integrate one or more of the characteristics and purposes of artworks from different cultures (include own community and culture).
- 3-4 3. Demonstrate an understanding of the roles of visual and performing artists in various settings and cultures.
- 5-8 6. Demonstrate an understanding of the ways various arts activities enrich people’s artistic, intellectual, social, and emotional responses.
- 9-12 5. Develop visual and/or performing artwork in response to a historical, social or cultural condition using a variety of forms.



## Appendix E

### WEB FILTERING

The Maine School and Library Network does web filtering for the MECDHH. Each school using this MSLN service may set its own parameters as to what gets filtered. We use the standard B.E.S.S. settings with a few modifications. These block users from sites that fall under these categories:

Adults only	Illegal Activities	Recreation / Entertainment
Alcohol	Jokes	School cheating information
Auctions	Lingerie	Sex
Chat rooms	Message/Bulletin Boards	Swimsuits
Drugs	Murder/Suicide	Tasteless/Gross topics
Electronic Commerce	Nudity	Tobacco
Employment search	Personal Information	Violence
Gambling	Personal ads	Weapons
Games	Pornography	Web mail
Hate/Discrimination	Profanity	Web page hosting

Also blocked are some specific sites, AIM and AOL AIM Login, and a specific loophole: P2P/Loophole.

Exceptions to these rules are provided for sites that:

- Are educational
- Are for kids
- Contain historical information
- Contain medical information
- Are moderated
- Contain text only

We provide “override accounts” to teachers and other staff members who are being blocked from sites that they legitimately need to visit. These are password protected accounts that allow staff to visit otherwise blocked sites (usually electronic commerce) for a limited amount of time. The default time is 15 minutes. Students do not get override accounts.

Filtering is in effect 24 hours a day for all computers on campus. Students at Portland High School are protected by PHS’s filter.

## **Appendix F**

### **GBSD Educational Technology Timeline**

#### **2011-2012**

- Begin implementation of GBSD Technology Curriculum
- Students instructed in the use of iPhoto and iMovie
- All students complete at least one multimedia project, either individually or collectively
- Pilot Student Communication System – restricted staff access
- Science, Social Studies, and Mathematics core vocabulary presented in ASL and English on DVD for use in student iBooks.
- All student’ portfolios contain both a Creative Writing and ASL Narrative which meets Maine’s Learning Results.
- All teachers will use SMARTBoard technology both in group activities and web-based activities.

#### **2012-2013**

- Student Communication System fully implemented
- Full implementation of GBSD Technology Curriculum
- All student portfolios in Upper Elementary thru High School contain both a written English research paper and an ASL research presentation aligned with the Maine Learning Results.
- ASL learning activities (such as frozen text translations) are available on the GBSD server.

#### **2013-2014**

- All GBSD Curricula are available both on the school server and on the school website

## **Appendix G**

### **GOALS FOR PRINCIPAL/CURRICULUM COORDINATOR**

- All GBSD Curricula are accessible both on the GBSD server and on the school website
- CLAS is fully accessible on the school servers (includes assessment, teacher direction, student directions, rubrics, and benchmark papers) to staff with permissions.
- Student Communication System is fully accessible on the school server and website (as a source of information sharing of assessment systems and procedures).
- Student Communication System for student progress and achievement is fully accessible to staff with permissions and is password protected.
- GBSD technology curriculum is continually revised to meet the changing demands of an ever-increasing technology dependent society.
- Ensure teachers have access to new ideas and strategies used by other schools for the Deaf, especially the Laurent Clerc National Deaf Education Center.

### **GOALS FOR TEACHERS**

- Participate in professional development activities to gain experience with various types of educational technology and learn how to integrate this technology into curriculum.
- Allow multiple opportunities for student engaged learning. Teachers understand students' individual learning styles, language development, and IEP needs.
- Use technology for instruction with a point and application in real, authentic situations, and become a facilitator rather than a deliverer of knowledge.
- Encourage students to broaden their horizons with technology by means of global connections, electronic visualization, electronic field trips, online research, and multi-media projects.
- Encourage students to collaborate on projects and to use peer assessments.
- Create opportunities for students to share their work publicly
- Learn how to use various technologies are used in today in the world of work, and help students see the value of technology applications.

### **GOALS FOR STUDENTS**

- Students use technology as they see it used in real life, realizing the value of applications.
- Incorporate English language skills and ASL (through the use of iMovies and iPhotos) to strength reading, writing and signing literacy.
- Demonstrate continual progress along the GBSD Technology Curriculum Matrix. See Matrix below.

*Appendix G, continued...*

## **Curriculum Matrix Goals**

The Curriculum Matrix Goals will be taught and practiced within content areas. There will not be a separate 'computer' class. Technology should not be used for technology's sake. Educational objectives are more efficiently achieved, with more depth and with more flexibility through technology.

1. General Hardware
2. General Software
3. Operating System
4. Word Processing
5. Keyboarding
6. Graphics
7. Desktop Publishing
8. Spreadsheet
9. Database
10. Video Production
11. Multimedia
12. Electronic Presentation
13. Telecommunications
14. Networking
15. Web Authoring
16. Web Research
17. Graphical Organizers
18. Social and Ethical Practice

## Appendix H

GOALS	SAMPLE ACTIVITIES	NEW HARDWARE OR SOFTWARE NEEDED	COST	FUNDING SOURCE
<b>1. Students will use technology to write.</b>	<p>1. Students will generate a picture of a grocery item by typing its name.</p> <p>2. Students will use a keyboard appropriately.</p>	<p>1a. Intellikeys alternative keyboard 1b. Magic Touch Touch Screen 1c. Pneumatic Adjustable Workstation</p> <p>2. “Learn to Type” Software</p>	<p>1a \$400 1b \$210 1c \$220</p> <p>2. TBD</p>	MECDHH operating budget; grants; federal flow through funds
<b>2. Students will use technology to communicate.</b>	<p>1. Students will email each other and their teachers.</p> <p>2. Residential students will email their families.</p> <p>3. Students will present class projects using Power Point.</p>	No new purchases required.		
<b>3. Students will use technology to learn.</b>	<p>1. Students will benefit from educational television programs, DVDs and videotapes.</p> <p>2. Students will use the resources of the library to enhance their classroom learning across all grades and content areas.</p> <p>3. Students will take virtual field trips to enrich curriculum content.</p>	<p>1 One television set per classroom with built-in DVD and VHS players</p> <p>2a. InfoCentre web-based library management system 2b. Upgrade library patron computer according to Library Enhancement Timeline. See Appendix I.</p> <p>3. Upgrade DL room per Distance Learning Enhancement Timeline. See Appendix J (page 37).</p>	<p>1. \$330 - \$500 each</p> <p>2a. By July 15, 2005, \$615</p> <p>2b. \$5,590 over 3 yrs</p> <p>3. TBD</p>	MECDHH operating budget; grants; federal flow through funds

<p><b>4. Students will use technology to create.</b></p>	<p>1. Students will use a digital camera to create original works of art.</p> <p>2. Students will create GIF animations, videos and QuickTime VR.</p>	<p>1a. Adobe Photoshop Album for student and faculty laptops  1b. Adobe Photoshop Elements for student and faculty laptops  1c. Extensis Portfolio 6 for student and faculty laptops  1d. Photo Quality Printer  1e. Upgrade RAM on student laptops</p> <p>1f. One 5.0-Megapixel Digital Camera</p> <p>2a. Clay Animation Kit</p> <p>2b. 4 Digital Video cameras</p> <p>2c. Fire wires  2d. Fire wire streams  2e. Tripods</p>	<p>1a. \$50  1b. \$50  1c. \$110  1d. TBD  1e. \$800 - \$2,400 depending on size of upgrade  1f. \$400</p> <p>2a. \$236 for five users  2b. \$300 - \$500 each  2c. \$390  2d. \$16  2e. \$45 - \$175 each</p>	<p>MECDHH operating budget; grants; federal flow through funds</p>
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## **Appendix I**

### **Library Enhancement Timeline**

Goal: To make the library computer systems mobile, cross-platform and wireless to provide library and information services on and off-campus.

#### **2011-2012 School Year**

1. Purchase and install Sagebrush's InfoCentre, a web-based library cataloging system that allows for cross-platform and remote accessibility of the library catalogue.
2. Upgrade Patron Computer #3 with 3D processed 128MB video card for graphic support of video streaming and digital image processing and speakers for students who can access sound during multimedia presentations.
3. Upgrade Patron Computer #2 with 3D processed 128MB video card, speakers and 256MB RAM.

#### **2012-2013 School Year**

1. Replace Patron Computer #1 with a 2Ghz iMac G5 with a 17" display and expanded memory to 1GB.
2. Install Adobe Creative Suite 2 Premium software in the new Patron Computer #1. The software package includes full new versions of Adobe Photoshop® CS2, Illustrator® CS2, InDesign® CS2, GoLive® CS2, and Acrobat® 7.0 Professional software with Version Cue® CS2 file manager and Adobe Bridge file browser.
3. Upgrade circulation desk with
  - a. An Apple PowerBook laptop equipped with Blue-Tooth technology.
  - b. A flat screen monitor with Blue Tooth technology
  - c. A compatible scanning wand

#### **2012-2013 School Year**

1. Replace both Library Office computers with one Apple PowerBook laptops equipped with Blue Tooth technology able to sync with the Circulation Desk monitor from 10-20' away.
2. Upgrade document scanner technology to high-speed, high-resolution capable of automatically converting lengthy documents to PDF format.

## **Appendix J**

### **Distance Learning Enhancement Timeline**

Goal: To make all distance learning programs fully accessible for students, parents, staff and school board members.

#### **2011-2012**

1. Purchase newest edition Polycom units with open and closed captioning capability.
2. Purchase training contract to provide professional development for staff on use of enhanced functionality.

#### **2012-2013**

1. Purchase yearly virtual tours for students to experience NASA, the National Art Gallery, the San Diego Zoo, etc.
2. Upgrade DL equipment in ATM/DL room

## Appendix K

### GBSD K-12 Teacher Technology Skills Self-Assessment

**In June 2005, the ten GBSD K through 12<sup>th</sup> grade teachers were asked to assess their ability with various educational hardware and software. They were asked to describe their current comfort level with each as either**

**Skilled** meaning the teacher feels s/he needs only advanced training;

**Semi-skilled** meaning the teacher feels s/he needs more training to be comfortable or

**No skill** meaning the teacher has little or no experience with this at all.

Hardware	Skilled	Semi-Skilled	No Skill
iBook	4	6	
SMART Board	1	7	2
Digital Camera	2	8	
Digital Video Camera	1	5	4
Scanner	1	3	6

Software	Skilled	Semi-Skilled	No Skill
First Class Email	7	3	
Saving data to Novell	5	4	1
FileMakerPro	4	5	1
Editing Images	2	7	1
Inspiration	4	6	
Kidspiration	3	6	1
HyperStudio	1	1	8
PowerPoint		5	5
iPhoto	1	6	1
IMovie	1	1	8
Web design		1	8

## Appendix L



### Goal Six: Technology

A Fundamental Tool for the Communication and Educational Enhancement of Deaf and Hard of Hearing Students.

#### Goal Statement

Technology must be made available for and used by deaf and hard of hearing students to enhance their communication and language opportunities, enlarge their educational options, increase cognitive and academic skills, and enrich their lives now and in the future.

#### Background

Technology is of particular importance for deaf and hard of hearing students because it provides unique and necessary communication and educational access. Technology tools and resources **must** become an integral part of both the teaching and the learning process if they are to have an impact on the achievement of deaf and hard of hearing students. Within a sound educational system, deaf and hard of hearing students can effectively use technology as they seek information and widen their worlds, as they learn to evaluate and analyze, as they seek to solve problems and make decisions, and as they become creative communicators, collaborators, publishers, and producers as well as informed, responsible, and contributing citizens.

Deaf education must incorporate instructional and assistive technologies, telecommunication devices, and access to contemporary and emerging technologies.

#### Proposed Goals

6.1 All instructional and information technologies used in the teaching and learning process for deaf and hard of hearing children should be, as appropriate for each individual child, visually and/or aurally/orally accessible.

Rationale: "Full access" incorporates captioning, visual signaling and alert systems, telecommunication devices, LCD information displays, SmartBoards, and other technological accommodations.

6.2 Educational programs for students who are deaf and hard of hearing should integrate technology standards into the general curriculum at all developmental levels.

Rationale: Federal law including, IDEA and NCLB, emphasizes the importance of the power of technology in all areas of K-12 education, from reading to science to special education.

6.3 Accurate diagnosis of hearing loss and appropriate amplification and other assistive technologies, both acoustic and visual, is the right of all deaf children.

Rationale: Audiology is part of the education of deaf children. Information presented regarding the relative merits of any assistive technology, including cochlear implants, should be done by a knowledgeable and unbiased professional.

6.4 Technologies such as videoconferencing, distance learning, and video-relay services should be utilized to allow deaf and hard of hearing students the opportunity to communicate, collaborate, and interact with peers, experts, and other audiences.

Rationale: Innovative technology opens new doors for communication access, networking, and the sharing of resources.

6.5 Deaf students with additional disabilities or intensive educational needs may require specialized technology intervention.

Rationale: Special-needs students may require special augmentative communication devices and other technology applications to increase communication, environmental control, and mobility.

