Network Design Project

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TIE 532

**Description of Project**

Saint John Berchmans School is a Catholic Pre-K through 8th grade two building campus that serves approximately 250 students from the urban communities of Logan Square and the surrounding areas. In 2005, the Archdiocese stated that they would no longer subsidize the school because of the massive amount of debt that had been racked up over the years. The community, parents, faculty, and staff were determined to keep the school running. The Save Our School Campaign brought the parish and school together in a major effort to raise the funds needed to stay open. Hundreds of individuals made donations and parents and staff organized fundraisers. A few months after the Archdiocese said the school would be shut down, enough money had been raised to reduce the accumulated debt. The Archdiocese changed its decision and the school remained open thanks to the families, community members, and others.

Although the school is still in debt, it is thriving and growing. Each year since 2005, enrollment has soared. The money from this enrollment and the Archdiocese has been used to “fix” the two buildings. The school was close to falling apart and last year, a $4 million project was started to fix the roofs, tuck point, install new windows, etc. The only technological advancements over the past few years have been the addition of 36 new IBM computers and new Promethean boards in all rooms except for the four preschool classrooms and two kindergartens.

Saint John Berchmans School is composed of two buildings around the block from each other. One building (Logan) consists of Pre-K through 3rd grade, art room and library and the other (Altgeld) is 4th through 8th grade, a gym, library, music room, and computer lab. The students in the Logan building rarely use the computer lab because it is a hassle walking to the other building. It would be much more convenient to have a computer lab setup in the Logan building for easier access and use. I feel that if there were another computer lab, the teachers would be more apt and motivated to use it. In the Logan building, there is an empty classroom on the second floor that would be a perfect fit for this new computer lab.

The computer lab would have 36 iMacs to ensure enough computers for each student per class and a few extras in case of technical issues. iMacs are a great fit for school settings and especially computer labs. They offer many capabilities and run less risk of crashing or obtaining viruses. The lab in the Altgeld Building has 36 Lenovo desktop computers that will need to be updated in a few years. Knowing that those PCs would not last too many more years, iMacs in the new computer lab would be our best choice. From research done, Macs seem to be the better choice in a school setting and according to the network specialist at my school, the Altgeld building might be headed that route in the years to come. In order to efficiently and quickly run iMacs in our school, we will also be purchasing a new Mac mini with Lion Server and the AppleCare Protection Plan. The Mac mini server includes the following specifications:

* 2.0GHz quad-core Intel Core i7
* 4GB memory
* Dual 500GB 7200-rpm hard drives1
* Intel HD Graphics 3000
* OS X Lion

http://www.apple.com/macmini/server/

The new lab would also include a Promethean board, a printer, a scanner, and an additional iMac for the teacher or monitor in the class. I feel that a Promethean board is necessary in a computer lab (especially with younger students) in order to visually guide the students in their programs, games, activities, assessments, etc. In addition to the computers, we would purchase headphones and speakers for each individual port. To save on costs, we will be utilizing old or donated tables and chairs to furnish the new computer lab.

The needs of the school are based off of completed survey results and the current technology integration plan from schools in the Archdiocese. Starting in 2011, the Archdiocese of Chicago began to revise the technology integration plan in order to identify school needs. The revision of this plan was dependent upon extensive data gathering, processing and analysis. In preparing the plan, the Office of Catholic Schools (OCS) utilized a vast array of data sources to draw a picture of the current reality of technology integration within schools. There is a technology survey that has been or will be sent out to all Catholic Schools. This provides data on local school planning, technology budgeting, network infrastructure, hardware inventory, teacher technology skills and future plans. Many schools lack technology plans and staff development programs, but the situation is changing. Saint John Berchmans School has given the technology survey to parents and teachers and from those results, will build a new technology plan by 2013.

To plan out the design, budget, and components of the new computer lab, I met with the technology support individual, Joe D’Arco, at Saint John Berchmans. We ended up meeting a total of six times to do the following: learn about the schools’ current network and the plans for the future, to get a technology tour (complete with pictures) of the school and church, to have a question and answers session, to go over completed project, etc. He was extremely helpful and I was intrigued by how much he knew about the school system, technology, and networking. I am excited to see what changes will be brought to our school in the upcoming years. Plans are in the works!

**Hardware/Software Components**

 There are many things that need to be purchased in order to set up a new computer lab at Saint John Berchmans. Although the entire project will cost a large amount of money, it will change our school in a positive way and be an excellent technology addition to the pre-k through 3rd graders. The new Mac computer lab is needed at our school to better integrate technology into every day lessons as well as prepare our students for the future of technology. A lot of the purchases are high quality items in order to ensure the longevity of the lab and allow for minimal maintenance. The total cost for the design, purchase, and set up of the new Mac computer lab is $70,869.37. Below is a table of the items needed (hardware/maintenance) as well as the quantity needed for each.

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| **Item** | **Quanity** |
| Mac mini with Lion Server | 1 |
| AppleCare Protection Plan for server | 1 |
| 21.5 inch iMac computers | 37 (36 student use; 1 teacher use)  |
| iMac Locks  | 37 |
| Ultimate Security Equipment Bracket Locks  | 2 |
| 300 PRO Series 87" ActivBoard w/ Short-throw Mount System and Projector | 1 |
| ActivEngage Support – 5 years | 1 |
| Printer: Xerox Phaser 6700/DN | 1 |
| Xerox Toner Kit | 1 |
| Epson Perfection V750-M Pro Scanner | 1 |
| Kensington HI FI Headphone Noise Reduction | 37 |
| AppleCare Protection Plan |  37  |

The following is a table of the software we will purchase or download to accompany our computers in the new lab. Some of the software is necessary on all computers campus-wide, while others are games, programs, and apps that are additional. As part of the budget, I will be allowing each teacher (pre-k through 3rd grade) to purchase $50 worth of apps from the Mac App Store.

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| --- | --- | --- |
| **Item** | **Quantity** | **Cost** |
| Jumpstart | 37 | $149.99 Lifetime Membership (per 6 computers) |
| Children’s Progress Academic Assessment (PreK-3) | 37 | $15 per child |
| Adobe Reader X | 37 | Free |
| RenWeb | 1  | Free Download through School (Faculty Login) |
| Active Inspiron | 1 | Free |
| Mac App Store apps | 13 | $50 per teacher |
| Typing Instructor for Kids (K-3) | 37 | $29.95 (Individual Annual Fee)  |
| Kidspiration 3 (K-5)  | 37 | $640.00 (20-computer license)$380.00 (10-computer license)$295.00 (5-computer license) $59.00 (1-computer license) |

**Jumpstart**: JumpStart.com includes thousands of games and activities for kids ages 3-12. Jumpstart includes activities (math, reading, critical thinking) that make learning fun. In addition, Jumpstart.com offers parents free access to Piggyback, an easy-to-use Facebook application that allows parents to easily review and reward their children's activities in JumpStart. With Piggyback, parents get updates on their child's game play in real time, which can be monitored for safety and accomplishments. The Altgeld computer lab already has a lifetime membership to Jumpstart.com, and decided that it would be beneficial to include in the Logan computer lab. The lifetime membership is the best value and this software will be utilized by grades prek through 3rd. (http://www.jumpstart.com/)

**Adobe Reader X:** Adobe Reader is free software that lets you open, view, search, digitally sign, verify, and print PDF files. It's the only PDF file viewer that can open and interact with all types of PDF content, including forms and multimedia. (http://www.adobe.com/products/reader.edu.html?promoid=DJDXD)

**RenWeb:** RenWeb is a fully integrated web based school information system. This private and secure software allows our school to maintain data including student attendance, classroom grades, homework assignments and family tuition accounts. Parents can easily check on their child's progress, review their child's homework assignments and view tuition information. Currently, our school uses RenWeb in all buildings and we would download this system on the teacher computer in the new lab. (http://www.renweb.com/)

**ActivInsipre:** This software is included with the purchase of the Promethean board I have chosen for the new computer lab. This software works on any interactive whiteboard or projector and computer. This software enhances group collaboration and teamwork in the classroom using Promethean's Learner Response Systems and creates differentiated lessons filled with rich, powerful activities to grab the attention of the whole class. The Promethean Planet website has thousands of lessons and resources that are free to access and can be used with ActivInspire to engage all students.

(http://www.prometheanworld.com/en-us/education/products/software/activinspire)

**Typing Instructor for Kids (K-3):** This is an excellent typing software for kids that includes great features, games and challenges. This educational, entertaining, and motivating game will teach the students keyboarding basics and proper hand positions. It offers rewards every step of the way with age-appropriate lessons, challenges, tests, and over 30 arcade-style, game challenges. Currently, there is typing software in the Altgeld Building (*Typing Quick and Easy*), but it is only compatible with Windows. The system requirement for this typing software is a Mac OS X 10.4 or higher. (http://www.typinginstructor.com/)

**Kidspiration 3:** This software program is geared towards grades K-5 and provides a cross-curricular visual workplace for learners. Students combine pictures, text, numbers and spoken words to develop vocabulary, word recognition, reading for comprehension, writing and critical thinking skills. Kidspiration helps students develop strong thinking skills, strengthen reading and writing skills, and build conceptual understanding in math. (http://www.inspiration.com/Kidspiration)

The following hardware and software components come included with the purchase of an iMac computer:

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| --- | --- | --- |
| Apple Wireless Keyboard | Magic Mouse | Built-in HD camera |
| Built-in stereo speakers | Built-in microphone | 2.5GHz quad-core Intel Core i5 with 6MB |
| 4GB (two 2GB) of 1333MHz DDR3 memory | 500GB hard drive | AMD Radeon HD 6750M graphics processor |
| Four USB 2.0 ports | Slot-loading 8x SuperDrive with 4x double-layer burning | One-year limited warranty |
| Software: **OS X Lion:** Includes Mail, Address Book, iCal, the Mac App Store, iTunes, Safari, Time Machine, FaceTime, Photo Booth, Mission Control, Launchpad, AirDrop, Resume, Auto Save, Versions, Quick Look, Spotlight, QuickTime, and more. | iLife ‘11 | 90 day complimentary phone support |

**Budget (see Excel spreadsheet)**

**Topology (see Visio attachment)**

**Organization and Administration**

 The organization and administration of the new computer lab/professional developments will be done by the following people:

* Megan Meade (Research and design of new Logan computer lab; will schedule PD workshops at SJB)
* Joe D’Arco (Network/Technology Specialist: will help install new hardware and software programs and make sure connections are set up properly; will oversee PD workshops)
* Parent volunteers (for set up of furniture, computers, hardware, etc.)
* Office of Catholic Schools (OCS) (administering various workshops at SJB for teachers and staff)

**Securing Network Hardware/Software**

In order to prevent theft or loss of the new equipment purchased, we will be safeguarding the large items (iMacs, scanner, printer). These items will be fastened to the workstations with cable locks purchased from retailers. For the iMacs, we will be purchasing iMac locks for all 37 computers. Each iMac lock is connected through the built in security slot. The great thing about the iMac locks is that it includes a unique and patented peripheral trap which protects the keyboard, mouse and power adapter cables. This all in one lock includes a 6 foot steel security cable, two piece stainless steel security lock head, two keys, and a carry pouch and is sold online at www.maclocks.com at a cost of $44.95 per unit. We cannot take any chances with security and although it will increase our budget significantly, it is better to have a fully secured lab than one susceptible to damage or theft. To secure the scanner and printer, we will be purchasing two Ultimate Security Equipment Bracket Locks from www.compulocks.com. These locks attach to peripheral equipment and sell for $43.95. As an added measure of security, we will be putting identification codes on all equipment, using ID tags and labels. This helps keep the items secure and keeps track of the inventory.



 **Scanner and Printer Bracket Locks**

http://www.compulocks.com/index.php/pclocks/ultimate-security-equipment-bracket-lock-including-peripheral-security.html

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 **iMac locks**

http://www.maclocks.com/index.php/imac-locks/imac-security-cable-lock.html

Although Macs are not prone to viruses and spyware, it is extremely important to keep the technology protected at a school. No system is going to be one hundred percent secure when it comes to viruses and it is better to be protected. This is where antivirus software and updates come in to play. Due to budget constraints, our school will not be able to purchase anti-virus and malware software for each computer per year. It is approximately $50 per computer for one year of protection. Although it is something we may think about including in the future, it is not in the budget for the new computer lab. Instead, we will be installing software updates and security updates on a regular basis. We will also have our internet set at high security and teach the students how to properly use and search the internet.

**Copyrights/Fair Use/User Safety**

 It is important for all public computer labs (school, libraries, etc) to protect themselves from possible lawsuits when it comes to Copyright, Fair Use, and User Safety. Staff and teachers first need to be educated on copyright, usage, and licensing laws and can then talk to their students about them in a simpler way. Students need to be taught not to use things off of the internet (writing samples, pictures, software programs, etc) without getting permission or citing their resources.

 It is extremely important to educate students and teachers from the start. Once the computer lab is open and running, the technology specialist or network specialist should set up a short meeting to discuss the various laws and rules of the new lab. They are to be strictly enforced to ensure that the lab is being used properly and legally at all times. The following is a list of rules and acceptable use policies that would be taught and posted in the computer lab:

* The lab is to be used for academic purposes, rather than recreational activity.
* Access to the computer lab is teachers and students only. If for any reason, it is open to parents and volunteers, the lab will be strictly supervised.
* Children should not be allowed in the computer lab alone at any time.
* Each teacher is responsible for their class and should make sure each student is observing all copyright laws. It is the responsibility of the classroom teacher to teach about internet safety and copyright laws.
* The software and documentation made available in the lab is for use only in the lab and is not to be duplicated for use elsewhere. The same software and hardware have been purchased for all 37 computers.
* Food and drink are not allowed in the computer lab.
* All downloads are restricted and can only be done by an administrator if necessary.
* Students are to be aware that personal information is not to be entered unless authorized by the teacher.

**Professional Development Activities**

 With the addition of a brand new computer lab, Macs, and other equipment, teachers and staff are going to have plenty of questions about the utilization of things. Before beginning use in the new computer lab, I would set up a meeting after school one day to fully explain the rules in the lab, how everything is laid out, how to turn certain things on and off, and how to use the basic equipment. Once this has been complete, teachers can feel free to use the computer lab at the times they have signed up for or whenever it is free. After learning the basics, I will have multiple professional development opportunities available to teach, train, and help the teachers learn about their new environment. With such limited technology at the school prior to the new lab, teachers are going to need as much support and training as they can get.

 To start off, I would set up a professional development dealing with the Promethean board. The preschool and kindergarten teachers do not have Promethean boards in their classrooms, but have voiced their desires to have one. With the addition of the Promethean board in the lab, the early childhood teachers not only can teach lessons using the Promethean board, but they can also guide and support the students when they are using the lab. The Promethean board is simply a large computer screen and the students will be able to follow along with the game, activity, or project on their own computer screen. The Archdiocese of Chicago has many technology workshops that can be set up at our school free of cost. Teachers earn CPDUs for their participation in the workshops as well. For this topic, I would have a Promethean board workshop. In this workshop, teachers will learn the basics and some advanced features of using the board. They will also learn how to apply the technology into their current teaching practices, as well as integrating current lesson plans into instructional delivery using the Promethean board.

 The previously mentioned Promethean board workshop will go into minor details about the care, maintenance, utilization, and skills needed to successfully work the interactive board. In addition to the free Archdiocesan workshop, I will also be purchasing an ActivClassroom Technical Training workshop to be set up at our school. (http://www.logicalchoicestore.com

/ProductInfo/10899.aspx). It is more expensive to have the technical support workshop come to our location, but more teachers have said they would attend if they did not have to travel to a different site. In order to get the most out of the workshop, I would invite all teachers Pre-k through 8th grade to join. The total price for this workshop is $2,000.00.

 The Office of Professional Development in Educational Technology assists schools within the Archdiocese of Chicago in integrating technology into their curriculum and instructional methods. As part of the new “Technology Integration Plan” the OCS (Office of Catholic Schools) is creating staff development opportunities that move educators from acquiring isolated skills in the area of technology to integrating technology into the curriculum. The next few workshops to be hosted through the OCS free of charge would be specific software programs or teaching through lessons using technology.These include workshops on *Kidspiration, iMovieMaker*, *Web 2.0 Tools*, *Podcasting and Blogging*, and *Webquests.*

 The Archdiocese of Chicago hosts many other technology workshops that show teachers new and improved ways to integrate technology into any curriculum, grade level, and content area. At Saint John Berchmans, I would set up the following workshops free of charge:

* **Using the Internet for Teaching and Learning**: This class is ideal for those with little or no exposure to the Internet. We will examine browser functions, search engines and explore a variety of sites. Participants will become comfortable “surfing” the Internet.
* **Easy Ways to Use the Internet in Teaching:** In this workshop, teachers will access lesson plans, student activities, and websites that meet curriculum and state standards.
* **Technology Instruction across Content Areas**: Utilizing curriculum developed by the Center for Teaching and Learning, participants become familiar with software and websites that are specific to a particular content area that enhances teaching in the inclusive classroom. They learn to use technology as a tool in Language Arts, Math, and Science classes.

http://goo.gl/Etrr0

http://goo.gl/F2noP

**References**

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http://www.typinginstructor.com/

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http://www.techsoup.org/learningcenter/ctc/page5203.cfm

http://www.copyright.gov/

http://www.compulocks.com/index.php/pclocks/ultimate-security-equipment-bracket-lock-including-peripheral-security.html

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http://goo.gl/Etrr0

http://goo.gl/F2noP

http://www.apple.com/macmini/server/