High School Technology Improvement Project

Mark A. Curcio

Belle Vernon Area School District

John Smith
Program Office
Community Foundation
1134 Common Lane
Some City, PA 21532

Dear Mr. Smith:

The Belle Vernon Area School District is respectfully requesting a grant in the amount of $80,000 for our High School Technology Improvement Project. As the biggest building in our district, the high school contains close to 1,000 students from Washington Township, Fayette City, North Belle Vernon, Belle Vernon, and Rostraver Township. Due to the large population of students at the school, access to technology is not at the level where it should be compared to other schools in Western Pennsylvania. The High School Technology Improvement Project will allow us to develop a sign-out laptop laboratory, provide access to three mobile laptop carts, implement teacher training and student hardware certification programs for troubleshooting, and develop our own technology plan for the community and our district to view and respond.

Our school board is enthusiastic about this program and eager to launch it in an effort to be considered one of the most innovative and technology-driven high schools in Pennsylvania, considering we are currently nowhere near average. Should this project be considered successful based on reports completed by both our teachers and students, our board is committed to integrating a large portion of our budget towards the program so it one day becomes an integral part of our curriculum.

Thank you for your consideration of our request. Please do not hesitate to contact me for any questions or concerns that are not answered by this grant proposal, as well as to learn whether there is a possibility of meeting with you to discuss the merits of this proposal. Feel free to contact myself at (412) 414-7490 or markcurcio3@yahoo.com, or the district at (724) 808-2500.

Sincerely,

Mark Curcio
District Substitute Teacher

ENCLOSURE

Summary

We are requesting funds to create and implement an innovative and technology-based laptop laboratory for use by the high school students and teachers of Belle Vernon Area. The main purposes of this lab and mobile carts are to provide teachers of the district opportunities to improve their craft through the use of technology, to offer a class-less laboratory opened to the entire school that can be signed out, and to promote the importance of technology education and iCritical Thinking to not only the teachers, but also the students. We strongly believe that this project will emphasize the importance of technology in the future of education and the importance of technology in our graduates' daily lives after high school. Your investment of $80,000.00 will fulfill the funding we need to fully implement the innovative lab, laptop carts, and teacher/student training in our district, and we are excited about the prospect of partnering with you. Thank you for your consideration of our request.

Introduction

Belle Vernon Area School District is a district located twenty-five miles southeast of Pittsburgh in Westmoreland and Fayette County. My name is Mark Curcio, a current substitute teacher at the district and looking for full-time employment this upcoming 2010-2011 school year. I am 2009 College of Education graduate of Pennsylvania State University, and I am currently slated to receive my Master's Degree in Instructional Technology from Duquesne University this upcoming Spring 2011. As a true advocate of the importance of technology in the classroom and having taught in the high school as a student teacher and a substitute, I notice the need of technology advancement for the betterment of the district's students on a daily basis.

This past Spring, I was reading an article about a new exam entitled, "iCritical Thinking" and how it is open to everyone, focusing on educators and their students. As defined by ETS.com, iCritical Thinking is the ability to "think critically and solve problems using a full range of information and communication technology (ICT) literacy skills". In today's world, as we both well know, technology is the leading medium when it comes to all types of employment. For college bound students, computers are used on a daily basis whether it is to check email, schedule classes, create spreadsheets for a statistics class, or write a paper for English 101. For students entering the workforce right out of high school, computers are used just as much whether it is updating specs at a car shop, ordering and processing materials for a shipping business, or simply running an at-home business using spreadsheets and other types of business software. I personally would love to see the *iCritical Thinking* certification become a requirement for graduation, but due to the price of the exam and the number of students graduating, this would have to be decided at the school board level. Future discussion based on the level of success of this project could be a future endeavor worth pursuing. Technology is what runs today and its updates and implements will run tomorrow.

After subbing a few technology and video classes and noticing students only learning the basics of what computers have to offer (i.e. Microsoft Office), I often found myself comparing the district to other districts in the area and how far advanced they were in technology compared to BVA. The best two examples are when I long-term subbed at Butler Area and interviewed at Avonworth, located outside of Pittsburgh. A rather new district, Avonworth presents the area with full-color monthly newsletters updating parents and community members about student accomplishments and what is going on in the district, focusing exclusively on technological advancements. Both Butler and Belle Vernon have news programs in the morning, and besides

the fact that Butler is a larger school, they boast a far more advanced video editing department. I've heard the ideas Belle Vernon Area's students have, but they really do not have the mediums necessary to turn these ideas into informative and memorable pieces of media. I, along with the teachers of BVA, would love to give our students the opportunities to learn and implement advanced technology on a daily basis. The possibilities are truly endless, and these possibilities are what have prompted me to attempt and improve the technology program at the high school.

Statement of Need

The need for technology advancement at Belle Vernon Area high school is great. Based on a façade that I completed on the district during the Spring of 2010, Belle Vernon Area scored an unacceptable 44 out of a possible 200 points. The most points were lost in the sections of a known technology plan, whether it or not it was accessible by the district and its community, if there was an IT expert always on-hand for computer problems throughout the day and teacher training.

This project will accommodate all of these needs both directly and indirectly:

1. By implementing new mobile laptop carts and an always empty, sign-out when needed laptop lab, a technology plan will be written and updated due to the newest additions to the district. Plus, because of the importance of community involvement by this project, the plan will be posted on the school website for all inhabitants and tax payers to see.

2. The lab and carts will also eliminate the problem of getting lab time, as expressed by various teachers at the high school. Using a sign-out method, the lab will never have a

class in it unless it is signed out, and the other three mobile laptop carts will be opened to everyone, not just CFF teachers.

3. The high school does have an IT personnel, but after talking to various teachers, getting a hold of this person is rather hard to do and/or scheduling is always a problem. This project will address this problem because of the addition of a Computer Hardware class that will be added to the curriculum. No hiring will be necessary because any teacher with technology certification will be qualified to teach the class. The semester-long class, opened primarily to juniors and seniors, will teach students the skills of computer programming and troubleshooting. After the completion and passing of the class, these students will then be IT troubleshooting certified by the district and will be "on call" during their respective study halls. If the IT person hired by the district is busy or not relatively available, one of these certified students will be paged through the intercom to help a teacher with a computer problem. Not only will this eliminate the scheduling problem, but teachers will receive on-the-spot help with computer problems and it will look great on student resumes if technology is in their future.

4. Teachers have expressed to me how much they would love to see teacher training become more prevalent at the high school. Not included in the budget provided in this grant proposal, teacher training can be accomplished in one of two ways depending on the district. One way is to offer teacher training every two weeks to teach new software and/or hardware after school. This method would be relatively cheap to the district, as they would only have to pay the instructor for volunteering his/her time in running the training session. The other method is to provide Act 48 credits for all those involved in

the sessions. Either way, by making it every two weeks, all teachers receive the

opportunity to learn technology twice a month.

Objectives

By implementing and utilizing this project at Belle Vernon Area high school…

… teachers will receive the opportunities to integrate and access technology on a daily basis

without any possible restrictions.

…students will be able to create and construct creative and informative projects to further

advance their understanding in various subject areas without limitations due to lack of

technology.

…community members and the district at large will have access to assess and review a district

technology plan located in physical form at the district office and electronically online.

…teachers and students will learn to recognize computer problems and be able to apply

troubleshooting skills taught through monthly teacher training sessions and a computer hardware

class, respectively.

Methods & Evaluation

As with everything, methods will be applied to make sure the objectives of this program will be accomplished to our satisfaction and for your reassurance that your money is being put to good use.

Objective #1: Teachers will receive the opportunities to integrate and access technology on a daily basis without any possible restrictions.

- All teachers will be required to log the usage, dates, and times of lab and cart usage. This data will be checked weekly to see if the lab and carts are being used to their full potential.

- If a problem arises, teachers must be report the problem electronically to the IT department chairman. These problems may range from computers not working to room and/or carts not available for various reasons.

- After each semester, teachers will be required to submit a form talking about how they integrated technology in their teaching after each semester. Each teacher must be required to teach 5-10 lessons incorporating technology in some way, shape, or form using the new lab or carts or not. If these 5-10 lessons are not reached, teachers will be shown different strategies and/or ideas to try during the following semester. If the teacher does not comply, access to the lab and carts will be withheld.

Objective #2: Students will be able to create and construct creative and informative projects to further advance their understanding in various subject areas without limitations due to lack of technology.

- Students will be required in their classes to create and maintain portfolios in physical or electronic form (blogs, websites, etc.) It will be up to teacher whether or not they will be graded, however, each student must present their portfolios to their senior project advisors in order to graduate. Each portfolio must contain a variety of mediums including papers, videos, slideshows, collages, etc.

- If a limitation is found technology-wise while creating a project, students have the option to turn in a written proposal letter to the IT chairman to see if an accommodation or substitute can be provided. This option will keep the students thinking at all times and show the creativity of the student body as a whole, plus it will show the district the importance of always being updated in the technological world.

Objective #3: Community members and the district at large will have access to assess and review a district technology plan located in physical form at the district office and electronically online.

- There will be a guestbook and forum provided on the school website for registered visitors to comment on the plan and/or make recommendations.

- Belle Vernon Area has a great podcast program already being utilized on the district website. A segment will be added to these podcasts entitled, "Community." During this

segment, all or most posts on the guestbook or forum will be commented on by the IT

chairman or a member of the school board.

- Speaking of the podcast feature already being used, students and teachers also will have

    the option to create their own podcasts to post on the website touching on how

    technology is being used in the building. I am a firm believer that educators and students

    should be recognized for trying new things and using materials to create beneficial

    mediums.

Objective #4: Teachers and students will learn to recognize computer problems and be able to apply troubleshooting skills taught through monthly teacher training sessions and a computer hardware class, respectively.

- Students who partake in the hardware class will be tested on a regular basis during and

    after the class duration to make sure the knowledge was obtained and retained.

- Each student will be required to take the *iCritical Thinking* certification exam for a grade.

    This exam will be a part of the final and will be beneficial to the student after he/she

    graduates as well.

- Each student troubleshooter must complete logs after troubleshooting sessions with

    teachers. These logs will include an in-depth summary of the session touching on the six

    steps to troubleshooting:

    o Gather data from the customer
        ▪ Teacher's name
        ▪ Room

- Problem as quoted by the teacher (will show the knowledge level of the teacher and show if the teacher training is beneficial as well)
  - Verify the obvious issues
  - Try quick solutions first
    - What solutions were tried
  - Gather data from the computer
  - Evaluate the problem and implement the solution.
    - What was the problem?
    - What was the solution?
  - Close with the customer
    - Teacher will be required to fill out a short reflection of the troubleshooting session (knowledge, professionalism, if problem was solved, etc.)

- In the forms turned in by teachers after each semester (Objective #1), it will be shown whether or not the teacher training sessions are indeed working based on the variety of technology implemented.

Laptop Laboratory Proposal

Abstract

My proposal will be a laptop laboratory for the purpose of online blogging, digital video editing, and using various other internet sites for reflection and creative projects. This room will contain thirty Compaq laptops with Intel Celeron Processors located in a mobile cart for charging. These laptops will boast 2 GB of RAM which is expandable to 4 GB, a 250 GB hard drive, 15.6 inch widescreens, and built-in 10/100Base-T Ethernet and Wireless-B+G+N capabilities. I chose laptops over desktop computers because I want the students to have the ability to move around with their work as well as provide teachers the option to teach elsewhere

such as outside for nature lessons (Science) or poetry lessons (English). The laboratory will have

a 48 port Cisco switch which will provide internet and network access to the thirty laptops, two

Brother LaserJet Color printers and instructor desktop. The lab will also have a high resolution

projector and Smart Board for the teacher's use only to show videos, demonstrations, and

presentations. Every computer in the room will also have access to the HP StorageWorks X1000

installed in the laboratory. The server will be used for storage space for projects and information.

Students will also be required to save their work on their own HP 8GB USB 2.0 Flash Drives,

which will be issued at the beginning of the year to avoid the possibility of file deletion

problems. The internet connection will be provided by the district and filtered by the district's

proxy server as required by the Children Information Protection Act (CIPA) of 2001.

*Keywords:* Laptops, wireless, Intel, storage, SMART Board, video, internet

Proposal:

An innovative, state-of-the-art 30 laptop laboratory open to the entire school, not just one

classroom teacher, for the purpose of document creation, paper writing/editing, online blogging,

digital video recording/editing, department and district meetings, and the use of the internet for

reflection and creative projects.

Room

The room will be contain six, 48 x 72'' Educational Edge Kidney Activity Tables each

seating up to seven students priced at $198.00/each (hertzfurniture.com). The structure of the

tables will provide students an easier opportunity to work in groups and enforce the importance

of collaboration amongst classmates, a vital ingredient in understanding and utilizing technology

in group projects, presentations, and portfolios. These tables have an advantage over their

counterpart, the round table, because all students will face the front of the room instead of just

half the students if round tables were implemented. Connectivity to the network will not a

problem because everything will be wireless for better functionally and for the avoidance of

obsessive wire hazards.

Figure 1.1 – Room Layout
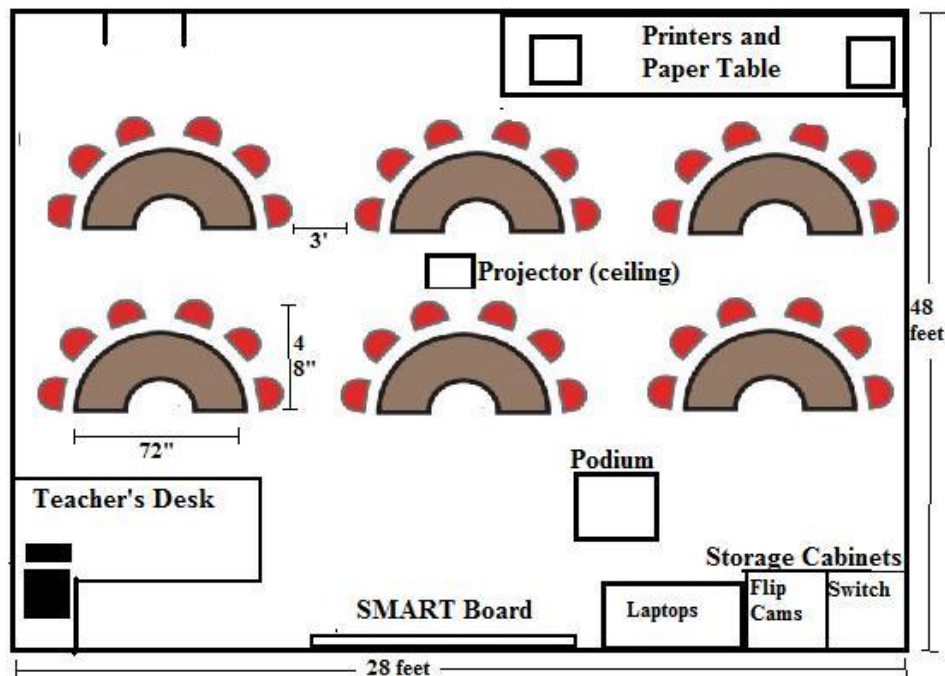
Laptops

     The room will contain thirty Compaq laptops with Intel Celeron Processors priced at

329.99/each or $9899.97 total (bestbuy.com). The laptops come with the newly released

Windows 7 software, 2 GB of RAM which is expandable to 4 GB, a 250 GB hard drive, 15.6

inch widescreens, and built-in 10/100Base-T Ethernet and Wireless-B+G+N capabilities. With

three USB 2.0 ports, students will have the advantage of multitasking by working on their flash

drive saved papers in Microsoft Word while uploading their videos from their Flip Cams which

use USB. Also, with up to 3 hours and 45 minutes of battery life, if the laptops are charged

correctly, students will be able to go through an entire period without having to charge once.

Figure 1.2 - Laptop Comparison Chart

|	Compaq - Presario	HP Pavilion Laptop	Dell - Inspiron
Speed/Processor	2.2GHz Intel Celeron	2.13Gz Intel Core i3	2.2GHz Intel Pentium
File System	NTFS	NTFS	NTFS
Cache	1 MB L2	3 MB	1 MB
RAM	2 GB	4 GB	4 GB
Hard Disk	250 GB	500 GB	320 GB
USB 2.0	3	4	3
Battery Life	up to 3 hrs 45 min	up to 3 hrs 30 min	up to 5 hours 29 min
Video/Graphics Card	Intel Graphics Accel. 4500M	Intel Graphics Accel. 4500 MHD	Intel Graphics Accel. X4500 HD
CDRW/DVD Drive	Double Layer DVD+RW/CD-RW	Double Layer DVD+RW/CD-RW	DVD+RW/CD-RW
Firewire IEEE 1394	0	0	0
Network Card	10/100 Base-T Ethernet	10/100 Base-T Ethernet	10/100 Ethernet LAN
Speakers	Altec Lansing	Altec Lansing w/ SRS	Internal
Warranty/Service	2 yr.	1 yr limited	1 yr.
Microsoft Office	Student 2007	Student 2007	Student 2007
Other Software	Norton AntiVirus	Norton AntiVirus	Norton AntiVirus
Screen	15.6	15.6	14
Cost	329.99	679.99	449.99
Cost for 30 Machines	9899.97	20399.7	13499.7

Hardware/Software

The laboratory will have utilize a 48-port Cisco switch which will provide internet and

network access to the thirty laptops, two printers, and teacher's computer. On the switch, there

are 48 10/100/1000 Ethernet ports with four miniGBIC slots for network expansion, if more

laptops or computers are purchased for the room in the future. For extra security, this Cisco

product offers advanced security with ARP Inspection, IP Source Grant, DNCP Snooping, and

STP Root Guard. Tech Depot offers this switch for $1358.99, cheaper than the retail value at

$1400.00. The internet connection will be provided by the district and filtered by the district's

proxy server as required by the Children Information Protection Act (CIPA) of 2001.

Even though this laboratory will boast wireless connectivity, the parts to create cables

will be purchased to avoid future costs if cables are needed. Tigerdirect.com offers a 500 foot

roll of Cat5e cable for $49.99, 50-pack of RJ-45 connectors for $12.99, 3-in-1 crimp tool for

$22.99, and a network cable tester for $29.99. To create a compare and contrast for budget

reasons, 50 feet of RJ-45 network cable at chain stores such as Best Buy costs between $30 and

$45/each, or 10 for $300-$450. For 500 feet of cable, connectors, crimp tool, and a cable tester to

create our own cables for the entire district to use, the cost would only be $115.96.

Figure 1.3 – Network Map
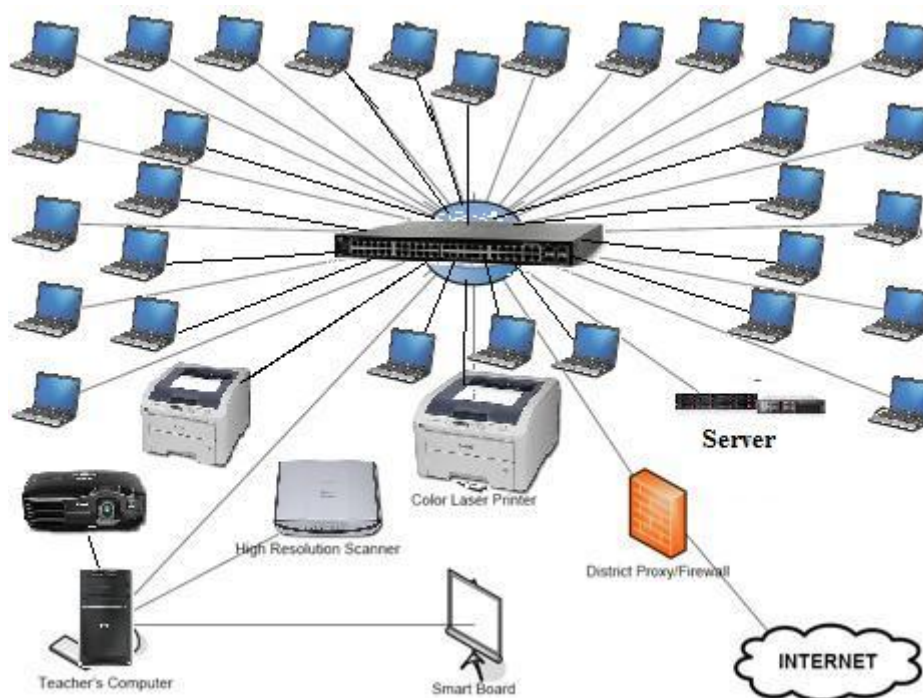
For video, each laptop is already pre-installed with Windows Movie Maker to create movies and/videos for projects. If a written demand is received for better video-editing software, it will be considered. But for now, WMM more than suffices the small projects that can be accomplished with the Flip Cams located in the room. Located in a cabinet near the teacher's desk, there will be ten Flip Video – Ultra HD camcorders for video recording, priced at $149.99; $1499.99 (bestbuy.com). These purchased camcorders come with a wrist strap, soft protective case, AV/TV connector cable, and a quick start guide which teachers can use to give quick summaries on how to get started. Speaking of which, training will not be necessary for teachers as these particular camcorders are very user-friendly. Each Flip Cam utilizes one touch recording with 4 GB of built-in memory (no need for tapes or additional memory cards) and a flip-out USB arm that connects directly into one of the three USB jacks located on the laptops for uploading. Also, to save on electricity costs, no charging is necessary as these camcorders are 2AA battery operated.

Considering this lab will be mainly for creative group projects and innovative presentations, two colored printers and one scanner will be available for use. The two printers in use will both be Brother Network-Ready Color Laser printers priced at $349.99/each; $699.98 total (bestbuy.com). Brother's latest wireless printer was made for today's students as it can print up to 17 pages per minute in black and up to 17 ppm in color, it can print on a variety of paper (glossy, letterhead, brochure, and rough), and it has three printing options (rough, normal, best) to save ink and to be sure that their final products look their best for submission. The lab scanner located at the teacher's desk will be a Canon – CanoScan LiDE200 Flatbed Color Scanner priced at $89.99 (bestbuy.com), perfect for photo and document scanning. Because it will be located near the teacher's desk, the scanner will be USB connected using a basic USB cable.

The teacher's desk, located in the front of the room, will be next to the interactive 64''

SMART Board. Priced at $1327.00 (*Epylon*), the board will be used to utilize Smart Board

technology for step-by-step instructions, better understanding, and also will provide a surface to

show projector-style movies and presentations. The projector, connected to the teacher's

computer and located on the ceiling in the middle of the room, will be an EPSON – XGA

Multimedia Projector ($559.99, bestbuy.com). It projects to a 30" to 300" viewable screen size,

which is perfect for our 64" SMART board, and because it is portable (only 5.1 lbs in weight), it

can be used for school assemblies that require projection style movies or Power Points. As

noticed, mostly everything in the room besides the SMART Board, printers, and teacher's

desktop can be signed out for use outside of the lab.

The computer on the teacher's desk will be a Hewlett Packard Desktop with an Intel Core

i3 processor, Windows 7 Home Premium, and a 23 inch Widescreen Flat-Panel HD screen

($249.99, bestbuy.com) which will allow teachers to multi-task by working on lesson plans,

grading documents electronically, and monitor student activities all at the same time. Priced at

$635.99 (bestbuy.com), this particular desktop was chosen for the teacher instead of a laptop

because the teacher's computer will have district software uploaded on it that should never leave

the room including grading, attendance, and lesson plan software. The key specifications will

include a 6 GB RAM, 1 TB Hard Drive, built-in 10/100/1000Base-T Ethernet LAN Network

card, 8 USB ports, 1 IEEE-1394 port, and a 15-in-1 media reader just in case students bring in

projects with file types not supported by the laptops.

All computers in the lab will run off the newly released Windows 7 operating system

already preloaded into every purchased laptop. Because these laptops are preloaded with a 60-

day trial for Microsoft Office Home and Student 2007, the purchase of this software will be necessary. The current price is $149.99/each; $4649.69 at bestbuy.com, but once the time of purchase comes, that price could become lower sale-depending.

Our district already has a firewall to block unwanted users from accessing our network *(see Network Map),* but an anti-virus is necessary to avoid any further problems down the road as our students use the internet on a daily basis. Bestbuy.com offers Norton AntiVirus for Windows 2010 for $39.99/each; $1239.69 total.

Storage

These laptops will be physically stored in a Bretford Manufacturing 30-unit Laptop cart with elect units in the back for charging priced at $1,358.02 (provantage.com). I chose laptops over desktop computers because I want the students to have the ability to move around with their work as well as provide teachers the option to teach elsewhere such as outside for nature lessons (Science) or poetry lessons (English).

As for file storage, to avoid students and faculty from saving on the individual computers and having to delete everything once they graduate, every computer on the network will also have access to the HP StorageWorks X1000 1 TB storage installed in the laboratory or school depending on the current situation or need. The offer is on the table because this particular device can serve between 25-3400 users, well more than the 31 needed. HP's Small and Medium Business Store offers the server for $524.00, with an option of paying $15.00/month over 48 months. The question that might be asked will probably be, "why do we need storage if the laptops are installed with 250 GB of memory?" Hard Drive space sometimes is the difference

between a $300 laptop and a $500 laptop. If noticed, the cheapest laptop out of the three possibilities was chosen not only because of price, but because of the hard disk space (250 GB compared to 500 and 320 GB, respectively). Not only this, but students will also be required to save their work on their own HP 8GB USB 2.0 Flash Drives priced at $17.99/each, $539.70 total, which will be issued at the beginning of the year to avoid the possibility of file deletion problems. If lost, students will be required to pay the district $20.00 for a new one.

Warranties

All Best Buy products offer 1 year warranties, but the purchase of protection plans on top of these warranties are important because of any possible problems that may arise due to the portability nature of the laptops and the amount of usage by the entire school. For a little over $3,000.00 more, we can avoid having to call pricey technicians to come into the school after the year warranties expire if any problems shall arise.

Laptops	Best Buy 2-Year Standard Protection Plan	79.99/each; $2399.70
Flip Cams	Best Buy 2-Year Protection Plan	44.99/each; $449.90
Scanner	Best Buy 2-Year Protection Plan	$14.99
Printers	Best Buy 2-Year Standard Protection Plan	$69.99/each; $139.98
	Total:	$3,004.57

Conclusion

If approved, this laboratory will be a great asset to not only the teachers and students of the district, but also the district itself. A lot of the computers at the high school are outdated and

a lot of talk has been made about how computer labs are not easily accessible because teachers have classes in the rooms. Because of the innovative nature of the proposed room (i.e. the work tables, new laptops, and Flip Cams) our district can surely benefit not only in the present, but most importantly, for the future. The success of this room could very easily lead to future additions and improvements to our technology department and how technology can and will be implemented by our teachers in all subject areas. One of the objectives of this lab besides the innovative nature to promote creativity is the mobility and accessibility to all of the equipment for our teachers. As mentioned, everything in the room besides the SMART Board, teacher's desktop, and printers can be signed out if the room is not available. There is a high demand by our district's teachers, especially the high school, for access to technology, and this lab can and will accomplish just that. Schools in our surrounding area already have similar rooms to this one, but not quite as innovative. We have a unique opportunity to make that step and lead the way into the future of education.

Budget

The following price chart includes the laboratory proposed above and three more laptop carts with 30 more laptops in each.

Item	Qty.	Price/Each	Total
Activity Tables	6	$198	$1188
Compaq Laptops	120	$329.99	$39598.80
48-port Cisco Switch	1	$1358.99	$1358.99
Cable Kit	1	$115.96	$115.96

Flip Video Camcorders	10	$149.99	$1499.90
Printers	2	$349.99	$699.98
Scanner	1	$89.99	$89.99
SMART Board	1	$1327	$1327
Multimedia Projector	1	$559.99	$559.99
Teacher's Desktop (CPU & Monitor)	1	$885.98	$885.98
Microsoft Office 2007	121	$149.99	$18148.79
Norton AntiVirus for Windows	121	$39.99	$4838.79
Mobile 30-laptop charging cart	4	$1,358.02	$5432.08
HP StorageWorks X1000	1	$524	$524
HP 8GB USB 2.0 Flash Drives	30	$17.99	$539.70
Warranties (if desired)	4	Varies	$3004.57
Total Cost:			**$79812.52**

Future Funding

After your grant is used to purchase all of the technology and equipment necessary for our project to work to the utmost extent, the district will take full responsibility of any or other costs that may arise as the years progress. These may include new warranties, maintenance, personnel costs, new equipment or requested supplies. Your much-appreciated and needed grant will get our project off the ground and our district and its teachers and students will take it the direction needed to gain community credibility and improve the technology knowledge at our high school. The best thing about this project is that it is a program that will succeed or fail based

on our faculty and students. But based on the information I've gathered from district employees

and the experience I've gained from students, this program is destined, and most importantly,

designed to succeed.

References

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