

The Bloomfield-Garfield Corporation

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Community Partner, Ernest Abrams

Introduction

Three months ago, I was selected as a consultant for the Bloomfield-Garfield Corporation. With my community partner Mr. Ernest Abrams, I worked to improve the use of technology within the organization, and to leave behind the tools and understanding needed to continue using it in the future. All of the work performed was to forward the Bloomfield-Garfield Corporation Mission:

To effect improvement in the physical, economic, and social conditions within the Garfield, Friendship, and Bloomfield neighborhoods by engaging residents, business persons and property owners in a continuous effort to assess and respond to issues and problems in the community and to lead in the implementation of strategies to address them.

Situation Description

The Bloomfield-Garfield Corporation is a community organization founded in 1975 and located on Penn Avenue in Garfield. The BGC is made up of a dedicated group of people who serve to improve the education and living standards in their community. While relying largely on their partnerships with major service groups like the YMCA, the BGC has seven full time employees who work to coordinate their many efforts. These employees include an editor to make their monthly newsletter, an executive director, a youth development director, a youth coordinator, and several administrative assistants. Ernest Abrams currently serves as the youth coordinator. Rick Flanagan, the BGC's youth development director, supervises him. In the past, BGC programs focused on youth education, adult training to provide marketable job skills, and development in the community. Currently, there is a great need for the BGC in Garfield. The area has a low standard of living, and most residents are close to the poverty level in income. The BGC is committed to incorporating new technology into all of its programs to provide comprehensive assistance to its residents.

The Bloomfield-Garfield Corporation owns three buildings on or near Penn Avenue: the youth development center, the community activity center, and the main administrative center. These are located within walking distance from each other. The youth development center is a small, five-room office building that is mainly situated to coordinate the youth activities run by the BGC. All of the resources needed to educate the area's youth about new programs are located here, as well as a list of people who have donated to the BGC. In addition, the staff who finds funding for these programs, Rick Flanagan and Ernest Abrams, primarily works in this building with a few volunteers and administrative assistants. The community activity center is located in an abandoned church donated to the organization ten years ago. There is a large recreational room on the first floor, and a computer cluster less than a year old in the basement. Many organizations work with the BGC to utilize this center, and they are excited to have new technology to incorporate into their programs. The administrative building contains only three rooms, but these rooms are filled with paperwork and computers used by the administrative assistants. The editor who helps publish the monthly newsletter also works at this location.

The youth development center contains three Pentium 133 and three 486 DX66 machines. These machines are each widely different, but they all have between 16 to 32MB of RAM, 1 to 4GB hard drives, and 15" to 17" monitors. Each office contains one computer except for the largest room, which has two machines, one running the BGC database. The large room also holds a scanner and printer that are used to incorporate pictures into their letterheads. Aside from Rick Flanagan's computer with a personal AOL account, none of these machines have network connectivity internally or to the Internet. The administrative office has six machines: four PowerMacs, one Pentium, and one 486. There is a printer and scanner available to the editor, Chris Dreher. He also has a modem and the only BGC owned Internet connection, which is a PPP account through Telerama.

The community activity center is where the majority of their new technology resides. There are eleven new, powerful machines located in the cluster on the bottom floor. These machines are evenly spaced out along two walls in a "L" shape. They are Pentium II level machines, all with 8 GB hard drives, 64 MB RAM, 17" monitors, sound, CD-ROM's, zip drives, and network cards. The machines are all running Win98. In the corner of the "L", the cluster has a new scanner and laser printer.

The leading use of the new computer cluster is youth education and technology experience. The BGC offers after-school and other youth programs at the activity center. These programs target elementary and middle school aged children. Currently, they have access to many books, toys, and desks. Now the BGC wants to provide computer-based learning and general access to computers for them. This is to hopefully give the children a chance to experience new technology that might not be available in their schools or homes. In addition, the BGC is looking to host training sessions for adults hoping to gain computing experience and sharpen their job skills.

The youth coordinator of the BGC does not currently use computers to great extent. He mainly uses them as tools for composing letters or creating invoices. The administrative assistants and volunteers consistently use the computer in the youth center to keep track of a large database of people who they serve. This includes a list of all the youth who have participated in their after school programs, as well as adults who went through the BGC's training programs. This database is used to contact the BGC's constituency for future events, and to distribute their monthly newsletter. Also, the editor uses a computer to do layouts and pictures for the BGC bulletin.

Currently there is no specific position within the BGC to maintain the new computer cluster. The current staff has to handle this responsibility in addition to their current job descriptions. This is possibly the most challenging problem in their organization. They want to use these machines as tools, and not have to worry about the headaches of fixing them. Mr. Abrams is currently in charge of the new cluster, and I hope to work with him to find possible solutions for this issue.

Problems and Opportunities

One of the largest problems faced by the BGC is how to best utilize the new computer lab. The computers have been purchased and hooked up, but they will not be used to their full potential until they are incorporated more fully into the programs run by the BGC. These computers were obtained to improve the welfare of the community, which is part of the mission of the BGC. In order to strengthen the role of computers in fulfilling their mission, a major goal of the BGC is to implement the machines to further enhance their programs. My community partner and I discussed many options that the BGC could pursue.

For example, the BGC runs an after-school program for the youth in the community. During this program the children are given opportunity to do their homework with the assistance of a volunteer. Currently, the children only use the computers in the new lab to play games during breaks or as a reward. Thus, one possibility to improve the after-school program is to install educational software. This software could then be used to reinforce the ideas that the children are learning in their schoolwork. Also, the BGC must find volunteers willing to learn new software to staff the computer lab.

I have been researching on the Internet for highly acclaimed software to meet these needs. This software needs to be flexible enough to be included in widely varying programs, powerful enough to challenge a wide age group of children, and inexpensive enough to justify the purchase. All the software also has to be easy to install and maintain for two reasons: to reduce the amount of time needed to be invested by the cluster's administrator to install the software, and to ensure that the software will not cause any additional problems to the machines once installed. My community partner feels confident that he can select and use educational software based upon recommendations that I make. The cost of educational software is fairly small compared to the amount of use it will receive; thus it is a viable option

for the BGC. The most difficult part of this solution is finding a quality software package among the hundreds of titles.

Another option discussed was to create a new program focused on computers rather than simply incorporating computers into other programs. This new program would be similar to a training workshop. The goals of this program would range from basic to more advanced computer abilities. The basic abilities include typing, mouse control, starting programs, opening files, closing files, copying, moving and general computer knowledge. More advanced topics include writing letters, making resumes, painting pictures, scanning and printing documents. This program would not only help to advance the community members who attend it, but it would also help the organization to become better versed in computer knowledge. Unfortunately, a great deal of time would have to be spent training my community partner. Since it is possible for the BGC to invite other groups to provide a program of this nature, this option should probably not be pursued.

The next major problem that BGC currently faces is how to keep the new computer lab functional for their constituents to use. It is very difficult to maintain a large lab of computers without a great deal of experience. Furthermore, the computer lab is used almost every day by a large number of people making it very likely that problems will occur. Since the computers were purchased to benefit the community, they should be always available for any programs that the BGC provides. Thus, I will constantly have to train and educate my community partner on the processes needed to keep the machines in working condition. In addition, these processes need to be documented.

Because of the high use of the machines in the cluster, one good idea is to perform routine maintenance tasks. Some of these tasks include running Norton's DiskDoctor, SpeedDisk, SpaceWizard, WinDoctor, VirusScan and other useful tools. These programs should be run weekly or monthly to ensure the systems are all working properly. By scheduling this maintenance, the amount of time spent on future problems will hopefully be reduced. However, this work would be preventive, and may not justify the amount of time required by the cluster's administrator. It is possible to run these tools overnight using a scheduler program, which seems to be the best overall solution since it minimizes the time required of my community partner. The resources for this option already exist since the BGC owns a copy of Norton Utilities. It is simply a matter of setting up the software correctly and making sure the computers stay turned on one night a week.

Another method the BGC could use as preventative maintenance for their new machines is a backup system. The BGC already has zip drives installed in every new machine, and ten Zip disks available to use. Since Zip disks are 150MB, it may not be possible to perform full backups of every machine. Thus two options available are to only backup one machine and use that to restore any machine that fails, or to only backup the important data on each machine. Also, I examined the prospect of making a disk image for each machine on a separate partition. This opens up the possibility of using a program like Norton Ghost to restore machines by overwriting their hard drives. This is an attractive solution because it makes troubleshooting easy since the BGC can just overwrite the hard drive if something does not work. This option is only feasible since no permanent user data needs to be stored on the machines, only the programs needed by the BGC.

While a backup system is the most reliable process that BGC can use to ensure the stability of their machines, it also has one of the greatest time commitments. It can take over an hour to fully backup one machine using Zip disks. Since the person would have to constantly swap disks during the backup, it can not be automated. The multiple partition idea would be much faster, on the order of minutes to backup or restore. Unfortunately, it would be a great hassle to repartition every hard drive, even using a utility such as Partition Magic. Since the new computers have such a high possibility of becoming unstable through extended use, some form of a backup system will have to be implemented. The most effective process will be to perform a full backup of one machine monthly using the Zip drive. The benefit of having a backup will greatly outweigh the time commitment.

The BGC also wants to address the opportunity of connecting the computers within the lab. They currently have a network-ready laser printer of extremely high quality. By connecting the machines, they hope to give all the users of the lab access to the printer. Also, networking the machines creates the opportunity to quickly set up a connection into an outside network like the Internet. The BGC feels that networking the machines together will increase their potential and give greater benefit to the constituents. This ties the project back to their mission of improving the community. Some specific benefits include giving people the opportunity to deal with common networking issues like chatting, file transfers, shared printing, and gaming. The experience gained from these interactions will also help to better prepare the lab's users to deal with new technology. The BGC already has a hub, and enough Ethernet cable to connect 11 devices to the network. With the purchase of one more cable, we can wire all the machines and the printer into a LAN. It should only take a few weeks to accomplish this while I work with the community partner. I have a great deal of experience in networking Windows machines together, and nearly no new equipment needs to be purchased.

One good reason to set up a LAN is to increase the possibility of connecting to the Internet at a later point in time. This is probably not feasible as part of my time at the BGC because of much higher cost and time restrictions. The lab's main purpose is for an education and future technology-training tool for children. The Internet is already such an important part of business and education that it is an obvious extension of the computer lab. The wealth of information available on the Internet is too vast to exclude from the children's experience, and many of the new methods of communication (E-mail, IRC, and Instant Messaging) are tied closely to the Internet. In order to get the computer lab connected to the Internet, the BGC will probably have to use a high-speed connection. This will be the only way for the community to actually get the chance to utilize the Internet.

In order to provide the BGC with the option of later connecting to the Internet, I will research and price Internet solutions. In addition, I will help my partner to understand what is required to make a knowledgeable decision. I have been looking into several possible Internet solutions including ISDN, ADSL, SDSL, and frame relay. The most cost efficient connection for the speed received has clearly been ADSL. Unfortunately, there are some prohibitive initial fixed costs associated with ADSL. While the Internet may have some of the greatest benefits of the technology the BGC has to offer, the cost of the installation and monthly rate might prove to be too prohibitive. Also, troubleshooting problems with networking, and especially the Internet, will require someone with a great deal of experience. I will have to work closely with my community partner to ensure he understands all the steps needed to implement an Internet connection.

Project WorkPlan

Project: Selecting Educational Software for Use in the Cluster			Oct				Nov				Dec
Task Name	Who's Responsible	Target Date	1	2	3	4	1	2	3	4	1
Find possible products	consultant	10/12/99	x	x							
Project: Connecting Computer Lab into an internal network											
Pick up hub	cp	10/12/99		x							
Buy additional ethernet cables	cp	10/14/99			x						
Connect machines together	cp/consultant	10/12 - 11/2									
Label Cabels	cp/consultant				x						
Plug in hub	cp/consultant				x						
Connect PC's to hub	cp/consultant				x	x					
Connect Printer	cp/consultant					x	x				
Verify Connection using lights	cp/consultant						x				
Set up machines to support network	cp/consultant	10/19 - 11/9									
Check for MS Client						x					
Check for Ethernet Driver							x				
Check for File and Print Sharing							x				
Set name and group							x				
Verify Setup							x	x			
Setup basic printing on network		11/1 - 11/9					x	x			
Training for basic network support	cp/consultant	10/12 - 12/1		x	x	x	x	x	x	x	x
Project: Basic Networking Uses											
File Sharing Training	cp/consultant	11/1 - 11/11					x	x			
How to share folders/drives											
How to connect to shared folders											
Print Sharing Training	cp/consultant	11/9 - 11/16						x	x		
How to share the printer											
How to add shared printer											
Mapping drives vs Sharing Folders	cp/consultant	11/16 - 12/1							x	x	
How to run programs remotely											
How to use a CDROM remotely											
Project: Basic Computer Maintenance											
Disk Utilities	cp/consultant	10/14 - 11/16					x	x	x		
Scheduling programs	cp/consultant	11/18							x		
Using Backup Software	cp/consultant	10/21-11/9					x	x			
Training for computer support	cp/consultant	10/1 - 12/1	x	x	x	x	x	x	x	x	x

Outcomes and Recommendations

Over the last two months, the majority of the work has centered on improving the general functionality and usability of the computer lab. The computers and the printer are now wired together to create a peer-to-peer Windows network. I have demonstrated to my community partner how to properly run various utility applications, and how to backup a machine using Zip disks. While performing this work, my community partner has demonstrated many gains with his technical proficiency. He has consistently shown a willingness and enthusiasm to work with new technology and has demonstrated increased technological knowledge since the beginning of this project.

Mr. Abrams:

- Connected five computers together using Ethernet cable
- Verified the network hardware using the link lights on the Ethernet card and hub
- Understands why printer drivers are needed, and where they need to be installed
- Installed printer drivers for the shared printer on eight machines
- Independently solved a technical problem – a machine was failing to boot, so he used the error message to retrieve a missing file from another machine. He copied the file over, and the machine now boots.
- Understands of the benefits of regular maintenance for the computer lab – he created a schedule of several utility programs to run weekly
- Used the network to copy files from other machines, run programs remotely, and share a CD among multiple machines

Because of Mr. Abrams hard work, the technical environment is greatly improved. The computer lab began as a room filled with random computers, some of which were not even plugged into the wall. Since then, the computers have been all been given surge protectors, and the entire lab is connected into a Windows Network based LAN. Furthermore, each machine in the LAN has the ability to print to a common laser printer, and one machine is connected to a scanner. Now that the lab is functional, the BGC has allowed local service groups to use it in their programs. Overall, the lab has vastly increased its usefulness for the constituents of the BGC.

While Mr. Abrams and I worked together, we documented nearly every project step-by-step. This included wiring a network, installing network printer drivers, running utility programs, running backup software, and how to use and troubleshoot a peer-to-peer network. The BGC benefits greatly by being able to use these resources to recreate any of our work. Also, I documented price and feature comparisons of some educational software as well as Internet solutions. The BGC can use these documents in the future to make purchasing decisions.

At present, it is still the case that none of the programs for the children fully incorporate the computers. The BGC has yet to purchase new educational software, and staff for the program is still not trained to use the machines. Until a program is designed for the children with the computer lab as a major component, the lab will not be properly utilized. However, the BGC currently partners with an adult organization that is attempting to use the computer lab in their program. Recently, they started a program that teaches basic computer literacy to adults. Because the lab is now functional, this program is a great success. The instructor is able to demonstrate basic usability issues like keyboard and mouse input. Additionally, they are teaching the adults how to use a printer.

The sustainability of the staff will depend on the ease by which someone can learn how to use and maintain the computers in the lab. Mr. Abrams has acquired the skills and knowledge to allow him to effectively administer the computer lab and independently learn new abilities. One of the largest problems the BGC is going to face in the future is the education of new staff members. Because of this, Mr. Abrams and I planned to work on a set of guides to facilitate the learning process of the staff. These guides would be a product of notes he took while we worked on various parts of the lab, and also papers I generated for him. For example, I created a step-by-step troubleshooting guide for common networking problems that they might encounter on the peer-to-peer network. We planned to collect these notes into an easy to use reference guide for anyone who works in the computer lab. It is essential that the person using the guide have a few basic computer skills, as the manuals assume a small amount of competency.

The sustainability of the computer lab is closely related to the amount of effort put into maintaining it by the BGC. The BGC has continued to demonstrate its commitment to new technology by recently investing in a CD-R drive. This will enable them to backup larger amounts of data, or produce easy to distribute CD's. The BGC is always looking for ways to improve the lab. A future goal of the BGC is to add Internet access to all of the computers. Adding the Internet will create many exciting possibilities for both the children and adults. Of course, the largest resource needed for Internet access is

funding. I have researched various business and consumer options for the BGC to allow them to make the most cost-effective choice. The BGC has also been looking into other possibilities such as the I-Net initiative.

My first recommendation is for the BGC to provide basic computer training for all of its staff and volunteers. Many of these people supervise programs run at the community activity center. By giving them the confidence to demonstrate computer knowledge, they would be more likely to involve computers. In addition, all of the staff that has to maintain the computer lab should go through a much more thorough training. They should be able to demonstrate basic troubleshooting ability. This includes understanding how the lab's network functions, how the printer is set up, and how each machine is configured. They should also be responsible for cleaning the computers of any software or data installed by unauthorized users. By ensuring that all of the employees have a basic level of computer ability, it protects against a creating large gap in technical knowledge if someone leaves the BGC.

The most essential resource needed for this training would be a reliable source of computing knowledge. The most effective source of computer knowledge would be to have one trained employee. This employee could then use their expertise to teach other employees and help them with their problems. However, it is costly to train employees, and if they left the BGC all of their knowledge would be lost with them. The guides created during my time at the BGC would then be extremely useful. Refer to Appendix B for an example script created by Mr. Abrams when we started to wire the computer in the lab together. Since these documents are specific to the BGC, they would be the easiest, most concise resource available. I also recommend the BGC consider investing in a few of the "Something for Dummies" books. More specifically, Building a PC for Dummies, Networking for Dummies, and Windows98 for Dummies. These are excellent, easy to use reference guides covering many of the topics. These cost between \$15 to \$20 and can be found in any bookstore, or on <http://www.amazon.com>.

I would also recommend that the BGC continues to examine and create new programs that involve computers and technology directly. For the after-school program, I would suggest first taking time to teach many of the basics of computer, similar to the adult program currently being run at the community center. Once these skills have been acquired, the computers could be used as part of a research project. The BGC currently owns encyclopedia and atlas CD's. Using these disks as tools, the children could use the information on them to generate a report on their favorite sport or hobby. This would cover many important topics including word processing and searching for information. Afterwards, all of the reports could be collected and imaged onto a CD. Then all of the children could receive a CD that contains a collection of reports on topics interesting to them. In the future, the Internet could replace the reference CD's as the research tool.

Rather than use an encyclopedia CD, the BGC could use Encarta Online, <http://encarta.msn.com>, if they had an Internet connection in the computer lab. This would benefit the BGC in many ways. They would no longer have to find the CD every time they wanted to use the reference, they would not need to use up hard drive space on all of the computers, and Encarta is updated daily with new information. This assumes the BGC has an Internet connection, which currently is not the case. To get connected to the Internet, the BGC can use Appendices C and D that directly compare various solutions to make a decision in the future. The SchoolWorld Internet Education Site provides ideas of how to use technology and the Internet in educational programs and is located at <http://www.schoolworld.asn.au/>. Part of their mission statement reads "a Resource Center for the international community that supports innovative endeavors and establishes a sharing of gathered information and data concerning education programs and projects." This site has a free registration, and allows its users to contribute their own ideas or browse other organizations best programs.

I finally recommend that the BGC implements a regular backup routine for their systems. Currently, the machines are running Windows 98, which provides no form of protection. Even disregarding the possibility of malicious users, many problems will be created accidentally by people who

simply do not know how to use the machines. A specific example is one day a child in the after-school program tried to install AOL on some of the machines. This modified the network settings on them, and they needed to be reconfigured. One solution is to restrict them from changing any system settings, or not letting them have access to delete important files. An easier solution is to always have a good backup of the machine to have the ability to quickly restore to a working configuration. I suggest backing up one machine completely once every two weeks, saving backups on a six-week cycle.

Now that the BGC owns a CD-R, it is also a cheap option to perform backups. Currently, CD-R disks can be purchased at Best Buy and CompUSA for as little as \$1. By buying them in bulk (50-100 disks) at computer shows, this can be dropped to fifty cents or lower. Presently, the BGC owns backup software that is integrated with the Zip drives. I recommend buying general backup software. DriveImage is easy to use, and affordable at \$50. It works with all forms of removable media, including Zip, Jaz, and CD-R. It is sold in all computer stores, or <http://beyond.com>. Another option is Norton Ghost, which sells for \$60. While this is not traditional backup software, it is well suited for an environment with a large number of computers. It lets the user make a hard drive into an image that can be written to removable media. This image can then be used to clone that machine's configuration onto other machines.

Appendix A: Educational Software Research

Educational Analysis

Software:

I used www.superkids.com, a site that reviews educational tools, including software, for educators and parents. These are the top educational products rated by ease of use, content, and ease of install.

Kindergarten and Elementary Age

Elmo's Reading Preschool and Kindergarten by Creative Wonders – *Cost: \$30*. An excerpt from a review: *Elmo's Reading* helps prepare kids to learn to read in a number of ways. In addition to inspiring a love of reading, the activities build phonics and whole language skills, reinforce letter and letter-sound recognition, increase vocabulary, rhyming and early sentence-structure skills, and introduce word-building and spelling concepts. As one parent put it, "The activities are like those found in the workbooks I loved as a child."

Dr. Seuss Kindergarten by Broderbund – *Cost: \$20*. Has the obvious appeal of Dr. Seuss, and covers the following general categories: alphabet sequencing and reading readiness, phonics and spelling, sentence building, classifying, logic, pattern recognition, counting, shapes and patterns, memory skills, measurement, estimation, addition, subtraction and counting.

Number Maze Challenge by Great Wave– *Cost: \$35*. *NumberMaze Challenge* remains an exceptionally strong educational program. In addition to offering practice in math facts covered in grades K-6, it now includes tutorials on new topics that make a reasonably good attempt to teach new concepts. It has 50 learning levels for each of the seven grades covered, over 350 in all.

Pajama Sam 2 - Thunder and Lightening aren't so Frightening by Humongous Entertainment – *Cost: \$20*. A snippet of the review: Children are instantly drawn to *Pajama Sam 2's* computer game facade and exceptional, child-friendly graphics. Luckily for parents, the program holds a lot more. While the program easily holds children's attention for hours at a time, they learn valuable spatial relations and mental mapping skills. In addition, they will sharpen problem solving, critical thinking and memory skills, as they explore and search for clues. This program's investigative set-up forces children to make decisions on their own, in order to achieve an ultimate goal.

Middle School through High School Age

Grade Builder Algebra I by The Learning Company – *Cost: \$25*. Curriculum-based, interactive lessons give the student a comprehensive overview, providing questions, examples, and even directed feedback if it appears that the subject matter is not fully understood. The presentation is colorful and engaging, with key words appearing on the screen along with a small amount of animation. The user is always given time to pause and consider information, or have it repeated if it doesn't quite make sense. More than a simple drill program, *Grade Builder Algebra* makes an excellent effort to actually *teach* the subject.

Mathville VIP by Courseware Solutions Inc. – *Cost \$50*. Math problems appear at every turn: many obvious, many cleverly disguised as games or chores. While at work, students balance bank accounts, estimate company profits, schedule workers, interpret business forecasts, compute percentage increases and stock values, and assemble and pack shipping boxes among other things. At the clothing store, students might choose to purchase a jacket at 20% off the regular price. They earn stars by correctly calculating the newly reduced cost of the jacket. At the sports center, they might choose to play soccer. Stars in this activity can be earned by computing the probability of a win based on a team's current record or measuring the perimeter of one of the hexagonal shapes on a soccer ball. In addition to math problems, puzzles allow the student to practice problem solving and logic skills

Star Wars DroidWorks by Lucas Learning – *Cost \$35*. *Star Wars DroidWorks* is an educational program that successfully captures the mesmerizing quality of many electronic game programs. Our parent and

student testers reported that this program captivated them for hours at a time, and drew them back again and again. The program features great graphics with familiar characters, plot, and music.

The Princeton Review Inside the SAT, PSAT & ACT Deluxe by The Learning Company – Cost \$35. Much like a new diet that promises quick and easy weight loss but eventually gets down to the fewer calories/more exercise clause, *The Princeton Review Inside the SAT, PSAT & ACT Deluxe* lures the user with ‘strategy is all you need’ claims, then later introduces the (groan) lesson/review part. The program is divided into six main sections or classrooms: Intro, General Strategies, Verbal, Math, Tests, and College Counselor. Verbal and Math rooms include specific lessons for each of the subjects included on the tests, while the College Counselor is filled with useful information for the confused college applicant.

Virtual Physics Escape from Braindeath by Cubic Science Inc. – Cost \$35. *Virtual Physics* opens with a scene that looks like a clip from the X-Files. A spaceship lands somewhere in "Downtown USA" and a lone figure is abducted. The user has become a 'guest' of the alien 'Spring-horns'. They have traveled to earth to determine the worthiness of the human race to join their empire. As their prime subject, the student is encouraged to "fill (his or her) brain". This is done by performing exercises and experiments, viewing tutorials and videos, and undertaking practice problems designed to solidify and review newly acquired knowledge.

Web References:

www.superkids.com

www.zdnet.com/familypc

Appendix B: Created by Mr. Abrams When We Started to Wire the Lab

Computers in Community

Summary of Activities

October 12, 1999

Wiring the Network

1. Labeled the wires at both ends for ease in future use.
2. Plugged wires into hub.
3. Connected computers to hub.
4. Verified the "Link" light to each computer.
5. Connected Hub #2 to Hub #1.
6. Verified the "Link" light to each hub.
7. Connected printer to network.

Configuring the Machines

1. We checked for:
 - a) Client for Microsoft Networks
 - b) Ethernet Card Driver
 - c) File & Print Sharing for Microsoft Networks
2. We checked for Name and Work Group.
3. Used Net.Neighborhood to look for other machines.

Configuring the Printing

1. Inserted HP-CD
2. Clicked install software
3. Clicked Network printer install
4. Clicked Peer-to Peer
5. Custom software
6. IPX/SPX
7. HP_Browser enabled
8. Installed software, exit the install
9. Go start -> settings -> printers
10. Right click on HP printer
11. Click shading, enable and click ok

Appendix C: DSL Price Comparison Guide

DSL Pricing Comparison

From the information I have received from networking experts and from my own research, I feel that ADSL/SDSL is the cheapest recurring cost Internet solution. In both cases DSL refers to Digital Subscriber Line. ADSL refers to Asynchronous DSL, which means that the connection is faster at either downloading or uploading. Usually downloading is faster, as it is the most common use of the Internet currently. SDSL is Synchronous DSL, which is a connection that has equal upload and download speeds. To make a comparison of the costs involved in setting up an ADSL/SDSL connection, I contacted Stargate Industries and Bell Atlantic. Each offered ADSL/SDSL as a high speed Internet solution.

Stargate Industries

I first contacted Stargate about a DSL connection. Stargate does not offer ADSL service, but it does offer a variety of SDSL support. Unfortunately, the cost of SDSL is currently much greater than ADSL. A major plus is that Stargate allows up to 14 IP addresses for no charge, and then a \$40 charge to add up to 32 IP addresses.

Time:

Approximately 8 weeks for installation to occur.

Costs:

One time costs:

DSL router	- \$575
Installation	- \$199
Rebate	- \$200
Total	- \$574

Monthly costs:

160kB	- \$175
200kB	- \$225
416kB	- \$345

Bell Atlantic

The next step was to contact Bell Atlantic. They only offer ADSL connections. This service is much cheaper than SDSL. However, Bell only sells one IP address Address with the service, thus a proxy server or network box would be needed as we discussed.

Time:

Not specified, but from personal experience 4-6 weeks.

Costs:

One time costs:

DSL router	- \$99*
Installation	- \$99*
Total	- \$198

**Using the current "Getting Started Program" special offer*

Monthly costs:

640/90kB	- \$50
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APPENDIX D - Comparison Chart of Connectivity Options

Information	Stargate SDSL	Bell Atlantic ADSL	Information Renaissance ISDN	Elbert/Kathy - Frame Relay
Speed (down/up)	160kB	640/90kB	56kB	56kB
Number of IP's ***	14*	1	No limit	?
E-mail	No**	Yes (1 account)	?	No
Web	No**	Yes (5MB)	?	No
Costs				
Installation	200	99	700	Free?
Equipment (router)	575	99	0	Free?
Monthly Charge	175	50	250	166.67
Rebates	200	0	0	N/A
Other Equ. (proxy/box)	0	500	0	Free?
Total Fixed Cost	575	698	700	Free?
Total Monthly Cost	175	50	250	166.67
First Year Cost	2675	1298	3700	2000.04

* For \$40, the number can be expanded to 32 IP's = 32 computers.

** For \$75, you get 20MB web space, and 10 e-mail accounts

*** The number of IP's is equal to the number of computers you can have without using a network box or proxy server

While Bell Atlantic has the cheapest solution, the legality of the proxy/network box issue has to be more clearly looked at. Kathy has relayed the information that Bell will only support one computer, but that doesn't mean it isn't allowed. Stargate also offers 24x7x365 support on it's DSL solution for an additional \$50 a month. Also, many sites offer free e-mail and web hosting, so not having that service provided to you is not necessarily an issue. Kathy told me in class the other day to **not** count on her plan moving forwards during the time I am there.