Hill House Association
Department of Education and Support Services
Consultant, Omar Zevallos
Community Partner, Stephen MacIsaac

Situation Description

Organization
Hill House Association (HHA) is an non-profit organization located at 1835 Center Avenue, Pittsburgh, PA 15219. Three buildings, in total, comprise all of HHA, with a fourth being added to the organization in the coming months. HHA's location serves to be readily accessible by the majority of the area it services, the Hill District. These services include programs focusing on counseling, parenthood preparation, child care, educational assistance, and public internet connectivity, amongst others. The Department of Education and Support Services (DESS) is located in HHA's main building, Hill House Center (HHC).

Since HHA is dedicated to the improvement of the Hill District, the city of Pittsburgh occasionally grants moneys and other resources to its cause, particularly the Young Mothers and Young Fathers programs. Allegheny county also contributes to HHA, focusing on senior services and programs. Further, independent donations also help to keep HHA an accessible and important resource to the residents of the Hill District. However, it is the United Way that provides the core funding for HHA. Particularly, the Early Child Care Initiative of the United Way contributes to the child-care related services. The current total operating budget of HHA is $4.3 million.

Technologically, HHA has a strong number of computers and peripherals located across the two main buildings, HHC and the Kaufman Building. Most members of the DESS staff have their own computers used primarily for word processing and other office-related applications. Two internet-connected computer clusters can also be found in HHC.

Facilities
HHC, the two-story main building, houses administrative offices in which a mixture of staff, students, and parents can always be found. The first floor has a large lobby with couches and other comfortable chairs to foster a friendly and inviting lounge atmosphere. A computer lab is also found on this floor as well as a set of vending machines for refreshment. The second floor of this building consists mainly of offices and meeting rooms. It is primarily on the second floor that administrative work is done with an open-door policy to further foster a welcoming environment.

Programs
HHA provides myriad services tailored to the specific needs of clients within the Hill District. These programs include The Hill House Child Care and Development Center, the Department of Education and Support Services (DESS), the Kaufman Program Center Services, and Hill House Senior Services. DESS includes the Young Mothers Program, Young Fathers Program, Independent Living Program, and the GAPS Initiative. The Kaufman Program Center Services entail the Hill Community Access Network (HillCAN), the Hill District Consensus Group, the After School Program, Summer Camp, and the Arts Program. Each and every one of these programs look to improve the quality of life in the Hill District.

HillCAN is an internet service provider for the residents of the Hill District. Basic internet connectivity is offered by HillCAN through a ten-modem 56k bps modem pool. There are presently over 400 email accounts, but those capabilities are very limited because of the interface. Email is sent and retrieved through PINE, which does not allow for an easy way to attach and extract email attachments. The PINE system not user-friendly and clients of HillCAN are usually confused when they try to use it. HillCAN access is limited to Hill District residents. HHA staff do not have access to HillCAN, especially since it requires a dial-up connection that most of staff lacks. As a result, most of the staff does not have email or internet access.

Staff

The staff of HHA is numerous, ranging from counselors, clerical staff, administration, computer technicians, and others. There are 45 part-time employees and 75 full-time employees in HHA. Each staff member works under a department and looks to assist their fellow staff members in accomplishing tasks relevant to HHA's mission. As such, most staff members are provided with computers so that they might more efficiently complete their tasks and stay organized. These computers are provided by a trickle-down effect where older computers in the labs, upon replacement, are distributed amongst the staff for their use. New computers are not acquired for the staff but are rather always for the labs so that HHA clients will be using the best HHA has to offer.

On the administrative level, Stephen MacIsaac is the director of operations and Jim Henry is the executive director of HHA. Mr. MacIsaac is in charge of DESS and, in Mr. Henry's absence, is acting director. Mr. MacIsaac and Mr. Henry work closely on most administrative issues.

Technical Environment

HHA's computer manifest consists entirely of PC-based machines. All machines utilize the Microsoft Windows 95 or 98 operating system except for one Unix box located in the Kaufman Building, at the heart of the HHA network, HillCAN. All the computers are loaded with either Microsoft Office 97 or Office 2000 versions of Word and Excel. The actual speed and specifications of the computers vary greatly from locations within the building, from offices to labs to other buildings.

All computers are brand-name, coming from Compaq, Hewlett-Packard, IBM, Packard Bell, and AST. Intel Pentium 90MHz – 233MHz CPU's are found in all of these machines. Hard drive size also varies from 500MB – 2.5GB. Standard quality video cards and other peripherals can be found in each computer and Ethernet cards are present in most of them. Modems ranging from 9600bps – 33.6bps can also be found in most machines to aid in internet connectivity. Printers are present at one per lab and in some offices. There is no internet connection present in the HHC lab despite HillCAN being located in the adjacent building. However, this lab had been designed to be connected as a LAN. Currently, however, the lab machines are not connected to one another. The remaining machines in HHC, including staff, do not have internet, nor intranet, connectivity. There was a previous attempt at connecting the offices with Ethernet cables, but this was never completed and now there is only a closet full of a great number of RJ-45 cables which no one remembers how to reconnect. Save for a very small network located in a cluster of offices that require the use of a single printer, there is no network present in all of HHC.

That is, computers cannot communicate with each other and send print jobs to specific printers. Instead, files must be transported on floppy disks to computers that are connected to printers. These printer-connected computers are located in a few offices throughout the building, so work is interrupted when someone needs to use a document. Similarly, the cluster computers are not connected to one another, leaving only one computer connected to a printer which requires users to stand in line in order to utilize it. Offices are not connected at all to the internet save for the America Online connection that Mr. MacIsaac and Mr. Henry share.

Technology Management

All of this technology is managed by the directors of HHA in that they authorize and verify computer purchases and installations as well as movements towards increased connectivity and efficiency. This management, however, is from an administrative perspective and not a technological one. The technological management is left to the director of HillCAN, Richard LeGrande, whose technical expertise has provided a means to create, and maintain, an internet service provider (ISP) for the Hill District. Dan Toller, head instructor for HHA, is also very computer literate and assists with computer-related purchases, upgrades, and installations. Both Mr. LeGrande and Mr. Toller are responsible for advising on problems as they arise and recommending upgrades when they become necessary. Students from Carnegie Mellon University also help in these tasks by working side-by-side with a staff member as a process consultant for the length of one semester (15 weeks) at

a time. This semester, there are three consultants, each one working with either Mr. Henry, Mr. LeGrande, or Mr. MacIsaac.

Problems and Opportunities

Through conferencing and from the Situation Description, Mr. MacIsaac and I have identified some problems and opportunities available to the Hill House Association. On the highest level, there are two main opportunities that can be taken advantage of, each with its own subset of problems and opportunities. These opportunities are the inter-departmental networking of the DESS staff as well as the networking of the computer labs.

Providing Networking of the DESS Staff

The staff of HHA share many resources in order to properly service the community. Included in the shared resources is the technology of computers, printers, and faxing capabilities. However, potentially productive time is lost in the movement of data, via floppy disk, to computers connected to output or communication peripherals. For a fax to be sent, a staff member has to first print the file, which requires floppy disk transportation, and then the printout will be faxed at a cost to the department. Further, if files need to be shared, they must also be transported via floppy disk to the computer where it can be read. Updates to the shared files must be synchronized between computers to ensure that the latest version is available to both parties. This further complicates the sharing process and wastes potentially productive time.

A solution to these problems is the networking of all of the staff computers, most of which already have Ethernet cards. This can be accomplished through either a client-server LAN or a peer-to-peer connection. Each of these two approaches has its advantages and disadvantages.

With a peer-to-peer connection, users can share their files directly from their computers. This is one of the goals involved in the decision to network the staff, but one must also consider that the resources of each computer would be taxed as a result of the direct connection to the others. For example, one computer would have to be a printer server so that everyone on the network might have printing capabilities. Further, another computer would need to be the email server, and yet another would have to be the fax server. Since the staff computers are cycled from the old lab computers, these machines will never be up-to-date with technology. As a result, the productivity of each employee at their server-workstation computer would decrease when other employees need to print, send email, or fax from their workstations. Since the point of this network is to increase employee productivity, the client-server LAN will be installed.

A client-server LAN would allow for users to continue to share their files while not having their computers taxed by network-wide applications. Instead of assigning different computers to run specific servers, one server machine can run the printer, email, and fax servers concurrently. Since there will be no employee using the server for daily purposes, the computer will be able to provide these services to the rest of the network that the staff will only benefit from, in terms of productivity. Further, the opportunities that are be produced as a result of networking the staff via a client-server LAN make it the best route to take.

The networking would be accomplished by either allocating one of the older, but faster, computers or by purchasing a new computer specifically for the purpose of setting it up as a server. The client computers can then be connected to their proprietary workgroup via existing cable connections or by creating new cable pathways from the clients to the server. Since HHA will undergo renovations in a few months, it is advisable to have the renovation crew create new pathways which would be easy to cable upon completion of the renovations.

Impact

The networking of the HHA staff would increase productivity and minimize time wasted on floppy disk saving and transportation since files can quickly and efficiently be transferred to machines or be sent to a printer directly. Files can also be shared on one machine so that when many people need to access or modify the file, the location of the newest copy can be found in one place. Maintenance of the network (and subsequent opportunities) could be done by Mr. MacIsaac, Mr. LeGrande or any other qualified staff member. There are other impacts to HHA that occur with the networking of the staff in that there are further opportunities that can be gained from such action.

Inter-Staff Email

The need to communicate with one another is vital in any office environment. HHA is no exception. Right now, hardcopies are required to send out memos, announcements, and other formal communications, which might sometimes require multiple copies from a copy machine.

A solution to this problem would be setting up an intranet mail server on the network server so that staff members can email each other with ease. Also, internet-capable email could be setup so that communication with clients, potential donors, and other officials would be up-to-date and efficient. Given that HHA is its own internet service provider (ISP), connecting to the internet for mail-only purposes is feasible.

Impact

With email, memos, announcements, and formal inquiries can be sent from staff member to staff member without the need of hardcopy that can be otherwise cumbersome and time-consuming. The ability to email would also help case workers to communicate with their students directly by emailing them to their HHA account (see below, as this is also an opportunity) in order to leave important messages or announcements in a timely manner.

Feasibility

Once the network is setup, configuring a mail server would not be too difficult given that there are many freeware, shareware, and commercial software packages, readily downloadable via the internet, that could be used to accomplish this task. Once set up, the mail server would be self-sustainable in the sense that as long as its settings were not blindly altered, the mail server could, theoretically, continue working for an infinite amount of time. Of course, real-world considerations must be taken into account, such as adding and deleting users, changing passwords, and setting forwarding account.

These considerations, however, are easy enough to handle as Mr. MacIsaac, and other staff members, can be trained to perform administration tasks. Particularly, Mr. MacIsaac is very interested in learning the inner-workings of the mail server, which makes training easier since his interest level is so high. As such, this opportunity is very feasible and contains little risk since all available mail server packages include help files and troubleshooting guides as well as provide technical support if deemed necessary.

Networked PC Faxing

Faxing is very important in the business world, and every organization has the need to communicate with distant locations by sending facsimiles to one another. At HHA, though, there is no specific fax machine available for unlimited use by the staff, so when a staff member has to send a fax, a charge is incurred to the department the staff member belongs to.

To try to minimize the long-run cost of continuing in this fashion, it would be best to setup a way, via the network, that would allow for PC faxing from any computer on the network. This could be accomplished by equipping one (or more) computers with a fax modem and setting up software that would allow for faxes to be periodically sent if there are files in a designated network-shared outbox.

Impact

This type of network-capable faxing would minimize the cost of faxing from the HHA communal fax machine and would also help to save the time needed to print out a document, run it over to the fax machine, and wait for it to be sent. Instead, a staff member could just drop their fax-ready document in the designated outbox and be assured that in at most 15 or 30 minutes the fax will be sent. A faxing program that could perform such an operation could also automatically delete the file it just sent so that on the next sweep it would not detect it and send the file again.

Feasibility

Once the network is setup, configuring a faxing program would not be too difficult given that there are many freeware, shareware, and commercial software packages, readily downloadable via the internet, that could be used to accomplish this task. Once set up, the faxing program would be self-sustainable in the sense that as long as its settings were not blindly altered, the faxing program could, theoretically, continue working for an infinite amount of time. However, as with all computer applications, problems are bound to arise. Fax numbers can be misplaced, files can get lost or damaged, or some faxes might be delivered to the wrong inboxes. At these times, software maintenance must be administered by qualified individuals.

The technical management and maintenance personnel of HHA would be responsible for performing such administrative tasks. Mr. MacIsaac, Mr. LeGrande, and Mr. Toller would have to become familiar with the program on both the user and administrative levels. Given that their interest level in such an endeavor is very high, training them with this program would be both effective and time-efficient. As such, this opportunity is very feasible and contains little risk since all available faxing program packages include help files and troubleshooting guides as well as provide technical support if deemed necessary.

Authentification and Timekeeping

Once a network is in place, automation of many other tasks can take place with just the right software involved. One of those tasks is the signing in and out of staff members for the work day. Presently, staff members sign in at a designated spot and then sign out at the end of the day. While Mr. MacIsaac likes the frequency of seeing his staff on their way to sign in and out, the recording process then becomes tedious in the translation from the clipboard-and-paper.

A solution to this problem would be one where staff members can authenticate to their computers and a timekeeping service on the server could then take note of the their entry time. At the end of the day, when the staff member logs out, the timekeeping software could stop the time and export the applicable data to a file.

Impact

This action would not greatly impact the organization but is rather a small opportunity for automation that could be taken advantage of. There are, however, some factors to consider, but not major ones that would heavily impact the decision to implement or abandon this opportunity.

One of the most immediate results of automating timekeeping is that staff will no longer have to sign in near Mr. MacIsaac's office. Since they can do it from their computer, Mr. MacIsaac would not see every member of his staff every morning and afternoon. This, however, does not bother Mr. MacIsaac since he is down the hall from most of his staff and can always visit them in their offices or call them to his office, if necessary.

Another impact that this might have is the potential for employees cheating on their working time. This is also not a substantial concern for Mr. MacIsaac because he believes in the work ethic of his staff. Further, signing in to the timekeeping software can be configured to require that an employee be in their office to complete the sign-in process. Whether or not this opportunity is taken care of, staff needs to be in the office building because they cannot do their work at home. As such, this opportunity does not greatly impact DESS.

Feasibility

The feasibility of implementing this automation would depend on finding the appropriate software that would run on the network and record the data. Finding software for any task is generally not a difficult undertaking, but the administration of the software can be time-consuming. Since the impacts of this software is minimal, Mr. MacIsaac and the rest of the staff are not very excited about this innovation. They are willing to learn the system, and even try it, but they would rather stay with the current system that they have since the payoff of changing would be so small. As such, this opportunity is not very feasible and takes a low priority of all the potential changes for Mr. MacIsaac.

Feasibility

The time to complete such an installation is available since, ideally, one would only need to setup the server and the software, connect the wires to the client computers, and then begin mapping drives, sharing folders, and configuring other detail-oriented aspects of the network. Given that no installation is problem free, the time-frame of doing such a network installation might span approximately three to four weeks. However, these few weeks would have to take place after the renovations to HHC are completed. Including the time it takes for renovating the building, the network installation can be delayed approximately six months. However, Mr. MacIsaac's motivation in such an endeavor is very high and, as mentioned before, his desire to get such a network installed, and subsequent opportunities, ensures a very cooperative work environment. The resources for the network installation are available given both departmental funds and already-owned computer parts such as all the client computers, Ethernet cards, and cables. Further, the skill-level required to perform this scale of installation will be a challenge both for the consultant and the community partner, but given existing knowledge of networks and hardware, the installation seems very plausible. Once the consultation period has expired, however, maintenance of the network would be left to Mr. MacIsaac and any other properly educated staff member. Given that there has already been an attempt at networking the computers, there is little risk involved since the foundation for such an endeavor has already been established. However, since HHA will be going through renovations that might require the disconnection of the network, Mr. MacIsaac decided that it would be best to plant the foundation for this network and have it installed after HHC renovations have been completed.

Providing Networking to the Computer Labs

The users of HHA have many resources available to them. Included in these resources is the technology of computers, printers, and other peripherals. While these resources are a great asset to the community, full advantage of these computer capabilities is not being realized since each computer is independent of each other and therefore unable to share with the other computers (and users) in an efficient manner. One of the main problems is the printing of documents which must be done by transporting the file(s), via floppy disk, to the computer which has the printer installed and print from there. Sometimes there is a line for the printer, which causes users to have to stand in a line instead of just sending their print jobs to a printer and continuing to use the computers.

A solution to these problems is the networking of all of the computers in the lab, most of which already have Ethernet cards. For the same reasons that the staff network would use a client-server LAN, the computer labs would also benefit from the client-server implementation. As such, users of the computers will be able to access the different servers running on the server machine, such as the printer.

This would be accomplished by allocating one of the present computers for the purpose of setting it up as a server. The client computers would then be connected to server via existing cable connections or by creating new cable pathways from the clients to the server. The room is set up with computers on long tables, arranged in rows. As such, running wires under desks and carpeting would suffice to connect all of the computers together. The server would also be configured to run the lab machines as one workgroup, separate from the workgroup created on the staff network. These workgroups can then be connected together to the most powerful of the servers and a building-wide network can be created in HHC.

Impact

The networking of the HHA lab would increase the potential of the computers provided. This is vital because the main ingredient to learning is interest, and if students are interested in what these computers can do and how they do it, they will be motivated to learn more about them. Using older methods of data-transferring (ie, floppy disk transport) makes the computer labs unattractive to students, which is something that must be corrected.

Like the networking of the staff, the networking of the lab would provide for files and printers to be shared. This would be helpful for students who want to work on multimedia projects with each other or who want to share their work with their friends. Also, students wishing to print out papers or pictures will be able to do so without standing in line with a floppy disk in hand. Further, by connecting the computer lab and the staff, it is easier for staff members to monitor progress and send their students file, data, and other things of interest to the student that would help foster interest in both computers and the programs at HHA. Maintenance of the network (and subsequent opportunities) could be done by Mr. MacIsaac, Mr. LeGrande, Mr. Toller, or any other qualified staff member. There are other impacts to HHA that occur with the networking of the staff in that there are further opportunities that can be gained from such action.

Email Access

Users of the current computer lab have expressed interest in the ability to communicate via email, like most of the population is doing. Right now those capabilities are limited to the internet-connected lab consisting of four computers that resides in the adjacent building. This is a problem because those computers are generally occupied and students have to wait in line to be able to use them. Further, since the lab in HHC doubles as a classroom, students will be encouraged to come before or after their classes to communicate via email. During class, the instructor already walks the around the lab helping students, so the distraction of email during class is a very minor concern.

A way to take advantage of this opportunity would be to set up an intranet mail server on the network server or using the one provided by the staff network. The former choice is too complicated because then there would be two concurrent mail servers running on the same large network and it can get confusing. The latter, however, is more feasible if both networks are connected as one, but if not, then the former could be done in much the same fashion as for the staff network. Also, internet-capable email could be setup so that communication would be up-to-date and efficient. Given that HHA is its own internet service provider (ISP), connecting to the internet for mail-only purposes is feasible.

Impact

This would continue to foster interest in visiting the computer lab and learning about how the system of electronic communication works. The ability to email would also help students to communicate with their case workers directly by emailing them to their HHA account in order to leave important messages or make appointments in a timely manner.

Feasibility

Once the network is setup, configuring a mail server would not be too difficult given that there are many freeware, shareware, and commercial software packages, readily downloadable via the internet, that could be used to accomplish this task. Once set up, the mail server would be self-sustainable in the sense that as long as its settings were not blindly altered, the mail server could, theoretically, continue working for an infinite amount of time. Of course, real-world considerations must be taken into account, such as adding and deleting users, changing passwords, and setting forwarding account.

These considerations, however, are easy enough to handle as Mr. MacIsaac, and other staff members, can be trained to perform administration tasks (see Appendix 1: Mail Server Administration Cheat Sheet). Particularly, Mr. MacIsaac is very interested in learning the inner-workings of the mail server, which makes training easier since his interest level is so high. As such, this opportunity is very feasible and contains little risk since all available mail server packages include help files and troubleshooting guides as well as provide technical support if deemed necessary.

Authentification and Timekeeping

Once a network is in place, automation of many other tasks can take place with just the right software involved. One of those tasks is the signing in and out of students for the duration of their visit. Presently, students sign in at a designated spot and then sign out at the end of the day. While Mr. MacIsaac likes the frequency of seeing the students on their way to sign in and out, the recording process then becomes tedious in the translation from the clipboard-and-paper.

A solution to this problem would be one where students can authenticate to their computers and a timekeeping service on the server could then take note of the their entry time. At the end of the day, when the student logs out, the timekeeping software could stop the time and export the applicable data to a file.

Impact

This action would not greatly impact the organization but is rather a small opportunity for automation that could be taken advantage of. There are, however, some factors to consider, but not major ones that would heavily impact the decision to implement or abandon this opportunity.

One of the most immediate results of automating timekeeping is that students will no longer have to sign in near Mr. MacIsaac's office. Since they can do it from their computer, Mr. MacIsaac would not see the students every time they visit HHA. This bothers Mr. MacIsaac since he likes to foster an open and friendly relationship with each HHA student, and not seeing them everyday detracts from this.

Feasibility

The feasibility of implementing this automation would depend on finding the appropriate software that would run on the network and record the data. Finding software for any task is generally not a difficult undertaking, but the administration of the software can be time-consuming. Since the impacts of this software is minimal, Mr. MacIsaac is not very excited about this innovation. He is willing to learn the system and teach it to the students, but he would rather stay with the current system that they have since the payoff of changing would be so small. As such, this opportunity is not very feasible and takes the lowest priority of all the potential changes for Mr. MacIsaac.

Feasibility

The time to complete such an installation is available since, ideally, one would only need to setup the server and the software, connect the wires to the client computers, and then begin mapping drives, sharing folders, and configuring other detail-oriented aspects of the network. Given that no installation is problem free, the time-frame of doing such a network installation might span approximately three to four weeks. However, these few weeks would have to take place after the renovations to HHC are completed. Including the time it takes for renovating the building, the network installation can be delayed approximately six months. However, Mr. MacIsaac's motivation in such an endeavor is very high and, as mentioned before, his desire to get such a network installed, and subsequent opportunities, ensures a very cooperative work environment. The resources for the network installation are available given both departmental funds and already-owned computer parts such as all the client computers, Ethernet cards, and cables. Further, the skill-level required to perform this scale of installation will be a challenge both for the consultant and the community partner, but given existing knowledge of networks and hardware, the installation seems very plausible. Once the consultation period has expired, however, maintenance of the network would be left to Mr. MacIsaac and any other properly educated staff member. Given that there has already been an attempt at networking the computers, there is little risk involved since the foundation for such an endeavor has already been established. However, since HHA will be going through renovations that might require the disconnection of the network, Mr. MacIsaac decided that it would be best to plant the foundation for this network and have it installed after HHC renovations have been completed.

Work Plan

After deciding on what the goals for the consultation period were, a work plan was drawn up which would illustrate what work had already been done, would be done, by whom it would be done, and by when. This work plan was very helpful in deciding what would be worked on each week and turned out to be an accurate estimate of how long network preparation could really take.

Below is the work plan that Mr. MacIsaac and I followed. Under the column labeled "Done By", *SM* represents Mr. MacIsaac, the community partner, and *OZ* represents me, the consultant. Darkened blocks indicate the weeks in which the associated tasks were worked on.

Task Name	Done By	February				March			April				12
		1	2	3	4	5	6	7	8	9	10	11	
Assessing the Situation	**SM, OZ**												
Determine current capabilities of computers, community partner, and staff.	OZ												
Develop short-term goals of setting up the network foundations by installing the appropriate software.	SM, OZ												
Develop long-term goals of networking both staff and labs together after renovations have been completed.	SM, OZ												
Testing the Eventual Network on an Already-Existent Smaller Network	**SM, OZ**												
Testing the mail server, *InetServer v3.1.1*	SM, OZ												
Get mail server software from the internet	OZ												
Install mail server on a computer that is already on the small network	OZ												
Test mail server from other computers using MS Outlook Express by sending email to all accounts	SM, OZ												
Testing the networked faxing capabilities, *Symantec WinFax Pro*	SM, OZ												
Get networked faxing software	OZ												
Install networked faxing software on computers in the lab	OZ												
Test networked faxing software on the lab	SM, OZ												
Set Up Foundations for the Network That Will Be Installed After Renovations Are Completed	**SM, OZ**												
Assess the capabilities of all potential machines to be networked	SM, OZ												
Find a computer that will eventually be the server and assign it as such	SM, OZ												
Make sure potentially networked computers have Ethernet cards installed in them	SM												
Prepare computers to be networked by installing the appropriate software and configuring the appropriate settings	SM, OZ												
Clean the hard drives of unnecessary files and programs to make more room for installations	SM, OZ												
Upgrade existing Windows95 computers to Windows98	SM, OZ												
Install mail server on server machine	SM, OZ												

Configure Outlook Express on client machines to work with the mail server by inputting the appropriate IP addresses	SM, OZ													
Install networked faxing program on server machine as a faxing gateway	SM, OZ													
Configure networked faxing program on server machine to accept faxes from approved clients	SM, OZ													
Install networked faxing program on client machines as faxing clients	SM, OZ													
Configure networked faxing program on client machines to be able to send and retrieve faxes from the faxing server	SM, OZ													

Outcomes and Recommendations

After weeks of working with Mr. MacIsaac, we have managed to make significant progress. This progress is evident in the technological improvements that have become part of the everyday routine in the office. More importantly, however, this progress can be seen in the potential that HHA is facing. The staff is now a little more familiar with networking concepts, particularly email, and a great surge of interest in bringing HHA up-to-date, technologically, ensures that technology is bound to find its way into every relevant aspect of the workday. HHA stands to benefit greatly from the product of this interest.

Providing Networking of the DESS Staff

The networking of the staff, particularly DESS staff, was the priority of this consultation period. The network was to allow a more efficient channel of inter-office communication and increase productivity. However, seeing as how there will be complete renovation to HHC and that all operations will move to a different building, Mr. MacIsaac and I have decided that the best course of action is to perform all the necessary software preparations and train key staff (starting with Mr. MacIsaac) in network administration. In essence, the most logical route to take was to lay a solid foundation for the eventual integration of a network and then, after renovations were completed, hardwire the department together.

Outcomes

Evidence of a solid foundation for the future network in HHA is evident in that the computers are being upgraded, in terms of software and hardware, in preparation for connection into a network. All the staff computers have had Ethernet cards installed in them, and those with the capability for certain software (Windows98, email client, etc.) have had that software installed in them. When the network is ready to be installed, the computers will only need to be plugged into the server and then rebooted to create the network.

Further evidence of this foundation for a network is found in the software that the computers have been loaded with. Working side-by-side, Mr. MacIsaac and I set up an email server, email clients on the capable computers, and a fax program with network capabilities. Windows98 has been loaded on all the computers that can handle it and the appropriate folders and files have been shared. All the computers have been named and assigned to the same workgroup to make sure that they are all readily accessible. Even though the network is not presently in-place, the sharing status of these folders and files remains constant and, once connected to the network, they will automatically be available to the appropriate staff members.

Yet more evidence of a promising future network is the interest of the staff for the eventuality of a network. Mr. MacIsaac is very passionate about implementing the network, and his staff is also looking forward to it. They are all willing to learn how the software works and are eager to know exactly how the network performs tasks such as file and print sharing. This willingness is evident during every consultation period when any staff within the vicinity of any given week's project is looking on. The staff is always asking questions about how things are going to work and how that will make them more efficient. They are usually very pleased with the answers and are excited about seeing these improvements through to completion.

The present level of progress is very sustainable. The hardware aspects will continue working (or have the potential to work) given that no one mistakenly changes hardware settings or performs other actions that produce problems such as halting of the computer or its peripherals. Mr. MacIsaac, among others, however, is qualified to diagnose and repair these problems. For example, when upgrading Windows95 computers to Windows98, Mr. MacIsaac was able to hypothesize the capabilities of the computer to be upgraded and then make a decision as to whether the operating system should be installed. For two particular installations, the computers halted and Mr. MacIsaac knew how to correct the problems encountered during the reboot phase of the installation. Those two machines were successfully upgraded.

The software aspects of the current level of progress are similar, given that no one mistakenly changes settings and the software is kept updated. Software updates can be done by downloading the most current versions from the internet (see Resources under Recommendations below). The only progress that might suffer is the interest level of the staff members, especially if the network takes a long time to implement.

Recommendations

The most important recommendation to note is that the network should be implemented as soon as the renovations to HHC are completed. That is, once the main operations have moved back into HHC, the hardwiring of the computers should take place very soon afterward. If done in such a way, productivity would increase soon after moving back into the renovated HHC, and HHA would be reinvigorated and perform its mission of assisting and servicing the residents of the Hill District.

The networking in general could be made easier by requesting that all the offices be connected with at least one RJ-45 Ethernet wire that would run into a central location where the server would be stored. This would provide for the cabling to be done in a sustainable manner that would make networking even easier, since all one would then have to do is plug their computer into the wall plug. This simplifies the whole networking process and helps minimize potential problems that arise from confusion.

There are many resources to help HHA in its future networking plans. I am one of those resources, since I will be continuing my consultation with HHA into the next academic year. This way, Mr. MacIsaac and I can oversee the completion of our initial goal of networking the staff. This is very beneficial because I am already very familiar with the way HHA works, both in terms of technology and in terms of office environment. I am also familiar with some of the staff and can keep teaching them about how the network works even after it has been installed.

Another important recommendation is that HHA begin to consider creating a technology plan to rotate and update the computers as they are needed. This would help ensure that the network stays functional with the changing demands of technology and software. A good way to implement a very basic plan would be to keep an inventory of all the computers and then develop an out-of-date threshold. Once computers have passed this threshold, then they need to be replaced. Since staff computers come from lab computers that have been upgraded, this action serves a double purpose because the staff gets newer computers to do their work on, and the labs get upgraded regularly as well, to better serve the

students of HHA. Of course, a technology plan should be much more detailed. There are many resources to help HHA create an effective technology plan.

Resources

The following resources are some of the many websites available on the world wide web for strategic technology planning.

http://www.nonprofits.org

This website is a very good resource for strategic technology planning in that its resources give straightforward answers to common questions that directors of HHA might have. This is done through the use of a large frequently asked questions (FAQ) section that one can select keywords from and then be transported to the correct area.

The answers that this FAQ can provide can greatly help HHA answer all questions they might have concerning technology planning in that it provides a mechanism through which it can keep current on "best practice" use of technology that can be used in the technology planning process for two to three year strategies. This website also gives insight as to the cost-effectiveness of certain implementations so that HHA develop an adequate budget that is not overestimating too much on what might to be done. Further, this resource looks to the long term and describes the long-term effects of implementing certain aspects of technology into the organization. All this information provides for the nonprofits to involve individuals that can be both technology- and program-savvy to take into consideration the suggestions on this website and then be responsible for reporting possible changes to the director or management team.

The following is a sample of topics and questions covered by the FAQ:

- Choosing Accounting Software: Questions to ask

- Software for client/donor tracking or mail merge?

- Should I buy a software package or customize my own system?

- What's involved in planning a computer system?

    o summary: Key considerations when planning a computer system

- Where can I learn about computers?

    o summary: Overviews of the basics of a small computer system

- Where can I purchase software at low cost?

- How do I know when I should upgrade a computer?

    http://www.genie.org

This website is also a good resource for strategic technology planning in that it also has a lot of FAQ's. Specifically, there is a FAQ dedicated to technology planning for nonprofits that could be of great use to HHA when looking to develop a strategic technology plan. This particular FAQ could be of great help to a non-technically-oriented director (for example) because it first walks through what information technology is and then dedicates the remainder of the FAQ to developing a technology plan.

This is a wonderful resource because it also uses straightforward answers to common questions which allow for nonprofits to efficiently, and correctly, develop a plan ranging from 1 to 2 years up to 3 to 4 years (any more than that would be

planning too far ahead considering the rate of technology expansion and invention). The FAQ also gives mention of how to efficiently estimate a budget for the proposed technology plan which is a great concern of an organization's board and/or director.

The best part about this FAQ, however, is the last question which deals solely with resources for technology planning. These are other websites that have been found to be of great use to nonprofits seeking to enter the 21st century utilizing technology in order to more effectively, and efficiently, serve their mission.

The following is a sample from the FAQ detailing technology planning resources:

Online resources:
      a. National Center for Technology Planning, www.nctp.com
      b. The Evergreen Society, www.nonprofit-info.org
      c. Non profit technology: www.nonprofit-tech.org

Publications
      a. The Art of Strategic Planning for Information Technology: Crafting Strategy for the 90s, by Bernard H. Boar
      b. Office Information Technology: A Decision-Maker's Guide to Systems Planning and Implementation, by Randy J. Goldfield
      c. Building Your Own High-Tech Small Office, by Robert Richardson

http://www.nctp.com
This is another useful website with a great amount of resources available to a nonprofit organization such as HHA. This website is dedicated to technology planning and has many articles and other sources of information to look at when developing a plan. Similar to the above websites, this site looks to educate nonprofits so that they can effectively and correctly create a working technology plan that will help serve the mission of the organization. This education is done primarily through articles, but there is also a rich assortment of example technology plans that can be used for reference. These examples are the actual plans from other organizations such as HHA.

The following is a sample of the articles available:
    Developing Effective Technology Plans
        Author: John See, Technology Integration Specialist, MN Dept. of Education
    Technology Planning: Recipe for Success
        Authors: Larry S. Anderson & John F. Perry, Jr., NCTP
    Making Dreams Come True!--How to Write A Technology Plan
        Author: Larry S. Anderson, NCTP. Published in *Multimedia Schools*, Nov95, pp. 14-19

http://prioris.dcr.state.nc.us/hottopic/techplan/techplan.htm
This is a small, but good, resource for technology planning because it provides templates, worksheets, and examples for how a technology plan should look. It's not a very in-depth website, but it does provide links to examples of technology plans as well as utilized checklists and other resources. For the most part, this is useful to state libraries, but with a little imagination and abstraction, HHA could adapt this information to their uses.

http://www.ties.k12.mn.us/techplan/index.html
This site is Technology Planning Guide for Minnesota School Districts and Libraries, but it can also be used in a similar fashion to the one above. This is a very detailed and very complete technology plan, detailing every possible aspect of a strategic 2 to 3 year outlook. As

a resource, this website provides a great example of how a technology plan should be organized and presented. It is highly recommended that Mr. MacIsaac and Mr. Henry read through this document when designing a technology plan.

Providing Networking to the Computer Labs

The networking of the computer labs was a secondary priority of this consultation period. The network was to allow a more efficient channel of communication between students and case workers and also increase efficiency in education. However, seeing as how there will be complete renovation to HHC and that all operations will move to a different building, Mr. MacIsaac and I have decided that the best course of action for this plan would be to also perform all the necessary software preparations and train key staff (starting with Mr. MacIsaac) in network administration. Again, the most logical route to take was to lay a solid foundation for the eventual integration of a network and then, after renovations were completed, hardwire the department together.

Outcomes

Evidence of a solid foundation for the future network in HHA is evident in that the computers are being upgraded, in terms of software and hardware, in preparation for connection into a network. Mr. MacIsaac has overseen the ad-hoc wiring of the computer labs to test their network connectivity. The wiring was not done in a permanent manner since the building will be renovated. When the network is ready to be installed, however, the computers will only need to be interconnected to create the network.

Further evidence of this foundation for a network is found in the software that the computers have been loaded with. Working with Carnegie Mellon student Rob Fetterman, Mr. MacIsaac and Mr. Toller used standard Ethernet wire to connect the computers in the lab to a server machine that utilized an eight-port RJ-45 hub. Mr. MacIsaac and I then set up an email server, email clients on the capable computers, and a fax program with network capabilities. Windows98 has been loaded on all the computers that can handle it and the appropriate folders and files have been shared. All the computers have been named and assigned to the same workgroup to make sure that they are all readily accessible. Even though the network is not presently in-place, the sharing status of these folders and files remains constant and, once connected to the network, they will automatically be available to the appropriate staff members.

The present level of progress is very sustainable. The hardware aspects will continue working (or have the potential to work) given that no one mistakenly changes hardware settings or performs other actions that cause problems such as halting of the computer or its peripherals. Mr. MacIsaac and Mr. Toller, among others, however, are qualified to diagnose and repair these problems. They took the responsibility of installing the lab network and it has been working flawlessly since.

The software aspects of the current level of progress are similar, given that no one mistakenly changes settings and the software is kept updated. Software updates can be done by downloading the most current versions from the internet. For installations, Mr. MacIsaac and Mr. Toller keep a close watch on what is installed on the computers and also work to make sure that the software does not produce any problems for both instructors and students. They decide what software should be installed and then work to have all the lab computers loaded with the software as soon as possible.

Recommendations

The most important recommendation is that the network should be implemented as soon as the renovations to HHC are completed. That is, soon after the main operations have moved back into HHC, the hardwiring of the computers in the lab should take place. This would help bring the instruction in the labs back to the level it was at before renovations took place and might also attract new students who are curious about the new HHA. Since the goal of HHA is to assist and service the community of the Hill District, any increase in membership is an increase in the importance and effectiveness of HHA.

The networking of the computers after the renovation should be done in much the same way they are networked now. Currently, the Ethernet cables run along the bottoms of the tables and into a wall track that leads to the server. If this wall track were to be put back up, the lab could be rewired in the same fashion that it is now, thereby cutting down on the cost of running cables behind the walls and installing RJ-45 wall jacks at the ends of each row of computers. Through the lab's almost flawless operation, it has been demonstrated that the configuration works very well and does not need to be replaced or seriously reconfigured. Minor reconfigurations, such as adding more computers to the network, would be beneficial to the lab's purpose of education.

There are many resources to help HHA in its future networking plans. I am one of those resources, since I will be continuing my consultation with HHA into the next academic year. This way, Mr. MacIsaac and I can oversee the completion of our initial goal of networking the staff and the labs together. This is very beneficial because I am already very familiar with the way HHA works, both in terms of technology and in terms of office environment.

Resources
There are many good websites that are of great use to the implementation of the HHA networks.

http://www.escape.ca/~avtronic/inetserv/
This is the homepage of the email server Mr. MacIsaac and I installed, InetServer v3.1.1. This website is updated with newer versions of the freeware mail server and also provides documentation.

http://windowsupdate.microsoft.com/
This website automatically checks the version of Microsoft Windows that the user is running and periodically offers updates for download. This website should be checked at least twice a month to keep the computers up-to-date.

http://officeupdate.microsoft.com/
This website automatically checks the version of Microsoft Office that the user is running and periodically offers updates for download. This website should also be checked at least twice a month to keep the computers up-to-date.

http://www.softseek.com/
This is an archive and search engine for shareware or freeware. It is very useful for finding low-cost or free software for many different tasks. This should be one of the first places to look when the need for new software arises.

http://www.winfiles.com/
This is also a software search engine and archive, but all the programs in it are designed specifically for Microsoft Windows. When a program cannot be found at SoftSeek, this website will have it.

http://www.google.com/
This is a search for everything imaginable. It combines approximately 100 search engines and usually returns very relevant and useful links. When searching on the web for anything other than software, I recommend starting here.

There are also many available books that would be very useful to HHA when completing the network installation. The following, I've found, are very helpful and have received top reviews from many websites. Both are also very affordable and are available from any online-book retailer.

Troubleshooting, Maintaining & Repairing PCs, Millennium Edition
by Stephen J. Bigelow
ISBN: 0072122234

Internet Book, The: Everything You Need to Know About Computer Networking and How the Internet Works
by Douglas E. Comer
ISBN: 0138901619