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A Drive towards Technology Girls Incorporated of Cny Action Research Project

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Running Head: GIRLS INC A DRIVE TOWARDS TECHNOLOGY

A Drive Towards Technology

Girls Incorporated of CNY Action Research Project

Lauren J. Hardee

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Abstract

When the technological system of an organization is deficient, it systematically promotes those deficiencies throughout the organization. The technical infrastructure of Girls Inc. was outdated, not standardized, and operationally deficient and hampered normal business activity. Given its practical application (French, et al.), an Action Research methodology was employed to identify the issues and solve the technological problems facing the Girls Inc. CNY organization. The result of this action research project is a framework for a technological infrastructure that prepares the Girls Inc. organization for the future.

A Drive Towards Technology

As a traditional non-profit organization, Girls Inc. has a “brick and mortar” business model in which its programs and services are delivered in a physical building. And, like most non-profits, technology is a minor part of that business model. The Girls Inc. organization has recognized the importance of technology, its relationship to their mission, and to its premier program, *Operation SMART*, where the focus is on science, math and relevant technology. With an infrastructure in place, Girls Inc. would be in a unique position to take advantage of its strengths in research and to introduce more girls to the use of technology. To accomplish this, the organization must build a technology infrastructure that can support its business model and strengthen the organization’s competitive advantage and growth. The executive director of Girls Inc. would like to make it a high performance, technologically-sophisticated learning organization. The purpose of this action research project is to identify and implement the technological improvements that will enable Girls Inc. to meet its organizational goals and objectives as they relate to technology.

Literature Review

Traditionally, research on the relationship between an organization’s competitive strategy and its performance strategy focused on the traditional, brick and mortar business model (Parnell, 2002). In the case study, *A Business strategy typology for the new economy: Reconceptualization and synthesis*, the author discusses the considerations for a business model that includes the use of the Internet and the organization’s ability to operate in a digital, knowledge-based society (Parnell, 2002). Two business models that incorporate the use of technology include the business to business (B2B) and the business to consumer (B2C) frameworks. These models are the basis of a study titled, *Integrating brick and mortar locations*

with e-commerce: Understanding synergy opportunities. This study describes the B2B and B2C business models as having two areas of focus; a physical and a virtual. It also describes how an internet and brick and mortar organization can achieve synergies in an e-commerce environment (Steinfeld, Adelaar & Lai, 2002). Benefits that can be realized with the use of the B2B and B2C frameworks include; lower operating costs; differentiation through value-added services; improved trust between the organization and the customer and organization to organization; and geographic and product market extensions (Steinfeld, et al, 2002). In addition to the above benefits, there is also a potential labor savings by automating low value activities like electronic forms, online technical assistance, and after sales service (Steinfeld, et al, 2002).

In the article, *Strategy and the Internet*, the author describes how today technology, e-mail and the Internet, play a major role in organizations as a more cost-effective means of communication over traditional methods (Porter, 2001). However, the use of technology requires an infrastructure or the technical capacity to support the business, staff training, and technical support (Porter, 2001). An organization must now factor into the competitive equation, its human resources, the skill-set of those resources, and how to capitalize on its internal knowledgebase to be a high-performing organization. Similarly, high-performing organizations must develop a strategic vision that includes a framework for the development and implementation of technology. This strategic vision is then aligned with the business and financial plans of the organization (ITRB, 1998).

Technology, as with any valuable asset of the organization, should be protected. The *Information Technology Resources Board - Lesson Learned* article talks about the need for proper controls to protect organizational assets and systems (ITRB, 1998). Unfortunately, many non-profits are dependent upon volunteers, donations and consultants to build, support and

maintain its technology infrastructure (ITRB, 1998). The problem with this dependency is that it is deficient in the ability of the organization to transfer much needed knowledge to internal resources. Knowledge transfer is a critical component to enable an organization to be self-sufficient in maintaining its technical infrastructure (ITRB, 1998). Another problem is the additional costs associated with the use of consultants or third-party organizations to support the infrastructure.

When an organization is internally connected by a common vision, they are bound together to achieve the common goals necessary to achieve the future state (Senge, et al, 1994). In the book, *The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization*, a system is defined as a whole of elements that “hang together”, continually affecting each other over time, and that which operates toward a common purpose (Senge, et al, 1994, p. 90). A learning organization is characterized as having five disciplines; mental models, shared vision, personal mastery, team learning and systems thinking (Senge, et al, 1994). The author, Senge describes a learning organization as an organization that has and shares its lifelong programs of study and practice (1994). It is therefore important to the organization to operate as a system and that those within the system understand and share the same vision.

There has been slow movement towards the integration of technology into the nonprofit management support systems. The Techsoup *Adopting Technology* series revealed that technology and technology training remain major challenges in nonprofit organizations (Techsoup, 2002). Based on interviews with non-profit executive directors, the leading concern with the integration of technology and technology training in particular, is that it is viewed as a distraction from mission critical activity (Techsoup, 2002). Other concerns included the lack of resources, time and money as contributing factors to the lack of technology. The results also

suggest that most nonprofits felt the best technology training programs offered a variety of approaches such as workshops; train-the-trainer and peer training based programs offered the most benefit (Techsoup, 2002).

Technology integration and strategic alignment are critical to the success of any organization. The organization must have a technology infrastructure and be equipped to handle the technology challenges of today along with capacity for the future. Training and development of internal resources are also critical components of capacity planning to insure that internal resources are equipped and in alignment with the strategic goals and objectives of the organization.

Organizational Background

The Girls Inc. organization began in New England during the 1800s as a response to the needs of low- wage working women. Many of these women migrated from rural communities in search of jobs in the textile factories. The first Girls Inc. affiliate was formed in Waterbury, Connecticut in 1864. The center provided recreation and a homelike environment for young women in hopes of keeping them off city streets and out of trouble. All other affiliate centers followed the same standard model. During the mid-1930s, the executive director of a Massachusetts affiliate began publishing articles in national magazines that highlighted the needs of girls living in low income areas across the state. Many of these girls lived in working-class or single-parent families that received public support. These girls were considered high risk because in many cases the risk of pregnancy, physical abuse, drug abuse, and prostitution were much higher than they were for girls in a fully functioning nuclear family. The articles resulted in a summit of program directors from across the United States. This summit became an informal association and continued to meet, share and create support programs for girls.

On May 18, 1945, representatives from 19 organizations formed the Girls' Clubs of America. From its inception, the national organization focused the exchange of information on programs relevant to girls and the establishment of new centers. (Girls Inc., 2003) During the 1950's, even though many women worked outside the home, the early programs focused on preparing girls for a future as wives, mothers and homemakers. Many of the programs taught sewing, cooking, knitting, drama and swimming. More than 60% of female college students dropped out of school to either marry or because of fears that opportunities for marriage were lowered by possessing too much education (Girls Inc., 2003).

Adding to the difficulties facing girls and young women was their second class status. During the 1950s and 1960s women were encouraged to care about their appearance. Magazines like *Glamour*, *Teen Magazine*, and *Good Housekeeping*, and became popular. Among the lessons that they taught women were "Don't monopolize a conversation. Don't interrupt when others talk. When at any public gathering, conduct yourself in a ladylike, considerate manner; don't be conspicuous and call a lot of unnecessary attention to yourself" (The Early Years, 2005).

During the 1970s, groups such as the Center for Women Policy Studies, the National Organization for Women and others spent considerable time on legal and economic issues affecting women. Most notable was the 1973 Supreme Court ruling in *Roe vs. Wade*. This case legalized abortion. Another famous ruling for gender equality was the Title IX Education Amendment of 1972, prohibiting sex discrimination in federally assisted education programs. This legislation paved the way for girls to participate in sports dominated by boys and vice versa. Equality for women and equality for girls were the same struggle.

In 1974, the Girls Club organization became Girls Incorporated. Finally, girls and organizations serving girls were taken seriously in raising awareness and increasing knowledge of the issues facing girls and young women, and the public policies that denied equality were changed. Up to this point, the Girls Inc. affiliates had been preparing girls for marriage and motherhood. It was time for Girls Inc. to change its mission to ally with the women's movement, the civil rights movement and women in the workforce. During the 1980s and 1990s Girls Inc. experienced tremendous growth in providing opportunities and support for young girls.

Girls Incorporated Mission

Girls Inc. programs were offered primarily in a single-sex environment; a safe environment where girls received the attention and encouragement to discover who they were as individuals and without societal barriers. Social changes, lack of positive family influences, and declining moral values make boys and girls vulnerable to daily challenges; however, the effects on girls can be more profound and longer lasting. Girls more than ever needed opportunities for development.

Also during the 1970s, programs offered by Girls Inc. included sex education. One such program was Preventing Adolescent Pregnancy. The goal of the program was to postpone sexual activity and to reduce the incidence of adolescent pregnancy (Girls Inc., 2003). Another program prepared girls for the workforce and focused on economic growth areas such as science and technology. These areas were underrepresented by women. This led to the development of Operation SMART (Science, Math And Relevant Technology), which offered girls hands-on activities in learning, discovery and adventure.

Because of the diversity of the inner city communities many of these programs were not available everywhere. This led to the development of a Girls Inc. framework that offered

programs in careers and life planning, health and sexuality, leadership and community action; sports and adventure; self-reliance and life skills; and culture and heritage (Girls Inc., 2003).

This framework was distributed the programs in a flexible and mobile fashion. In other words, they can be delivered anywhere, including outdoors.

A challenge still exists in offering Girls Inc. programs to girls in rural areas but inroads are being made through collaboration with other community organizations. An example of such collaboration is the partnership with the Young Women's Christian Association (YWCA) of U.S.A. To ensure that more girls had access to Girls Inc. programs, the programs were made available at local YWCA centers nationwide. This became another form of membership for girls and the YWCA became a partner organization. All programs offered by Girls Inc. promote self-sufficiency, exposure to a broad range of options and help in avoiding obstacles. A rigorous program evaluation provides statistical evidence of program effectiveness. Nationally, Girls Inc. now serves more than 350,000 girls between the ages of 6 and 17.

Girls Incorporated of Central New York

Girls Incorporated of Central New York (Girls Inc. CNY) is an independent affiliate of the national nonprofit youth organization, Girls Incorporated. Girls Inc. provides vital educational programs to thousands of girls throughout the Central New York areas in predominantly low-income areas. Because of their environment, many of these young girls are vulnerable and at high risk of pregnancy, drug abuse and physical abuse. The mission statement of the Girls Inc. organization is "To inspire all girls to be strong, smart, and bold." The Girls Inc. organization sponsors research-based informal educational programs that encourage girls to rise to physical, intellectual and emotional challenges. Many of these programs focus on math,

science, technology, pregnancy, drug abuse prevention, media literacy, economic literacy, health, violence prevention, and sports.

The organization's name, Syracuse Girls Club, was changed in 1987 to Girls Inc. as part of an organizational redesign. This organizational redesign was intended to introduce a more aggressive program focusing on fields in which women were underrepresented, such as science, math, and technology. Today, Girls Inc. programs are offered in schools, churches, community centers and housing projects.

As a nonprofit agency, Girls Inc. National receives 77 % of its revenue from public support, corporations, foundations, government grants, and private individuals. Three-quarters of the organization's functional expenses go directly to support program services for girls.

Originally named the Syracuse Girls Club, Girls Inc. CNY has a 57-year history of programming and support services for girls. The Syracuse Girls Club was founded in 1949. The local and national organizations changed names in 1987. Girls Inc. CNY serves approximately 300 girls in its girls-only programs, 60 between the ages of 5 and 13 in its three after school programs, 25 families in its foster care placement prevention program, and 70 infants, toddlers and pre-school children at its child care center.

The organization's headquarters is currently located at Zonta House, a 120 year old former church in Syracuse, New York, which it owns and has partially renovated. The administrative offices, the foster care prevention program, and the school age and the girls-only programs are housed there. Two of the after school programs are offered in city schools. The child care center space is leased from a church two miles from Zonta House. Girls Inc. CNY is one of only three Girls Inc. affiliates in New York State. One is located in New York City and the other is in the Greater Capital Region surrounding Albany, two and half hours away. Girls

Inc. CNY has been given jurisdiction in Onondaga, Madison, Oswego, Cayuga and Cortland Counties. Huge expanses of territory in all directions are not served by any Girls Inc. affiliate. If it could, Girls Inc. CNY could expand as far north as Canada, west to Buffalo, east to the Greater Capital region and south to the Cortland-Binghamton area. However, within its territory, Girls Inc. CNY serves less than one percent of the 90,000 girls in its five-county region. Most of the girls served are in Syracuse in Onondaga County.

Girls Incorporated is in a unique position to create and deliver programs that can make a profound difference for thousands of girls across the country. The organization has the ability to broaden its distribution market by penetrating targeted communities to deliver an informal education package based on the unique needs of the girls in those communities. With the expansion of programs facilitated by partnerships with other youth agencies, growth is no longer constricted by the costs of maintaining facilities. This allows the Girls Inc. organization to continue to do what it does best: deliver programs that promote advocacy and life aspirations to girls who would otherwise have few options. Girls Inc. is a multifaceted organization whose programs can make girls strong, smart and bold.

Strengths, Weaknesses, Opportunities and Threats

A SWOT analysis is a tool used to study an organization's operating environment. The definition found on the *QuickMBA* (2005) website states that, "A SWOT analysis provides information that is helpful in matching the firm's resources and capabilities to the competitive environment in which it operates" (<http://www.quickmba.com/strategy/swot/>). The environment in which an organization operates can be internal, external or a combination. It includes economic, financial stability, changes in technology, culture, demographics, marketing, competition and regulatory (legal) factors. Internal factors can be categorized as strengths (S) or

weaknesses (W), and external factors can be categorized as opportunities (O) or threats (T). An examination of the organization's external environment is an important aspect of strategic planning.

Competitive Environment

Major competitors in the region include other national agencies, such as the Boys and Girls Club, Boy Scouts, Girl Scouts, and other local community based programs with sponsorships from local churches. One advantage the Girls Inc. organization has over the Girls Scouts programs is its advocacy program for equality. Girls Inc is a strong advocate and supporter of Girl Power and in particular Title IX, which is equality in intramural sports. The Girls Inc. SWOT analysis is represented in Table 1 found in the Appendix.

In the book, *Competitive Strategy (2003)*, the authors, Pearce & Robinson describe the benefits of using a Resource-Based View (RBV) in performing an internal SWOT analysis of an organization. "The RBV approach to a SWOT analysis is a way to identify and evaluate organizational resources to determine if there is a future competitive advantage in maintaining the resource(s) or associated processes" (Pearce & Robinson, 2003, p.131). The RBV provides four criteria of an internal analysis: disaggregate resources, a functional perspective, organizational processes and the value chain approach (Pearce & Robinson, 2003). These resources are described below.

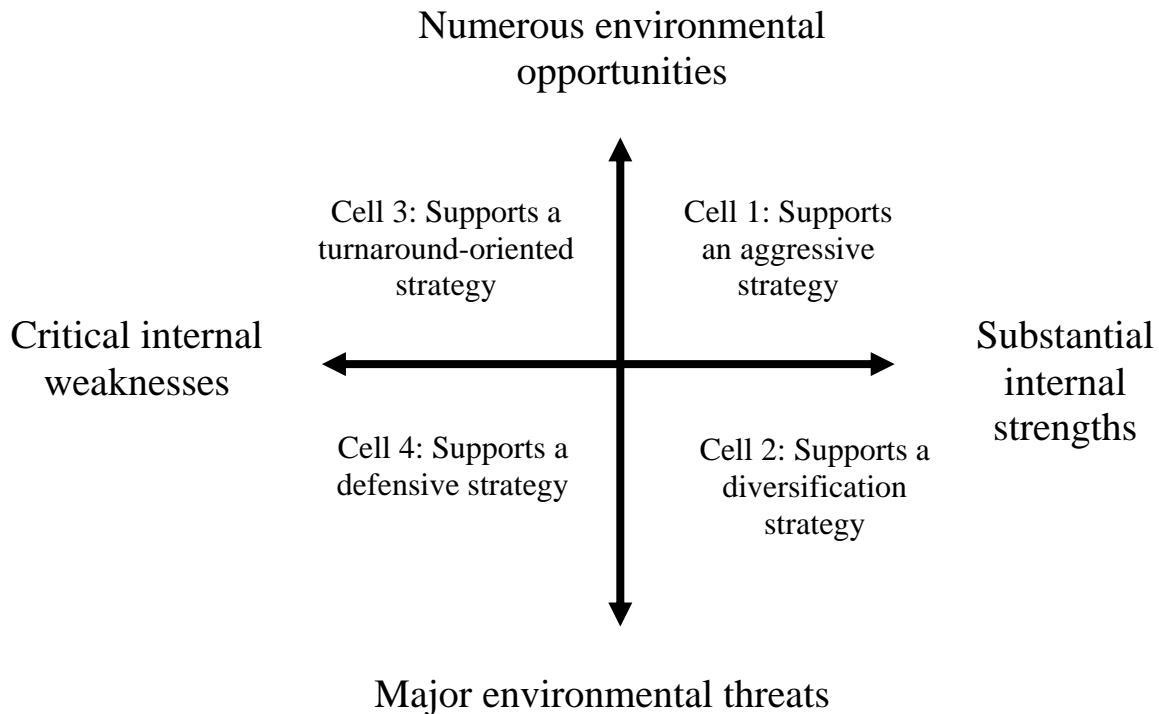
1. Disaggregating resources provides a breakdown of specific organizational competencies.
2. Utilizing a functional perspective provides a way of disaggregating an organization's tangible and intangible assets.

3. Looking at organizational processes determines if and how existing competencies can generate a competitive advantage.
4. Using the value chain approach uncovers organizational capabilities, activities, and processes that have the potential to be a competitive advantage.

This action research project used the “Look at Organizational Processes” method to identify existing competencies related to Girls Inc. program services, program development and the organization’s strategy to build capacity. One helpful tool was the SWOT Analysis Diagram, which provided a structured systematic approach to compare external opportunities and threats to internal resources and competencies (Pearce & Robinson, 2003). This exercise involved matching internal resources and competencies to key external opportunities and threats. The objective of this exercise was to identify one of four patterns between the organization’s internal resources and its external situation (Pearce & Robinson). An illustration of the SWOT Analysis Diagram used in this project is below.

Figure 1

Girls Inc. SWOT Analysis Diagram Adapted From Pearce and Robinson (2003)



Adapted from "SWOT Analysis Diagram," Pearce and Robinson 2003

The SWOT Analysis Diagram consists of four cells. Each of the four cells represents a characteristic of the organization based on a match of the organization's internal resources and competencies to its external opportunities and threats (Pearce & Robinson, 2003).

In Cell 1, the most favorable situation, the organization has several strengths and the ability to capitalize on external opportunities (Pearce & Robinson, 2003). In this case, the organization is focused on growth. A good example of such an organization is America Online (AOL). From its inception, AOL's market strategy, technical expertise, early entry and reputation allowed it to evolve into the mega Intranet Service Provider (ISP) it is today. The organization continues to capitalize on its strengths and environmental opportunities, as shown in its 2004 merger with cable giant Time Warner (Pearce & Robinson, 2003).

In Cell 2, the organization has key internal strengths but an unfavorable external environment. The strategy here is to redeploy competencies. A good example of an organization operating in Cell 2 is IBM, which originally designed large mainframe computers and data centers. IBM has not only been able to make the shift to the smaller computing environments but has also converted its technical services expertise into marketing global technical services and support (Pearce & Robinson, 2003).

Cell 3 represents an organization that is facing external opportunities but is constrained by its internal resources. In Cell 3, an organization has a strategy to eliminate internal constraints while pursuing external opportunities (Pearce & Robinson, 2003). The AOL-Time Warner merger is an example of two organizations that both had internal resource constraints in a highly competitive external technical environment. In this example, the weaknesses of one organization were strengths in the other. Without the merger neither organization would have been able to overcome its weaknesses in that highly competitive external environment (Pearce & Robinson, 2003).

And finally, Cell 4, the least favorable situation, represents an organization struggling with serious external environmental threats and very few internal resources (Pearce & Robinson, 2003). Texas Instruments was forced to reexamine its product offerings as they related to emerging technology and its position in its external environment.

Based on organizational strengths and opportunities, Girls Inc. CNY is in Cell 3 on the SWOT (Pearce & Robinson, 2003). This finding is based on several considerations.

1. The organization has begun reinventing itself by returning to its original girls' only programming.

2. The organization is trying to eliminate internal weaknesses by reexamining its core competencies
3. The organization is attempting to build a sound technology infrastructure.
4. The Girls Inc. organization is embarking on a turnaround-oriented strategy.
5. A pending merger with the YWCA of CNY will present additional opportunities for growth and stability.

The Girls Inc. CNY organization must focus on its strengths and opportunities to compensate for its weaknesses. While many of the areas of concern listed in the internal analysis reveal the effects of financial difficulties on staff, technological infrastructure, marketing and morale, there are several opportunities for future financial stability. Areas of expansion and outreach will depend on solving technology problems and cementing partnerships. Maximizing the potential for collaboration may help the organization's marketing efforts and mobilize local support.

History of the Problem

The technological infrastructure must be strengthened if the organization is to survive the funding cuts in the nonprofit sectors in Syracuse and Onondaga County. The organization aspires to use technology to its greatest advantage in order to achieve more efficient management processes, to preserve its records, and to optimize the use of its vast intellectual property. It seeks to create both a public image and a self image of a technologically sophisticated organization that is always on the cutting edge of innovation. This woman-run organization, which is a model for the girls that it serves, is strong, smart and bold in its use of technology. Girls Inc. of CNY wants to inspire girls to become visionaries who will move into the next age of technological wonders and create breakthroughs.

The executive director asked two questions. How can the staff and programs model for the girls what is needed and expected from the organization if it lacks the technology to do so? How can the organization build capacity for the future when there are only five computers for 77 girls and a lack of technical support staff?

Technology Defined

The *Encyclopedia Britannica* defines technology as “the application of scientific knowledge to the practical aims of human life or to the change and manipulation of the human environment” (2004). This is the problem that Girls Inc. CNY is facing with inefficient business processes caused by deficiencies in the technological environment.

The technological environment of any organization includes its computers, software, printers, fax machines, copiers, telephones and any equipment used to support its business processes. These items are also tangible assets of the organization. Technology is often considered the hub or the engine supporting organizational business processes (*The Technology Place for Non-Profits, 2005*). To run these processes, employees must have the knowledge, training and technical skills to do so. They should be retrained as business processes change and software becomes more sophisticated and complex. Most organizational processes require the latest "productivity tools." These tools include software for word-processing, financial and contact management, communications, and graphics. These tools enable the organization's leadership to collect and analyze data that it needs to make informed decisions. These tools are a critical to the organization's image. Employees are no less critical assets. They must have the skills and tools to perform required tasks.

Symptoms of the Problem

The technological or computing environment is the cornerstone of an organization. Technology is the hub of activity in an agency that promotes technology awareness and careers. But if the environment lacks efficiency and stability it cannot sustain its future growth. When the technological system is deficient, it then systematically promotes these deficiencies throughout the organization, thereby creating multiple levels of frustration and, in some cases, chaos. This paper will discuss the deficiencies in Girls Inc. CNY's technological capacity, resource(s), and morale.

Capacity

Girls Inc. CNY is limited in its capacity to adapt and sustain improvements in its programs and services because of a lack of technology and technological advancement. This is because technology has always taken a back seat to more traditional programs. If not corrected, the lack of technology may cause the organization to lose its competitive edge. The capacity of the organization is limited by its ability to capture, organize, and retrieve information. This is a huge risk, especially since as hardcopy historical information, is at risk of loss or destruction. Likewise, the capacity to produce material for distribution is greatly limited, so the costs of outside services are higher. A non-profit organization must be able to market and distribute information to contributors, the board of directors, the community, and especially to the parents of the girls being served. The costs of creating and distributing this information can become a budgetary nightmare, resulting in inferior material or limited distribution. This has a direct impact on the image of the organization.

Urban youth, especially girls, have the greatest needs and the fewest resources. In the after school setting, girls are often observers rather than participants. In the words of one girl,

“Boys play sports. Girls sit on the benches” (Girls Inc., 2003). Girls Inc. recently adopted a comprehensive business plan that will help the organization triple the number of girls it serves through the use of technology outreach. If successful, Girls Inc National stands to increase its national client base from 350,000 in 2004 to 2.4 million by 2010 with Girls Inc. CNY potentially reaching out to 90,000 of those girls. According to the executive director of Girls Inc. CNY, national strategy is a three-phased approach centered on technology.

1. Aggressive investment in the growth and outreach of Girls Inc. member organizations.
2. The formation of partnerships and licensing agreements with other not-for-profits and corporate partners.
3. Expand capacity to introduce more girls to an online experience of Girls Inc. programs.

Resources

Girls Inc. CNY is limited in its use of technology due to outdated and defective equipment. A lack of funding has prevented the purchase of much needed equipment and when new(er) equipment is received, it is often incompatible with existing equipment. A lack of computers and software has made scheduling and determining employee availability difficult, thus creating an environment of low accountability and ownership. This includes the ability to efficiently schedule employees time on projects and events, meetings outside resources, and scheduling of facilities and equipment. The lack of email and internet capability has made it hard for management to conduct day to day business activities, or to distribute needed information in a timely manner. Likewise, technological deficiencies have inhibited the inability of the organization and employees to communicate; the result is low visibility, low capacity for exchanges of information, and the inability to access valuable knowledge resources, including those of Girls Incorporated National.

Morale

The lack of technology has exacerbated frustration and is undermining the image of the organization in the eyes of its employees. The organization has a reputation of being unsophisticated and ill-equipped. The staff is demoralized, and staff retention has become a problem. Proper training is critical to any technological environment, but more so for a non-profit organization as it contributes to the organization being able to use its resources more efficiently. In seeking opportunities for growth, employees need to update their skills or transition to new ones; the organization needs to offer training that keeps an employee internally and externally marketable.

Problem Statement

Girls Inc. CNY, like many non-profit agencies, has an outmoded, low-tech infrastructure. This cumbersome, inefficient infrastructure is both a symptom and a cause of the agency's failure to keep pace with the times. The purpose of this action research project is to identify organizational inefficiencies and problems relating to technology, and to determine and implement the appropriate interventions.

Method

Action research is a methodical, deliberate, and reflective means of taking action or intervening in a change process. Action research is a multi-step process of a) planning b) taking actions; and c) fact-finding (Lewin, 1947). Action research encourages collaboration between the members of the organization and the researcher(s). All aspects of the research project are shared and all participants share a vested interest in solving the problem (French & Bell, 1995). Given its practical application (French, et al.), an Action Research (AR) approach was chosen to solve the technological problems facing the Girls Inc. CNY organization.

Action Research Overview

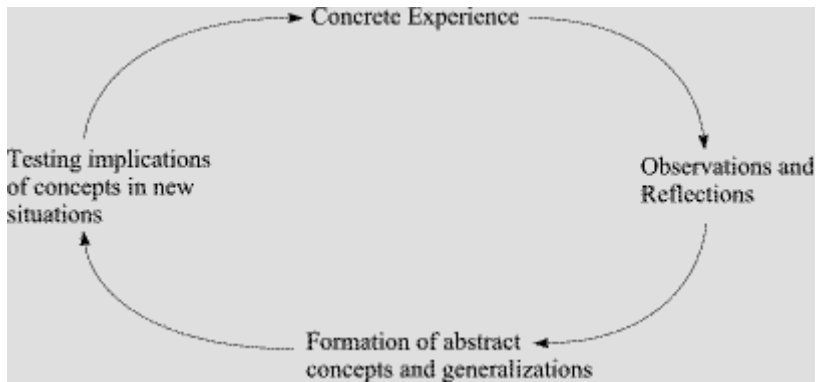
Action research is designed to solve problems and generate new knowledge (Coghlan & Brannick, 2001). Kurt Lewin (1890-1947) made significant contributions in the areas of action research, group dynamics and experiential learning. As founder of the Research Center for Group Dynamics at Massachusetts Institute of Technology (MIT), Lewin is referred to as “the father of organization development.” David Clark has stated:

Lewin’s research in organization behavior and the study of group dynamics discover that learning is best facilitated when there is a conflict between immediate concrete experience and detached analysis within the individual. His cycle of action, reflection, generalization, and tests is characteristic of experiential learning (1999).

Lewin defines action research as the execution of a series of steps. This incremental approach allows the researcher and the participants to analyze the results of each step and make adjustments before the next series of steps. Each step in this spiral cycle consists of planning, action, fact-finding and results. The cycle is repeated until the objectives have been met and the problem is solved. This method ensures that participants learn throughout the action research process. Lewin’s action research cycle is depicted in Figure 2.

Figure 2

Action Research Cycle Adapted from Kurt Lewin (1946)



Adapted from “Enacting the Action Research Cycle,” (Clark, 1999)

Action research is cyclical and continual. It is a participatory process that incorporates problem identification, data collection, feedback, learning and evaluation (Coghlan, et al, 2003). The goals of this action research project are to promote organizational change and improvement in the areas of technological advancement, and to establish a technological framework for Girls Inc.’s outreach programs. This action research project involved the Girls Inc. senior management team in providing a strategic direction and in taking ownership of technological improvements. The involvement of management became a model for cooperation and motivation for staff members. In order for this project to be successful, everyone who would be affected by the outcome of the action research process had to participate in all stages of the project.

Action research is an experimental methodology that is informal, qualitative and/or quantitative, interpretive and reflective. It requires participation and collaboration between the research participants and the researcher (Coghlan, 2003). Members of the Girls Inc. organization were frustrated by technological deficiencies in administration and programming. The employees enthusiastically worked with the researcher to identify areas of focus and to prioritize

and correct the problems. Reflections on the outcome of the investigation offered opportunities for adjustment. All of the processes were performed as a team.

There are a number of data collection methods that can be used in an action research project. These research methods are either qualitative or quantitative. The qualitative approach to action research emphasizes the use of subjective data. Subjective data describes individual or group perceptions. The intent of qualitative research is to gain insight into the basis of perceptions. The quantitative approach to action research is based on data that can be measured.

In contrast, quantitative research involves the collection and analysis of statistical data. Each of these research methods offers a different approach to data gathering and analysis; however, both approaches can be combined in a single action research project. A researcher must select the method that is best suited for the type of research. Regardless of whether the research is based on qualitative analysis or quantitative analysis, specific categories of methods can be used for particular research projects.

Action Research Model

The goals of this project are to identify the contributing factors to the technology issues facing Girls Inc., and to build a technology strategy that will enable the organization to reach out to girls in a five-county area. Based on these criteria, a qualitative method was chosen. "As a change process, action research refers to a change process based on the systematic collection of data" (MSM694 Applied Action Research Module, 2000, p.25). The action research process is a means of moving toward a desired future state. In this instance, a shared vision for technology by senior management and the staff of Girls Inc. was critical. This vision provided answers to questions like, "What do we want to be?" or "What do we want to create?" The researcher and the participants had to look at the organization as an comprehensive technological system. This

enabled the participants to define and design the future state of the organization as it related to technology. The criterion for this action research project required a systematic qualitative process. The Robbins' Five-Step Model was selected because it offered a simple approach to action research. The Robbins Action The research model is presented in Table 2 below.

Table 2

Five-Step Action Research Model Adapted From Robbins (1991)

Step #	Activity
Step 1	Diagnosis of the data gathered on the described problems
Step 2	Analysis of the data
Step 3	Feedback and communication to employees; especially, those impacted by the change
Step 4	Action or implementation of changes as agreed upon by participants
Step 5	Evaluation or assessment of the change for effectiveness and for planning subsequent changes

Adapted from "The Robbins Five-Step Action Research Approach" (1991)

The Robbins Five-Step approach was executed in a series of repetitive steps within the action research cycle. Each cycle included fact finding, diagnosis, analysis, action and reflection on the action taken to fix the problem.

Step 1: Diagnosis

The first execution step involved a facilitated identification and diagnosis of the problem. Information about problems, concerns, and frustrations related to technology issues was gathered from members of the organization. Assuming there would be some level of change as a result of this project, it was important to engage the entire organization in the effort. It was also important

to work with a small group of individuals that were capable of thinking objectively, team work and decision making ability. This team was referred to as the collaborative team.

Collaborative Team.

The collaborative team consisted of the researcher, the executive director, the president of the board of directors, two members of the staff, a member of the strategic planning committee and the technology chair. This team had a shared vision of the role technology has and should have in the organization. It is stated that, to come to believe that one of the reasons people seek to build shared visions is their desire to be connected in an important undertaking (Senge, Fifth Discipline, p. 206). In this case, the collaborative team was connected and bound together by a common goal of having a technological infrastructure that could be used to build upon for the future. This shared vision and the collaborative knowledge base of the team proved to be valuable to the project. This team had a clear understanding of current and future technological needs for the expansion strategy and could provide assistance in developing the strategy for capacity planning along with technical expertise. The two members of the Program Staff understood the programs and need for improvements, had worked with the girls and could provide input for process improvements. One of the staff members was also familiar with daily operations, facilities, and current facility overhead issues.

Entry and Contracting.

The entry and contracting phase of this action research project was completed in three stages. The first stage consisted of both formal and informal discussions with the executive director of Girls Inc. CNY. During these discussions the executive director expressed her concerns with the existing technological infrastructure and promised verbal support for an action research project within the Girls Inc. CNY organization. A subsequent formal interview with the

executive director took place in July 2003, at which time a framework for collaboration and feedback was established. Formal acceptance of the action research project proposal by the executive director was received in August 2003.

The second stage of entry and contracting was completed in October 2003 and consisted of a formal meeting with agency employees. The objective of this meeting was to introduce the project to agency staff, establish project goals and objectives, and to set expectations for participation and cooperation during the execution phases of the project. Confidentiality between the researcher and participants and the researcher and the executive director was also discussed and established at this meeting.

There was minimal resistance to the project from employees, mainly because they shared the same concerns about the problems relating to technology. The third and final stage of entry and contracting consisted of providing members of the board of directors an overview of the project at the October 2003 monthly board meeting.

The researcher can be either an internal or as an external consultant. Internal consultants are more familiar with the operating environment, the formal and informal policies, networks and organizational culture and behaviors. Internal consultants have a higher level of trust in the organization and can get things done more quickly than external consultants. A disadvantage to the use of internal consultants is that, because they are part of the culture, they might be less objective. There may also be the perception that internal consultants are more selective in their use of information. Confronting issues is less of a risk for external consultants. External consultants tend to be considered experts in fields of study and thus the expectation is that the consultant brings valuable knowledge to the project. However, since the decision to hire external consultants is made by management, there is a tendency to suspect that management has a hidden

agenda. External consultants may have difficulty in understanding organizational culture and systems. The authors, Coghlan and Brannick refer to this role as duality (2001). For this project the researcher was a member of the organization's board of directors and chair of the technology committee. Therefore, the researcher was considered an internal consultant in this effort.

Interactions within the organization were warm and helpful, which was characteristic of Girls Inc. CNY. The impact of the researcher remained positive as the goal of the board of directors, organizational management and staff was interested in strengthening and refocusing the organization's use of technology.

Data Collection and Analysis

This action research project employed interviews, brainstorming, observations, and open forum group discussions. Additional interviews and brainstorming sessions were conducted with staff members and technology professionals. Small group interviews were conducted with staff members and volunteers for the purpose of collecting data relating to agency work flow, work environment, and communication. Informal surveys were conducted with members of the board of directors, management, staff, program volunteers and girls who attended the Girls Inc. center, Zonta House. The information collected described the current state of the organization and potential areas of improvement. Some activities focused on defining and charting the state of the organization. These activities culminated in defining and charting the desired future state of the organization. The strategic planning committee served as an advisory panel throughout the project, providing information about organizational activities and direction. Secondary data reviewed by the researcher included financial data, program data, organizational history and the state of technology. The researcher performed comparisons against information gathered in this project and the industry trends of similar organizations within the same geographic area.

Validity

Validity is the accuracy of the measuring instrument used in data analysis (Nadler, 1977). Validity forces the question of whether the instrument measures what it is supposed to measure and whether the sample being measured is representative of what is being measured. Validity is the measurement of the relationship between one or more variables, accurately measuring specific inputs and outputs, based on questions asked in the form of direct inquiry, observation, or a hypothesis (Cunningham, 1993). The research method, the inquiry or observation, must support the data required to prove or disprove the hypothesis. From a behavioral standpoint, the appropriate measurement can determine why morale may be low in an organization. The responses from a direct inquiry or observation method may indicate what organizational issues are related to the issue of low morale, frustration or concerns as it relates to technology issues (Cunningham, 1993).

Reliability

Reliability refers to the consistency or the degree to which a test is consistent and stable in measuring what it is intended to measure (Cunningham, 1993). Reliability can be ensured by asking the same questions to multiple individuals or groups of individuals. The same is also true in observing operating behaviors in organizational processes or job functions. Reliability and validity are independent of each other but can be related. For instance, a measurement may be reliable yet not valid or valid but not reliable.

According to Patton (2002), there are three methods of qualitative data collection: interviews, observations, and secondary data. This action research project used a qualitative approach, so it was important to use flexible data collection methods for the classification of day-to-day activity, processes, behaviors, and culture (Patton, 2002). The use of multiple data

collection methods minimized the risk of researcher bias. The data collection methods selected for use in this project included a focus group discussion, interviews, observations, and technology needs assessments. A summary of the collection methods used is provided below. Samples of the collection templates are provided in the Appendix.

Interviews

An interview can be structured, unstructured, semi-structured or informal. Interviews offer the people being interviewed opportunities to express their own viewpoint of what is perceived to be the issues (Patton, 2002). Structured interviews use a goal oriented systematic process that guide communication between the researcher and the participants. The structured nature of the interview is designed to minimize the possibility of misinterpretation. Unstructured interviews are more informal or conversational and provide a simple means of covering general information relating to a problem situation. Advantages and disadvantages of using this data collection method would vary from interview to interview.

There are a number of advantages to using the interview data collection method. The interview method is face-to-face and thus allows the researcher to maintain focus on the area of concern. When several interviewers are used, the risk of bias is minimized. Interviews provide a means to easily organize, categorize and perform data analysis. Respondents are asked the same questions, increasing the ability to do comparisons or matching data to an individual or situation (Patton, 2002).

There are also disadvantages to using the interview data collection method. Interviews can be expensive and time consuming. The volume of information collected may be too large or difficult to transcribe. The interviewer should be trained and skilled in interviewing. Flexibility can result in inconsistencies across interviews. Respondents may be constrained by the

standardized wording of questions and perceive them as impersonal and irrelevant (Patton, 2002).

Two interviews were conducted as part of this project. One was a conversation between the researcher and the executive director in July 2003. The purpose of this interview was twofold: a) to gain insight into the future vision and goals of the Girls Inc. organization as it related to technology, and b) to gain an understanding of the immediate technology issues faced by the organization from a managerial perspective. The second interview was held with the executive director and members of the staff. This meeting provided members of the staff an opportunity to express their concerns and frustrations over the lack of having a stable computing environment. The meeting also allowed the opportunity for the researcher to introduce the project and lay the ground work for the project. It was important to engage the entire organization in the interview process so this interview was held during a regular monthly meeting. The meeting was also different from the focus group discussion because it was more relaxed, there was more time for an open discussion and there was no pressure to complete a list of action items. In attendance were the executive director, three program staff members, the office manager, and the facility manager. The group interview was done in a semi-structured discussion format using randomly selected open-ended questions. The list of questions used in the interviews can be found in Appendix A and Appendix F.

Observations

The second data collection method was direct observation. Direct observation provides the researcher a physical environment in which to see and hear the activity and behaviors of the people being studied. The direct observation method places the observer in the natural context with the people being observed, it provides open inquiry within that setting , the can see things

that others native to the environment may overlook, and finally it reveals things that people are unwilling to divulge in an interview or group discussions (Patton, 2002).

The advantages of using the observation data collection method are: a) observations provide a means to gather information directly on the behaviors of both individuals and groups; b) it provides opportunities for the researcher to gain a better understanding of a situation or the context of a situation or problem; c) it provides an opportunity to identify unexpected outcomes; and d) it allows the researcher to observe participants in normal unstructured setting and allows for flexibility (Patton, 2002).

Some disadvantages of the observation data collection method are: a) the investigator has little to no control over the situation; b) it can be expensive and time consuming; c) may affect the behavior of the participants because they are aware they are being observed; d) observers should be well trained or qualified in performing observations; e) perceptions of the researcher can distort the data; and f) participants may feel job security is threatened and may not fully participate (Patton, 2002).

During the observation sessions the researcher made every effort not to interfere with day to day processes or to the observation blatant. There were opportunities for the researcher to document the work environment during the off-hours. The observations were held at Zonta House on a typical workday. In order to understand how the Girls Inc. system worked, it was important to gather information on the day to day use of technology.

Focus Group

A third data collection method was a 45 minute focus group on Girls Inc. technology. A focus group interview is a small group interview, usually 6-10 participants, on a specific topic (Patton, 2002). Unlike personal interviews, a focus group is a discussion on a common set of

problems or concerns. The discussion was open, comfortable, and held in a non-threatening environment where participants could share opinions or add to comments made by others (Patton, 2002). Participants were randomly selected from a population of 37 using a number set from one through five. Seven people participated in the focus group, including the researcher, staff and board members.

Focus groups are a forum for interactive communication between research participants. The group format allows for the exploration and clarification of views in an open discussion. There are a number of advantages to using the focus group data collection method. Several of these advantages are described below.

Authority role of the moderator. The face-to-face involvement of the moderator ensures the conversation stays on track. The moderator can also encourage participant involvement by not allowing dominating of the discussion by stronger more vocal individuals (PBWIKI, 2006).

Group interaction. Group dynamics can generate new thinking about a topic which can result in a more in-depth discussion. Interactions among participants enhance data quality. Participants tend to provide checks and balances on each other, which weeds out false or extreme views (Krueger and Casey, 2000).

Cost Effective. Focus groups are a cost effective means to research, requires little preparation and can be done in a short period of time providing the participants are in the same geographic region (GroupPlus, 2003).

Data quality and validity. Focus group interviews are widely accepted as research data because they produce believable results at a reasonable cost (Krueger and Casey 2000).

Diversity. The extent to which the group has a consistent and shared view or there exists a variety of views that can be immediately assessed (GroupPlus, 2003).

Non-verbal behavior. The attitude of the participants and the intensity of the conversation can be assessed and documented by the researcher to be included as part of the results (PBWIKI, 2006).

Just as there are a number of advantages to using focus groups, so to are there the disadvantages. Some disadvantages are described below.

Facilitator experience. Discussion and usefulness of data collected depends on the skill of facilitator. Conducting a focus group interview requires experience in group process and dynamics. The facilitator must manage and control the process to ensure the discussion is not dominated by outspoken individuals (Krueger and Casey, 2000).

Time restrictions. The number of questions that can be asked is restricted in a group setting and the discussion is limited by time (PBWIKI, 2006).

Dynamics. Focus groups tend to be successful when people in the group, though sharing similar backgrounds, are strangers to each other. The dynamics are quite different and more complex when participants have prior established relationships (Chronic Poverty, 2006).

Conformity. There is pressure in groups to conform to the norms established by the group. Those whose viewpoint is a minority may not express opinions for fear of negative reactions by the group (PBWIKI, 2006).

Privacy and security. Participants may be unwilling to share real feelings on sensitive topics publicly. This can in turn influence the output data (PBWIKI, 2006).

Quality of the data. By its nature focus group research is open ended and cannot be entirely predetermined and findings cannot be generalized to the larger population since a focus group is not a random sampling (Krueger and Casey, 2000).

Technology Needs Assessment

The fourth and final data collection method used in this project was a technology needs assessment. Patton describes the needs assessment method as a scenario tool for constructing futuristic needs (Patton, 2002). The planning process defined the network infrastructure, the network architecture (topology), and the operating systems as a total design for the future state. Many technical issues were captured on the hardware and software inventory and assessment sheets; the same was true in identifying an immediate need to create a computing and communications policy. Examples of the software and hardware inventory sheets can be found in Appendix B and Appendix C of this paper. Issues related to a lack of training were also identified as a contributing factor to some of the issues related to technology.

There are several advantages to using a needs assessment as a data collection method: a) it involves a systematic examination of the current situation and the desired future state; b) builds employee involvement and support; c) can be used as justification for funding support; and d) matches a need to a planned action (Mission Based Technology Planning, 2005).

Just as there are advantages there are also disadvantages to using a needs assessment as a data collection method. Depending on the goals of the project, needs assessments can be time consuming, logistically difficult, and requires a skilled observer (Mission Based Technology Planning, 2005).

The needs assessment involved taking an inventory of existing computer equipment, peripherals and software. Once the inventory was documented, a second assessment was done to determine the state or working condition of the equipment. A software assessment was performed looking at the type of software, software versions, licensing, compatibility with other

software, and an inventory of installation discs. An example of the hardware and software inventory sheets can be found in Appendix B and Appendix E.

The first step in building a network is to perform a needs analysis as part of the requirements gathering process (Mission Based Technology Planning, 2005).. The needs analysis focused on the 'As-Is' scenario, how Girls Inc. as an organization is currently functioning. This analysis was followed by the development of the organizational 'To-Be' scenario, or how do they want or need to do business in the future. The 'To-Be' scenario was done by looking at overall computing requirements and doing an assessment of the current operational systems, the workflow for each business area, and determining what, if any, of the existing infrastructure can be used and what has to be added or replaced. The assessments were based on current technology needs which served in helping to outline future computing requirements. Table 3, found in Appendix H, depicts the key user groups and the number of workstations currently in place.

Results

Step 2 - Analysis

The second step was analysis of the findings and identification of patterns. These patterns were then categorized and assigned severity ratings to make it easier to denote items as primary concerns or problem requiring immediate action. The process also provided an opportunity to separate those items denoted as primary concerns or wish list items.

Findings from interviews.

Both interviews centered on immediate technology issues, how they contributed to levels of frustration and any operational limitations perceived as being a result of the problems identified in the discussions (see Appendix A and Appendix F). The information gathered

during the interviews was documented, categorized and prioritized according to severity or desirability. The information below represents the categories of technical issues documented during the interviews.

Hardware. Most of the computer equipment was old and out-dated and in some cases was the cause of compatibility issues with software or other hardware components. The performance of the equipment was slow with interruptions from error messages to system freezes when attempting to perform tasks. Some equipment was just inoperable or unusable for normal use. Personal computers and printers were often used in the business setting due to the inoperability or unreliability of the Girls Inc. equipment.

Software. Error messages were constantly received during the use of software or when attempting to print documents. Compatibility issues with the software and hardware was also documented along with the concern of a lack of training in the software being used. It was also noted that documentation and instruction manuals were not available.

Security. Password protection and computer passwords were a major issue. In most cases, the computers had passwords that were unknown and the individual(s) who set them were no longer with the organization. In some cases where there should have been password security there was none and in other cases, passwords were shared where they should not have been. Virus and malware infestation and the lack of proper protection, was another major security issue and was one of the primary reasons for the inoperability of the existing computers. All of the computers were infected with destructive viruses, spyware and other malware programs. This became a larger issue because viruses were often passed on to other users, home computers and board members when sharing information.

Policies and Procedures. There were no policies or procedures in place that outlined or provided guidance for employee's use of the organization's computer equipment, telephones, fax machines or any other communication mechanism used by the organization. There were also no policies or procedures in place prohibiting or providing guidance for the use of personal computers in the business setting. From a communications perspective, there was also no guidance provided for the use of cell phones or proper use of the company's phone lines. The employee handbook did not have a topic covering the use of computer and communications equipment.

Training. It was found that while many of the employees and volunteers used the Microsoft Office Productivity Suite, almost none of them had any formal training in the software. This was a limiting factor and contributed to levels of frustration when using computers.

Communications. There were two main issues with the organization's communications system a) lack of internet activity and b) inaccessibility to voice mail system. The issue with limited access to the internet was compensated with the use of personal dial-up internet access via the phone lines. Although it was not an ideal situation and posed several issues with it, it showed the creativity and determination of the staff to gain access to much needed information. The second issue had to do with the organization's voice mail system. The voicemail system had passwords that no one in the organization had access to have the system reset. The problem was compounded by the staff having no knowledge that messages had been left by clients or business partners.

Findings from Observations.

The observation data collection method was an opportunity to observe and document the behaviors and actions of the staff. Some of the findings were documented as part of problem solving or troubleshooting outside of regular business hours. Information gathered during the observations was documented and categorized as either a deficiency in operating procedure or an issue related to policy, hardware or software.

Data collected during observation were consistent with and supported the information gathered during the interviews. The computer equipment represented various versions of the Windows operating systems, some of which are no longer supported by Microsoft. The hardware also was made up of various makes and models including IBM, Hewlett-Packard and non-branded equipment. On average, of the existing hardware inventory 6 out of 7 workstations were inoperable. Because there had been many volunteers over the past, the software inventory was incomplete and inaccurate. In some cases, the software media was unable to be located or the software was not properly licensed or unauthorized for use.

Findings from Focus Group.

The focus group identified and discussed the organization's technology problems. During this session the group developed an action plan to address the immediate problems. An example of this plan can be found in Appendix D. As a result of this discussion, three long-term strategic goals were established: a) to model the most up-to-date technology for both staff and programming, b) to acquire funding to acquire the needed resources, and c) to hire a technology specialist. Based on these goals, the following strategies were proposed as a starting point to develop a strategic plan to address the organization's technology problems.

1. Identify hardware and software requirements by business area.

2. Determine immediate and future technology requirements.
3. Prioritize and remediate based on criticality the criticality of the problem and the impact to the business.
4. Develop a plan to create a technology infrastructure.

Findings from Needs Assessments.

Once the "As-is" needs assessment had been documented, a logical design of the "To-Be" or future state of the Girls Inc. computing environment was completed. This allowed for a simple analysis and design of a network computing environment that would support current needs and future growth. As the computing requirements were defined, additional analysis and research was done for the purpose of putting together preliminary cost projections and possible implementation phases and schedules for a new network. Table 4, found in Appendix I, is a sample of the proposed logical design of the future state.

Discussion

Step 3 - Feedback

The third step in this action research project involved communicating the findings of the data collection and analysis to the Executive Director, staff and the board of directors. The findings were first communicated to the Executive Director followed by staff. The information from the assessments, interviews and observations were categorized, some items were shown to be common occurrences. The frequency of each occurrence was also reviewed to determine whether the occurrence was a direct result of a related activity.

An overview that included a summary of the findings and the action plans was provided in a presentation to the board of directors. In addition to the presentation, the technology

committee was added as a regular agenda item at monthly board meetings along with a status report to the Executive Director on a regular basis.

Step 4 - Action

The fourth step was the execution of the action plan(s) or intervention. The Girls Inc. technological infrastructure is integral to the organization. It is a hub for sharing information, enables operational capacity for services and helps brand the Girls Inc. CNY's name. When the technology environment lacks efficiency and stability it can not support the current needs of the organization or its capacity for future growth. For this reason, the technology committee was chartered to address immediate needs and prepare the organization for the future. The formation of the technology committee as part of the board was critical in developing a long-term technology strategy that not only supported organizational goals and objectives but more importantly its mission. As part of its new charter, the technology committee was instructed to develop a strategic plan to address short-term (immediate) and long-term technology needs (Mission Based Technology Planning, 2005).. The Executive Director assisted in developing short- and long-term action plans to correct the issues with the technology committee. The following is a summary of that strategic plan.

Technology Committee Strategic Plan.

1. Identify hardware and software requirements by functional area: determine technology needs based on departmental processes, ability to share information, and other resource requirements and constraints.
2. Determine immediate and future technology requirements based on current requirements and limitations and what is required to do business in the future.

3. Prioritize and remediate existing technology problems based on criticality and current operational requirements and develop a plan to address.
4. Develop a plan to design and implement a new technology infrastructure to support the organization. This plan included the following action items:

A. Assess organizational need

1. Inventory of available hardware resources outlining the operational condition of all computers, associated peripheral equipment and usage.
2. Inventory of existing software and categorize based on type, location of installation disks, verification of licenses, maintenance agreements, and user manuals or guides.
3. Identify and document the list of end users based on organizational role, work performed, business requirements, and workspace inventory including hardware and software requirements.

B. Infrastructure upgrade

1. Acquire and upgrade all hardware within the organization based on priority and criticality. This was an opportunity to standardize equipment make, model and capacity.
2. Acquire and update all software and secure proper licensing based on priority and criticality. This was an opportunity to standardize on software versions.
3. Outline a strategy to secure funding to support the infrastructure upgrade effort. This included the identification of funding resources and type of

funding including, gifts, grants and in-kind donations from other local organizations and fundraising.

4. Provide a design of the network infrastructure and outline an implementation schedule.
5. Develop a plan to provide internet communication and email capability.

C. Policies and Procedures

1. Author and seek approval of appropriate policies and procedures to govern the use of technology in the organization.
2. Author and get approval of policies and procedures for the use of the computer laboratory and internet use for staff and program participants.
3. Define a process to document and report technical issues and problem resolution.
4. Provide training to staff on newly created technology policies and procedures.
5. Determine and document acceptance criteria for technology standards of in-kind donations.

D. Training and Development Plan

1. Develop and implement a plan to train staff and volunteers on policies and procedures for the proper use of hardware and software.
2. Develop and implement a training program for program participants using the computer laboratory.

E. Funding and Support Resources

1. Determine potential sources of funding.

2. Develop and implement a plan to obtain funding
3. Develop and implement a plan to obtain technical resources.

F. Resource Development

1. Identify and recruit technical resources within the community to partner with the technology program.
2. Develop a plan to attract technical support talent using a technology internship program from local colleges, universities, and technical schools.
3. Identify potential sources of funding for continued support of organizational technology.

The technology committee was made up of board members, staff representatives including the executive director, and community volunteers. All technology work was performed by members of the technology committee.

Step 5 - Evaluation

The final step was an evaluation of the intervention of the action taken. This evaluation included an assessment of the effectiveness of the action plan or intervention and planning for subsequent changes. The nature of the project and the work performed required the use of an iterative approach; therefore, the evaluation of the results was also iterative. All work performed was visible to all involved and the results of the effort was immediate. From the initial cleanup of the existing computers to the replacement of older equipment as new equipment was acquired. Therefore, the evaluation was merely a comparison of what was planned versus what was completed and what remained to be completed. In any event, the implementation of technology is always an ongoing iterative process.

The results of this action research project were the successful implementation of a technology infrastructure that prepares the Girls Inc. organization for the future. The key result of the new technology infrastructure was an alignment to the strategic goals and major processes of the organization. The vision of the organization was now supportable by technology and provided a set of standards going forward. The technology infrastructure was also supported by a team of technology professionals that could help guide the organization in the direction for the future. In addition, opportunities for continuous improvement and ongoing training for both management and staff in the use of the technology had been realized as an important factor to maintaining a supportable technology infrastructure.

In Step 2, during the interviews and discussions relating to this project, the executive director of Girls Inc. and the board of directors repeatedly asked two questions. How can the staff model for the girls (in programming) what is needed and expected from the organization without the right technology? And how can the organization build capacity for the future with the current technological environment? With respect to technology, Girls Inc. CNY, like many non-profit agencies, had an obsolete, low-tech operating environment supported by old donated computer equipment and obsolete software. This unreliable inefficient infrastructure was both a symptom and a cause of the agency's inability to compete in the areas of technology. The intent of this action research project was to provide a process, by which deficiencies relating to technology could be identified and improved.

Collaborative Team Interaction

The interaction of the collaborative team was a critical component to the success of this project. The team consisted of individuals with varying areas of expertise who equally shared tasks and responsibilities. The collaborative team was also a decision making body and assisted in

preparing the proposals submitted to the board for formal approval. The executive director and members of the staff facilitated communication between the technology committee and the Girls Inc National organization. Information and knowledge obtained from these contacts provided the foundation for technology committee recommendations.

What Has Changed?

The Girls Inc. organization, like many non-profit organizations, is not an organization that was technically savvy and thus had a heavy dependence on volunteers and in-kind donations of used computer equipment that was already outdated when received. The other issue was that most of the staff were also non-technical and had minimal knowledge and understanding of the proper use and maintenance of computers. As the project progressed through the Step-1 Diagnosis and Step 2- Analysis phases, it became obvious that the best solution was a phased approach to a) addressing the immediate needs of insuring operability of existing computers, and b) bringing the organization forward to meet current industry technology standards.

Another issue the researcher and the collaborative team had to deal with was the possibility that the Girls Inc. of Central New York agency may be forced to close its doors due to financial constraints and the manner in which the agency was required to operate as a result of lost funding. Therefore, given the circumstances, it became more important to keep the operations going, maintain the existing equipment in the most cost effective manner and develop a strategy to implement new technology when and if feasible.

As a result of this action research project and the action plans completed to date the following changes have occurred.

Capacity

Girls Inc. CNY now has the technological capacity to adapt and sustain improvements in its programs and services. The infrastructure upgrade paved the way for the organization to improve its competitive edge in the market place. With the installation of a central server and 25 new workstations in the business area and children's computer lab, the organization now has the capacity needed to electronically capture, organize, share and retrieve important and historical information. This ability also minimizes the risks of loss of this important information. The installation of high-speed printers and creative software provides the ability to produce distribution material that help brand the organization's name and program offerings. In addition, this new capacity allows the organization to independently produce distribution material thereby reducing the dependency and costs associated with external resources.

The capacity improvements outlined in this section contribute greatly to the Girls Inc. organization's ability to aggressively invest in the growth and outreach of Girls Inc. as an affiliate member of the national organization. The organization can build partnership and licensing agreements with other local not-for-profit organizations and academic institutions. And by building on partnership opportunities with local corporate sponsors, the Girls Inc. organization can develop an expanded capacity to give more girls the opportunity to experience Girls Inc. programs online. Table 5; found in the Appendix J, provides a summary of capacity improvements that have been realized as a result of this action research project.

Improvements in Morale

Now that Girls Inc. has a technology infrastructure that is up-to-date, stable and reliable, benefits acquired as a result of the infrastructure upgrade include a reduction in the frustration

levels of the staff. In addition, the staff members now have a higher level of creativity and pride in their work are able to model these qualities for the girls they support.

Training. The lack of training was a source of frustration. To remedy this, training CDs were acquired with the Microsoft Office Suite that included modules relating to each of the Microsoft products. It was also recommended that job applicants complete a technology skill assessment with a follow-up during the orientation process. Based on the assessment, an individual training plan will be established to aid in building and reinforcing the skills needed to use the software in use by Girls Inc. Consideration should also be given to solicit corporate sponsors for volunteers that have technical expertise to help maintain the computer environment..

Financial constraints. Another item that contributed to low morale was the financial condition of the organization. Like most non-profit organizations, Girls Inc.'s operational expenses that exceeded its income. Funding had dwindled and the weak local economy intensified the competition for funds among non-profits. Over the year between 2004 and 2005, the agency has since been rejuvenated by the recent merger with the Young Women's Christian Association of Syracuse and Onondaga County. The agency reviewed and revised the internal process for the acquisition of funds and the completion of grant applications. The process now factors the cost of human and physical resources into all funding proposals. This method has greatly improved the agency's ability to solicit funds for the infrastructure upgrade and capacity building. In addition, the board of directors approved the creation of a budget line item for the purchase of technology improvements and support.

Resources

Girls Inc.'s outdated and defective equipment had limited the organization's use of technology. A lack of funding and technical resources precluded repair, procurement and

integration of equipment. The new infrastructure provides a more efficient means of scheduling employees and tracking their use of resources. This has also improved communication throughout the agency and with the community. The new infrastructure facilitates electronic communication and has lowered reproduction costs with the use of the high-volume printer.

Communications

Other highlights of the organization's expanded resource capacity include the phone system and internet communications. The issues with voice mail passwords have been resolved with the vendor and the organization now has internet capability which they did not have previously. The benefits of internet capability include: a) Internet access to external resources by staff and the computer laboratory; b) email capability for staff and computer lab; c) local internet presence with links to the national website and other key resources; d) access to internal information by the board of directors via the internet; and e) the ability to share information with business partners via the internet communication.

Policies and procedures

The technology committee wrote the policies and procedures governing the use of technology. The Girls Inc. Communication Usage Policy governs the use of computer hardware, software, installation, security, internet, fax and telephone. The policy began as a separate document but has since been incorporated into the employee handbook. The technology committee also established "notebooks" to document technology needs for each workstation. The staff has been trained to document technical problems for the technology committee to review and solve using the notebooks. The notebooks also serve as a communication mechanism back to the owner of the workstation as to the resolution of the problem.

Lessons Learned

The scope of the infrastructure upgrade was unknown until the results of the initial assessments were done. With limited resources and financial support, the technology committee was forced to come up with creative ways to fund the infrastructure upgrade. One example of this creativity was the implementation of the internet service. The committee members themselves paid for the installation, network cards, router and software then solicited donations for the first year of service.

As the organization restructured its operations and cleared its immediate financial constraints, the technology committee continued working. The restructure of the organization involved eliminating programs that did not meet the mission of providing girls only programming. This afforded the organization the opportunity to cut expenses but it also meant eliminating jobs. The organization is now stable and the technology committee has a budget for maintenance and support. Research shows that most funding resources are supportive of mission-based technology projects (Mission Based Technology Planning, 2005,). Projects in this category are strategically aligned with organizational goals and objectives. As the project progressed, the technology committee worked with the executive director to develop grant proposals that would fund the major components of the project. A two-year \$65,000 grant from Bristol-Myers Squibb (BMS) enabled the organization to purchase the new SMART van that is used to transport kids to Girls Inc. program locations and portable science kits. Other major funding sources include the local United Way, the Central New York Community Foundation and others who provided funding for the purchase of the new computers, the network server, high-volume printer and software. Some items were also donated by members of the technology committee.

Another lesson learned was that once the staff had a contact name for technical assistance, the technology committee was overwhelmed with phone calls and emails requesting assistance. In response, workstation notebooks were created and a central contact responsible for communicating with the technology committee was appointed.

Implications of Research

One of the greatest benefits of this project was the implementation of a computer network infrastructure. Where there had been only seven computers, five of which were inoperable most of the time, now there are 25. There is also a documented inventory of all computer equipment including date of purchase and funding source.

Girls who have limited use of computers at school and no access to computers at home can use the computers at Girls Inc. to acquire life-long skills that will help them become self-sufficient.

The new network allows access to critical information in one central location which was previously stored on separate workstations throughout the agency or some other form of electronic media. This made it difficult to locate and share critical information. More importantly, the network infrastructure provides a framework for the organization's future needs and growth

From a process perspective, the organization can now generate funding proposals that incorporate the cost of tangible and intangible resources. This process now ensures funding for items that had previously come out of operating expenses.

The formation of the technology committee as part of the board was essential in developing a long-term technology strategy that supports organizational goals and objectives.

The committee is the central point of accountability for technical decisions, including standards and architecture issues.

From a funding perspective, the main supporters of the organization have a good working and collaborative relationship with the new and expanded technology initiatives in the community. The partnership with Bristol-Myers Squibb, a large pharmaceutical company and the Central New York Community Foundation, another local non-profit organization, are both examples of a successful partnership.

Organizational Learning

High-performing organizations know that it is essential to understand what business they are in and to draw from this the information that they need to meet their business objectives (Pearce et al). A business is successful when it has an advantage over its competitors. Two sources of competitive advantage are the business's cost structure and its ability to differentiate itself from its competitors (Pearce & Robinson, 2003). Girls Inc. distinguishes itself from other organizations by its long history, dynamic research capabilities on issues that are important to girls, and its ability to create and administer research-based programs.

From an information systems viewpoint, technology is not an invisible commodity but a resource that is vital to the success of the organization's business (O'Brien, 2004). For non-profit agencies, technology should not be secondary to business strategy, but its driver (O'Brien, 2004). The executive director of Girls Inc. was concerned with the organization's traditional image rather than as an organization that is technologically competent, progressive, and visionary. Girls Inc. now has a technology infrastructure that will allow it to become a technologically modern resource for girls. In order for Girls Inc. to train girls in technology, the organization must have state-of-the-art technology and a staff that knows how to use it.

Focusing on collaboration can help Girls Inc. in the areas of marketing and local support. Girls Inc. is in a unique position to take advantage of its strengths in research and outreach through the use of technology. The ability to build and maintain a suitable technology framework will increase capacity and support the Girls Inc. organization's strategic direction.

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APPENDIX A

Organizational Technology Assessment

Retrieved from Internet July 2003 (<http://www.techsoup.org>)

1. What do you see as the most pressing needs for your organization that technology might address?
2. Why or how do you think computers can help?
3. If all computer systems were magically working and adequate tomorrow, what would change in the organization?
4. Who at the agency has been involved in planning for technology staffing, training and purchases?
5. Who at the agency has been involved in day-to-day computer troubleshooting and maintenance?
6. Who will be involved in the implementation of new technology efforts?
7. Are staff members able to use the technology that is crucial to their efficiency and to the tasks they need to accomplish?
8. What type of training have staff members completed in the past? How useful was it?
9. What type of financial resources for technology does your organization have available? Are you prepared to seek funding from other sources?

10. What are the obstacles to your organization's effective use of technology?
11. What are management's attitude and role in the organization with regard to technology?
12. How would you assess your agency's use of technology compared to that of similar agencies?

Open Discussion Topics:

Do you need better systems to streamline your operations, increase communication among staff, reach out to clients, cultivate your board, or communicate with your members?

What role will the implementation of new technologies play in your strategy for the next five years? Do you need new technology in order to grow? Would new technology allow you to respond to new opportunities?

APPENDIX B

Technology Committee Task List

Goal: It is the goal of Girls Inc. of CNY to:

- Model the most up-to-date technology for both staff and programs
- Develop funding and resources to advance technology
- Hire a technology specialist.

Strategies: Girls Inc. of CNY will:

- Assess needs
- Develop a strategic plan
- Update hardware and software
- Develop policies for use
- Train staff
- Teach children
- Approach foundations (Beaumont, Hewlett-Packard, IBM, Microsoft, Welch-Allyn)
- Develop technical resources

Technology Committee Tasks (2003)

Strategy	Activity	Responsibility	Timeframe
Assess needs	1. Organize current technology	Technology	1.done
	2. Inventory current technology	Committee	2.done
	3. Determine needs		3.3Q03
Develop strategic plan	1. What is needed by staff/programs?	Technology	1.3Q03
	2. What are National Girls Inc. compliance needs?	Committee	2.on-going
Update hardware/software	1. Obtain new computers and software	Technology	1.4Q03 –
	2. Update current software	Committee	1Q04
	3. Obtain internet access		2.3Q03-4Q04 3.done
Develop policies for use	1. Policies for staff usage	Technology	1.done
	2. Policies for program/child usage	Committee w/ help	2.done
	3. Policies for internet access and usage	from tech groups	3.done
Train staff	Train the trainer: seminars, workshops, self-teach	Technology Committee w/ help from tech groups	On-going
Teach children	Staff training	Staff	As needed
Approach foundations	Research and develop proposals that support increased technology in girls programming	Resource Development Committee and Staff	3Q03-4Q04
Develop technical resources	Approach tech groups and training facilities for interns and technical volunteers	Technology Committee and staff	3Q03 - on-going

APPENDIX C

Technology Committee Sample Maintenance Report, February 7, 2004

Location	Workstation	Action	Outstanding Issues	Next Steps
	New IBM		Needs a workstation log book	
Downstairs	Sam	Install and configure wireless network card	Needs Norton Anti-virus Unable to get a network connection. No signal: may be caused by location: cement walls and metal door or the USB ports are not working.	May require a wired connection.
Printer	4200	Powered Down and reset. Printed a test page.	Network connectivity issues Not printing submitted jobs Need workstation log book	Re-configure by Jeff
Ann's Office	Ann	Virus protection and scan up to date Ran Windows and installed critical updates Print test to 4200 – failed	Complained of slow performance and programs not running. Unable to print to 4200	done

APPENDIX D

Interviews

Summary of discussion on July 18, 2003, September 30, 2003

Problem Area	Cause	Concern
Technology	Lack of infrastructure	Lack of organizational use of technology
	Limited capabilities	Undermines management effectiveness
	Lack of working computers	Lack of security or protection
	Old and obsolete computers	Technological issues lead to incompatibility
	Lack of standardization of hardware and software	(can't match the versions in use by board of directors)
	Old versions of software limited communicate capability	
	Lack of electronic communication Internet access capability / web presence	Lack of proper training
		Low visibility
		Inability to exchange information
		Lack of access to knowledge resources
		Inability to connect to the national organization
		Management inefficiencies

Problem Area	Cause	Concern
Financial	Budget crisis in the city, county, state, and school systems	Difference between being passive and active
Problem (s) -	Professional salaried employees without computers	Difference between consumer and producer Compelled to use home computers Lack of inventory
Inefficient systems for managing employee calendars	Technological capability working to throw out the old computers Hundreds of "disks" Unorganized	Low accountability
Morale problems caused by lack of technology	Limits ability to schedule meetings and allocate resources Inefficient scheduling of facilities and equipment	Low morale Inability to model technology in girls' programming Unsophisticated / ill-equipped organization creates a morale issue / problems for employees Lack of employee pride in the work they do
Self image (of organization)	Technology has always been taken a back seat Limited skill set of staff	Are we good enough?

Problem Area	Cause	Concern
Capacity to produce decent material for distribution	Lack of equipment	Loss of competitive edge
	Lack of specialized software	Inability to produce quality designed flyers, mailers, and booklets.
	Lack of expertise or skills needed to produce.	Cost associated with outside print and graphic services.
Historical records and information are at risk of being permanently lost or destroyed.	Paper records	Historical records and information are unprotected and at risk of being permanently lost or destroyed.
Human Resources Issues		Retention Morale Potential growth opportunities Personal value Recruitment benefits Personal investment
Risks	Virus protection	Loss of valuable information
	Inadequate information systems (databases)	Inability to share information
	Internet access capability / web presence	
	Lack of internal computers	
	Lack of technology Program	

Problem Area	Cause	Concern
How can the staff model for the girls (programming)	Technological issues Proper training	Ability of staff to model technology in programming
What is needed and expected from this organization?	Unknown	Unknown
Limited capacity for the future	77 kids current enrollment Currently have five working computers One or more computers are need of attention Non-technological staff available	Lack of ability to teach technology to 12-14 year old girls Non-technological staff available

Girls Inc. Summary of Discussions with Staff 2003

Quotes From Executive Director:

- Exacerbate "the haves" and the "have nots"; promotes or contributes to "the digital divide"
- Environment should be stimulating to girls (kids) walking in the door.

APPENDIX E

Network Infrastructure Cost Projections - Estimate
January 2005

TOPOLOGY: STAR (Wireless)

Budget: \$70,000

Servers: \$15,000

- (3) Dell PowerEdge Server 1800 - \$5000 (includes 50 cal licenses) (\$3800 15 cal) ** best buy
- Client Access Licenses

Printers: \$5,987

- Multi-function printers – internet café/computer laboratory (\$2499)
- Shared business printer - \$2499 (print/copy/scan/fax)
- HP Color LaserJet 3500n printer – business area (optional) \$899

Wireless LAN: \$1,844

- Cisco SOHO 96 – Broadband Router EN, Fast EN – Cisco IOS - \$345
- Wireless 802.11g 108Mbps Access Point with SNMP and AES (DWL-2100AP) \$99.00
- Cisco Wireless Switch – Cisco 6500 Wireless LAN Service (2) – \$700

Workstations (Business / Training / Computer Laboratory): \$35,000

- HP Business Desktops – d325 (50 @ \$700) \$35,000
- Wireless network cards

Software: \$4,100

- Microsoft Office XP Productivity Suite, English - 5 License Pack - \$300 (45 additional licenses \$3000)
- Mozilla Firefox Web Browser (free)
- Mozilla Thunderbird Email Client (free)
- Mozilla Calendar Tool (free)
- PHP Web Server
- Intuit Quickbooks Accounting Software (\$800 – 5 user license)
- Non-Profit Contact Management System

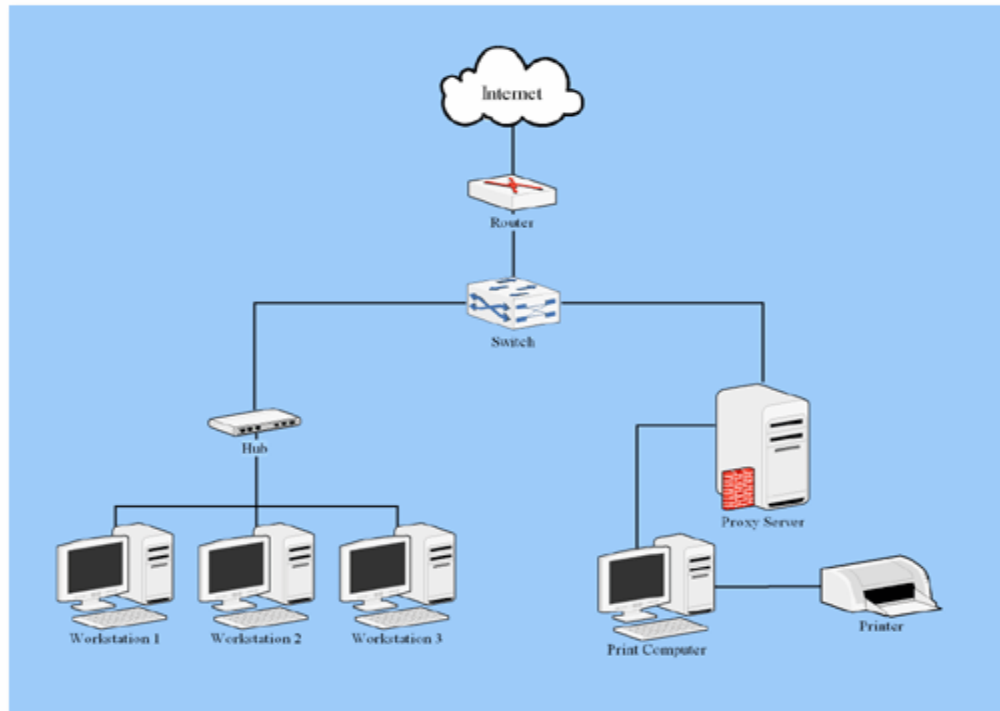
Services: \$1200 (Annual)

- ISP Broadband Service (estimated @100/month)

APPENDIX F

Figure 3

Girls Inc. Network Infrastructure Design (2005)



Star Network Design - Ethernet

Internet Access via Cable Modem

4-port Linksys Wireless Router (firewall)

8-port Switch

8-port Hub

Workstation 1:

- 3rd floor executive director
- (1) Business area workstation

Workstation 2: 2nd floor workgroup

- Reception area
- (7) Business area workstations
- Shared printer

Workstation 3: 1st floor workgroup

- (15) Computer lab workstations
- shared printer

Workstation 4: (not shown)

- Remote Location (Administrative)
- (1) Business area workstation

APPENDIX G

Table 1

Girls Inc. SWOT Analysis Summary 2004

Strengths	Weaknesses
Girls Inc. National has a 135 year history.	Small Staff
Girls Inc. CNY has a 57 year history.	Technical skills of staff are minimal
Gender-specific programming is a niche market.	Lack of skilled technology support
The history of Girls Inc. "girls only" programs	Financial constraints
In-house program development resources	Outdated technological infrastructure
Programs focus in math, science, & technology	Staff turnovers
Programs in social and preventative topics	Building is an asset and an overhead expense
Girls Inc. CNY geographic location	Limited marketing in local community
Support of local organizations & community	Low morale of the staff
Zonta House: organization headquarters – asset	
Presence in local schools	
Collaborative abilities within local community	
Opportunities	Threats
Potential for geographic expansion	Loss of major funding sources
New strategic direction to return to original girls-only mission.	Organization is still stabilizing
New collaborative opportunities	Low employee morale
Competition slow to adopt new technology	Competition of like organizations
Community outreach through the use of technology	Non-Profit financial distress
Increased presence in community at large	Without the proper technology in place it will be very difficult for the organization to maintain a competitive edge

Girls Inc. SWOT Analysis (2004)

APPENDIX H

Table 3

Key User Groups (Current State) 2004

	Staff	Management	Computer Lab	Satellite Locations
Functions	Provide training	Administration	Receive Training	Volunteer recruitment
	Volunteer recruitment	Financials	Receive Girls Inc. programming	Receive Training
	Program management	Planning		Program management
	Program development	Grant writing		
	Grant writing			
	Receptionist			
Number of workstations	7	3	5	0

Girls Inc. Key User Groups Technology Needs Assessment (2004)

APPENDIX I

Table 4

Logical Design Requirements (Proposed Future State) 2005

	Staff	Management	Computer Lab	Satellite Locations
Applications	Microsoft Office	Microsoft Office	Microsoft Office	Microsoft Office
	Email	Email	Email	Email Access
	Internet	Internet	Internet	Internet
	Girls Inc. Program	Contact	Receive Training	Receive Training
	Development	Management	Receive Girls Inc.	Receive Girls Inc.
	Training System	Database System	Programming	Programming
	Shared Information	Training System		Shared Information
	Volunteer	Training Materials		Volunteer
	Recruitment	Shared Information		Recruitment
	Receptionist	Financial System		
		Planning		
Printers	Shared and local	Shared and local	Shared	Local
Security	File Server	File Server	File Server	None
	Application	Application Server	Application Server	Remote Access
Remote	VPN	VPN	None	VPN
Access				
Operating	MS Windows 2003	MS Windows 2003	MS Windows 2003	MS Windows 2003
System				
Location	Internal	Internal	Internal / External	External
Number of	10	3	21	6
workstations				

Girls Inc. Key User Groups Technology Needs Assessment (2005)

APPENDIX J

Table 5

Capacity Improvements 2004-2005

Component	Purpose
File Server	File sharing Centralized access to standard applications Security and Anti-Virus protection Centralized shared printing service
Internet Communications	Unlimited Internet Access Girls Inc. CNY website (http://www.girlsincofcny.org) Displays local calendar of activities and events Portal to Girls Inc. National Access for Board of Directors Remote Access portal
Workstations (25 computers)	Standard hardware configuration Standard software installation Current versions Proper licensing Standard make, model and operating capacity Business area Computer lab
Printers	Shared print capacity High-volume printing
Miscellaneous	Graphic Scanners Projector

Girls Inc. Capacity Improvements (2005)