Improving Operations at the Boys and Girls Club of Boston

Design Team
Meghan Coleman, Meghan Hannigan, Erika Moody, Emily Simpson

Design Advisor
Prof. Susan Freeman
Sponsor
Boys and Girls Club of Boston

Abstract
This project will streamline several operations at The Boys and Girls Club of Boston (BGCB), demonstrating how IE tools can be applied in the nonprofit sector. The project is divided into two major components: data management, which is based out of the BGC’s Boston office; and process flow within a single club, which is being piloted at the Yawkey BGC in Roxbury, MA. The BGC’s volunteer and member data management systems are not standardized and contain a large quantity of invalid data, while the club’s current online volunteer application is difficult to find with many unnecessary fields. An optimal form was created, resulting in a streamlined website that contains only pertinent information. The current systems have been analyzed to find solutions that will fix data input issues, and the team will suggest system migration options as needed. For the second area, there were three main issues that were identified: poor homework club attendance, wait time for parents picking up their children, and the difficulties moving to an online member application. The first two problems can be solved using radio frequency identification (RFID) technology. Real time locating wristbands could be worn by children that would allow the club staff to determine where the members are in the club at all times as well as make sure the children attend homework club for a minimum of 30 minutes a day. To promote the use of the online member application over the dated paper form, a “computer on wheels” (COW) system was developed to allow the clubs to sign out shared computers.

(For additional information, please contact Prof. Freeman, s.freeman@coe.neu.edu)
The Need for Project

BGCB consists of ten clubs throughout the Boston area. While these clubs operate as part of BGCB, there is a lack of standardization in everyday operations such as member orientation, parent pick-up process, club flow, and data entry. The club’s current systems provide inadequate tracking of members and volunteers. In addition, the Boston office recently piloted an online volunteer application and asked for suggestions for potential improvements. The issues above are major complaints from staff, volunteers, and parents, but the BGCB has not been able to allocate any resources to amend these issues. Solutions obtained from this project will create standard processes throughout the Boston clubs.

The Design Project Objectives and Requirements

Design Objectives

The objective of this project is to standardize the information systems and operating procedures at BGCB and to improve the everyday operations within the Yawkey Club. This includes providing final recommendations for the following major problems: member orientation, parent pick-up process, homework club attendance, online volunteer application, and data management systems. Solutions were developed through the use of IE tools such as research studies, simulation, Pareto analysis, preventative failure mode effect analysis (PFMEA), spaghetti diagrams, web design, and cost-benefit analyses.

Design Requirements

Each solution must take into account the capabilities of the organization. Due to the fact that BGCB is a non-profit organization, solutions must be affordable with clearly stated benefits, such as child safety and increased efficiency. The staff at the clubs is comprised of individuals with a variety of backgrounds, and solutions will have to cater to those who possess very basic Microsoft Office skills. Solutions within the clubs must be easily learned and used by the club staff. Designs also need to be adaptable and adjustable to accommodate the
different club procedures and needs.

Design Concepts Considered

The team worked on each issue simultaneously, and multiple solutions were developed for all portions of the problem. Optimal solutions were determined through meeting with BGCB and IE analysis techniques.

Website

The team conducted a three-phased research study to develop the optimal layout for the online volunteer application. In the first phase, subjects compared the current form to one used by another nonprofit organization. This information, both qualitative and quantitative, was reviewed and considered when developing the new proposed form using HTML and JavaScript. User feedback ranged from formatting preferences to gauging the importance of form data. The second phase of the study had subjects compare the current form with the team’s design while the third part analyzed the first and final drafts of the proposed designs to measure the effect of improvements.

Volunteer Database

Volunteers are currently being tracked through Samaritan software, which has resulted in problems running reports and collecting metrics by BGCB management. Therefore, two alternative data management systems were analyzed to see which should replace Samaritan. The BGCB could switch to a Raiser’s Edge volunteer module, which would conveniently link to their donor database, or add VolunteerTrax to their TraxSolutions database, which is used to track their members. Sponsor’s preference and the results from the cost-benefit analysis for both alternatives were factors of highest importance in recommendations to BGCB.

Flow through the Club

Members currently travel throughout the club by age group to multiple areas. Members of any age can be in homework club, the pool, the gym, dinner, or any of the four other activity
rooms. This requires volunteers to search throughout the club for members making it difficult to sustain a quick pick up process. The team researched tracking systems that would decrease parent waiting times.

**Recommended Design Concept**

The recommended design concept is focused around the safety of the members and standardization of information.

(1) **Design Description**

**Website**

The optimum layout for the online volunteer application consists of five subsections: contact information, affiliations, location of service, availability, and interests. This is cut down from half of the original online application which comprised of over 120 fields. The final proposed design utilizes increased dropdown fields, interactive screens, and check-all buttons.

**Volunteer Database**

The ideal solution for the volunteer database problem was to add the Raiser’s Edge volunteer module to the existing BGCB donor database. The overall system is more intuitive, and the reporting features are more customizable and better fit the needs of the BGCB.

**Flow through the Club**

Through simulations, a RFID solution was found to be the optimal way for the club to track its members. The system consists of RFID wristbands, which the members can either wear or attach to their backpacks, plus readers, and a computer interface. As the members walk into each room a chip in their wristband is read by a reader in the doorway. This information is sent to a computer located at the front desk. When a parent enters into the club he or she tells the volunteer their child’s name, the volunteer can then look up the real time location of
the child.

**Homework Club**

The previously described RFID system has a variety of modules that can be applied to different areas through the club. One of these components will allow the club to determine whether or not a child has completed their time in homework club.

A low-cost solution includes a colored ticket with the child’s name and date on it given only at homework club. Upon entering subsequent activity rooms they must present this ticket. If they do not have it, the adult in the room will send the member to homework club to complete their time.

**New Member Orientation**

A COW system was developed to ensure that clubs use the online member application, as opposed to the previous paper application. The ten clubs will share a computer cart that they can sign out for orientation days. This cart will be stored at the main office in downtown Boston as this was determined to be the optimal central location through linear programming techniques. An Outlook resource calendar will be created so that the clubs can see when the cart is free and schedule their orientation accordingly.

(2) Analytical Investigations

**Volunteer Database**

The team conducted a cost-benefit analysis of the two system migration alternatives: Raiser’s Edge and VolunteerTrax. While Raiser’s Edge initially appeared to be the more expensive option, the time savings and usability it offers made it the most economically attractive solution.
Homework Club

The Yawkey Club is a homework first club, and currently about half of the members bypass this required area. A PFMEA was conducted to identify and address the flaws in the homework club system. After this analysis, it was discovered that the greatest risk of members not attending homework club occurred when there is no employee at the front desk and when members go to snack. Both the RFID system and the ticket system will address these failures.

(3) Experimental Investigations

Website

The team conducted a research study to develop a more concise volunteer application that took into account user preferences and perceived importance of information. This data was used to create a proposed optimal form layout to be implemented in the future.

Flow through the Club

The team observed the parent pick-up process to collect baseline data. From this data, a simulation was created with Arena to show the current process. Alternative simulations were created to depict the improvements with RFID technology.

(4) Key Advantages of Recommended Concept

Website

The final form design provided users with more insight to the volunteer process while maximizing the application’s usability and decreasing the time to fill out the application by an average of two minutes. The new layout also allowed for in-line validation of data to prevent users from submitting forms.
without completing required fields.

**Volunteer Database**

The most important advantages that Raiser’s Edge offered were its intuitive system design, customizable reporting features, and cost effectiveness. Based on these criteria, required by the BGCB, adding the Raiser’s Edge module as their primary volunteer database is the optimal solution. Utilizing Raiser’s Edge will give BGCB responsive customer service, and the ability to seamlessly customize reports and link their donors and volunteers within one database.

**Flow through the Club**

The RFID system will be able to locate a member in real time. This will decrease parent wait times, and increase homework club attendance and member safety.

**Financial Issues**

*Working with a non-profit organization, it will be necessary to have low cost solutions in order to benefit the members. Cost-benefit analyses were conducted for all solutions to economically justify them.*

All costs to the BGCB will have to be as minimal as possible to keep membership rates low. This will be a major constraint as the team implements new projects; all money coming into the clubs comes from grants or sponsors so all project costs must be justified with the benefits clearly stated.

For each of the solutions presented to the BGCB - the RFID technology to track members through the clubs, the Raiser’s Edge volunteer module that will replace the current database, and the COW system for new member orientation - a cost benefit analysis was conducted in order to economically justify that these are the best alternatives available.

**Recommended Improvements**

*Final recommendations will be presented to BGCB.*

The team will be presenting the following list of recommendations for BGCB to use if sufficient funding is
provided:

- Migrating the volunteer database to Raiser’s Edge to significantly improve reporting and usability
- Adopting the optimal proposed volunteer application to promote efficient and accurate data collection
- Installing and implementing the RFID system at the Yawkey Club to better track club members and increase member safety
- Integrating the homework club solution into the RFID system, to meet the goals of BGCB
- Utilize a mobile computer system to use during club orientations