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The Role of Service Learning in Engineering Education

Katherine Renee Mitchell
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UNIVERSITY HONORS PROGRAM
SENIOR PROJECT - PROSPECTUS

Name: Katherine Mitchell

College: Engineering Department: Civil

Faculty Mentor: Eric Drumm

PROJECT TITLE: The Role of Service Learning in Engineering Education

PROJECT DESCRIPTION (Attach not more than one additional page, if necessary):

The acceptance and use of service learning as an established educational tool for undergraduate engineering programs is in its infancy. Engineers' ethical and professional obligations suggest that service learning be incorporated into standard engineering curriculum. Successful pilot programs can serve as blueprints for the rest of the academic engineering community and verify that these programs are necessary and useful.

This paper explores the possibility of service learning as a viable educational method in undergraduate engineering programs and illustrates how service learning can be integrated in to a wide variety of classes and disciplines. The appendices provide sufficient information that ASCE volunteer coordinators in the future will have all the contact and project information they need to continue the established relationship between ASCE and B&GCA. While the annual report that ASCE produces each year to maintain their chapter eligibility accomplishes this to some extent, I wanted to create a more detailed reference.

Projected completion date: 04-16-02

Signed: Katherine Mitchell

.....
I have discussed this research proposal with this student and agree to serve in an advisory role, as faculty mentor, and to certify the acceptability of the completed project.

Signed: Eric C Drumm, Faculty Mentor

Date: 4-16-02

Return this completed form to The University Honors Program, F101 Melrose Hall, following your first presentation in the Senior Project Seminar.

UNIVERSITY HONORS PROGRAM

SENIOR PROJECT - APPROVAL

Name: _Katherine Mitchell_____

College: _Engineering_____ Department: _Civil_____

Faculty Mentor: _Eric Drumm_____

PROJECT TITLE: _The Role of Service Learning in Engineering Education_____

I have reviewed this completed senior honors thesis with this student and certify that it is a project commensurate with honors level undergraduate research in this field.

Signed: , Faculty Mentor

Date: 4-16-02

Comments (Optional):

The Role of Service Learning in Engineering Education

Katherine Mitchell

04/16/02

Department of Civil and Environmental Engineering

University Honors Program Senior Thesis

University of Tennessee at Knoxville

Abstract

The acceptance and use of service learning as an established educational tool for undergraduate engineering programs is in its infancy. Engineers' ethical and professional obligations suggest that service learning be incorporated into standard engineering curriculum. Successful pilot programs can serve as blueprints for the rest of the academic engineering community and verify that these programs are necessary and useful. This paper explores the possibility of service learning as a viable educational method in undergraduate engineering programs and illustrates how service learning can be integrated in to a wide variety of classes and disciplines.

Introduction

The phrase "service learning" is often confused with another similar phrase "community service." Differentiating between the two phrases is important from an academic standpoint. Community service should inherently be voluntary and based upon personal motivation. Requiring community service for academic credit is not acceptable. "...many in the field of engineering education... advocate that providing 'community service' lies outside the academic mission of their discipline" (Gokhale & Aldrich, 1997). Requiring "involuntary volunteers" also undermines the spirit of service, which should incorporate some amount of personal sacrifice in order to help others.

Instead of requiring community service, engineering programs have started to incorporate service learning into their curriculums. Service learning is emphatically different from community service. Service learning is "a method under which students learn and develop through active participation in thoughtfully organized activities that are conducted in and meet the needs of a community" (Tsang, Martin & Decker, 1997).

Service-learning is distinguished by the deliberate combination of service and study: "One of the characteristics of service-learning that distinguishes it from volunteerism is its balance between the act of community service by participants and reflection on that act, in order both to provide better service and to enhance the participants' own learning"(Pritchard, 2000).

Gokhale and Aldrich (1997) applied the phrase "reflective practitioners" to service learning participants to imply that students and faculty should apply book knowledge to real-world problems and use self-evaluation to fine tune their theories. To ensure that service promotes substantive learning, an important requirement is that students reflect on their experience to be able to connect it with the curriculum. At the core of any definition of service learning, however, are two essential components. First, students must be actively engaged in learning and secondly, students must provide a service to the community. Service learning combines academics, skills, citizenship, and values. "For many who participate, it provides experiences which help solidify the connections between the classroom and the 'real world' " (Petry, 1998).

Professional responsibility

Dr. Ernest Boyer, 1997 President of the Carnegie Foundation for Advancement of Teaching, believes that academia is obligated to help improve the surrounding community. His vision for the "New American College" is an institution that "celebrates teaching, supports research, and takes special pride in its capacity to develop a new model of higher education, one that would enrich the campus, renew communities, and give new dignity to the scholarship of service." Ira Harkavay, 1997 director of the University of Pennsylvania's Center for Community Partnerships, shares this belief and warns "universities cannot afford to remain shores of affluence, self-importance, and horticultural beauty at the edge of island seas of squalor, violence, and despair"(Gokhale & Aldrich 1997).

University engineering programs are now required by the Accreditation Board of Engineering and Technology (ABET) to demonstrate that their graduates understand the

impact of engineering in a global and social context, along with knowledge of current issues related to engineering. This involves combining community service and academic study in ways that invite reflection on what one learns in the process. In the pursuit to be recognized as a profession by society, engineers should embrace the opportunity to give *pro bono* service, an important feature already provided by the medical and legal communities (Pritchard, 2000).

But aside from program accreditation requirements and societal recognition, engineering programs should feel obligated to instill moral and ethical responsibility on their students. This comes from language found in professionally accepted codes of ethics, specifically the National Society of Professional Engineers (NSPE) and the American Society of Civil Engineers (ASCE).

Under NSPE's Code of Ethics, Section III, *Professional Obligations*, the second entry says "Engineers shall at all times strive to serve the public interest." Subsection a. under this obligation reads: "Engineers shall seek opportunities to be of constructive service in civic affairs and work for the advancement of the safety, health and well-being of their community." "Furthermore, there is no qualifier, 'in the performance of their professional duties.'" This suggests that engineers' obligations in regard to public well-being are not restricted to their responsibilities within their place of employment" (Pritchard, 2000).

ASCE's Code of Ethic's first *Fundamental Canon* shadows the sentiments and even wording of NSPE's and reads: "Engineers shall hold paramount the safety, health and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of their professional duties." Subsection e., under this canon reads: "Engineers should seek opportunities to be of constructive service in civic affairs and work for the advancement of the safety, health and well-being of their communities, and the protection of the environment through the practice of sustainable development." Subsection f. reads: "Engineers should be committed to improving the

environment by adherence to the principles of sustainable development so as to enhance the quality of life of the general public” (Pritchard, 2000).

Although the NSPE and ASCE provisions are rather broadly stated, they do provide a rationale for concluding that community service is an important feature of engineering ethics. Community service and academic excellence are not competitive demands to be balanced through discipline and personal sacrifice by students, but rather they are “interdependent dimensions of good intellectual work. When effectively structured, facilitated, related to discipline based theories and knowledge, community based service learning experience ensures the development of graduates who will participate in society actively, ethically, and with an informed mind” (Gokhale & Aldrich, 1997).

USA’s Pilot Program

The Mechanical Engineering Department at the University of South Alabama (USA) has successfully implemented a service learning program into their curriculum. USA had several preliminary objectives when approaching their service learning project. The program was designed to give students the opportunity to apply knowledge gleaned from engineering classes, to “give back” to the community, to network with other students, faculty, professionals, and community leaders, and to “prepare themselves for living in and supporting their communities.” (Petry, 1998). Faculty anticipated that students would “find themselves addressing ethical problems very much like those they will have to deal with in their eventual place of employment,” and that the projects would offer “reflection on directions [the students] want their careers to take and on the values and ethical ideals they hope to sustain” (Pritchard, 2000).

In order to revamp the University of South Alabama’s “Introduction to Mechanical Engineering” course, the faculty decided to incorporate a service learning project into the class. The students were asked to design teaching modules for the Mobile County School System that could be used by middle-school mathematics and science teachers. To prepare the engineering students for their design project, a series of five presentations and activities on designing for instruction were led by a faculty from the College of Education

whose expertise is on instructional design and K-12 science education. This portion of instruction included an overview on what motivates middle-school students to participate in activities, the essential components and techniques to implement cooperative learning, an overview of learning styles and self-analysis scales, the different levels of cognitive development, and elements of objective classification (Tsang, Martin, & Decker, 1997).

These modules emphasized fundamental engineering concepts that were being studied by the students in their freshman engineering classes. "Since the knowledge base for the design project is middle-school mathematics and science, the 'analysis' part of the design process will be less of a burden to the first-year students and they can focus their energy on the 'creativity' and 'process' part of the design" (Tsang, Martin, & Decker, 1997).

USA's Program Findings

From the standpoint of establishing university-K12 partnership, the service-learning project met its goal. Surveys conducted after each semester's project showed specific statistical trends. "Concerning student attitudes toward the community and civil responsibility," attitudes were somewhat negative during the winter quarter but became more positive during the spring quarter. Students typically listed benefiting society as a definition of engineering after completing the course. Students self-confidence in studying engineering as "increased both winter and spring quarters, and both findings were statistically significant." "Concerning interpersonal interactions," student confidence in talking with faculty members in the department and engineering professional increased both quarters (Tsang, Martin, & Decker, 1997).

Program Initiatives at UTK

Students in the Department of Civil and Environmental at the University of Tennessee at Knoxville (UTK) have tried to pattern their own service learning program after USA's and incorporate it in their ASCE student chapter. During fall 1998 and spring 1999, several civil engineering students began volunteering at local Boys and Girls Clubs of America (B&GCA) through a campus service organization, TeamVols (see appendix for national and local information regarding the B&GCA organization). Over time, the

students observed ways in which to involve the student chapter of ASCE with their volunteer efforts. Instead of just visiting with the children, they would conduct simple engineering related activities with various age groups.

Throughout the next three years, these students developed several activities that were fundamental enough that the children could grasp simple engineering concepts, inexpensive enough that ASCE could fund the activities without outside sponsorship, effective enough that the children could retain and recall information discussed in previous meetings, and entertaining enough that the children did not lose interest in the activities. Students were able to use the activities to build a relationship with the children and staff at the Boys and Girls Club and excite the children about math and science. UT students were also able to incorporate information discussed in their own engineering classes, thereby applying book knowledge to the real world. These activities included Index Card Towers, Pipe Cleaner Bridges, Paper Airplane Races, Clip Art/Art Projects, Poster Board Plays, and Salt Dough Models (see appendix for project descriptions and illustrations). Reflection was encouraged through writings submitted for ASCE's annual report, a presentation given to the UT CEE faculty at their biannual faculty retreat, and presentations given to the UT Honors Department.

UTK's Program Findings

Conclusions on the effectiveness of ASCE's efforts are qualitative and not quantitative in nature and are based upon personal observation.

Activities were accomplished with fewer disciplinary actions when the children were randomly divided into teams of four or five with one ASCE member in charge of the team. The random division discouraged rivaling clichés, and the team configurations helped to keep order, provide an engineering student to give assistance, and gave the children more personalized attention.

An effective means to maintain control was to set a time limit. This gave the children a structured amount of time so that the activity would not take too long and cause a loss of

interest. It also gave motivation to work efficiently toward a goal. Other techniques had to be employed in order to keep things from getting out of control. Rules and limits were set, such as raising hands and being called on to speak, not interrupting another child, and taking turns.

An informal “awards ceremony” was also found to provide positive motivation. The awards were verbal such as Highest Tower, Most Colorful Bridge, Fastest Airplane, etc. Sometimes they were also inexpensive yet tangible awards such as candy, party favors, erasers, pens, pencils, or actual awards printed out on paper. Awards provided the children with motivation and interest in the projects. Care was taken to include all children in the awards so that some would not feel excluded.

Candy was given out sparingly, because many of the children lack proper oral hygiene, and ASCE did not want responsibility for any subsequent cavities. The other trinkets handed out as awards were carefully considered for safety issues, such that the children would not hurt themselves or others.

Engineering team leaders had to be receptive to the children’s level of understanding. A typical child at the Boys and Girls Club is well below the expected academic level their age suggests. The majority of the time, principles and ideas had to be reiterated several occasions before the child could grasp the entire concept.

Principles for Effective Service Learning Programs

Through research, example, and personal execution the following list of principles may serve as a guideline for implementing an effective “service learning” program in various engineering disciplines: “academic credit is for learning, not for service, do not compromise academic rigor, engage students in responsible and challenging ways, provide a structured opportunity for students to reflect critically on their experience, articulate clear service and learning goals for everyone involved, clarify the responsibility of each person and organization involved, and provide feedback and assessment mechanism to all involved” (Gokhale and Aldrich, 1997).

Conclusions

When service learning programs are included in engineering curriculums, the students, University, and community benefit. Students gain practical application of their engineering education, strengthen teaming and interpersonal skills, and develop ethical responsibility. The University, specifically the engineering department, receives any recognition that is a result of the service performed. This can be in the form of television news shows, newspapers, journals, and word of mouth. The community also benefits because it is the direct recipient of the service. With a well structured program that answers a real community need, this benefit is invaluable.

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Appendix A. National B&GCA Information

Appendix B. Local B&GCA Information

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Appendix A.
National B&GCA Information

A Brief History

Boys & Girls Clubs of America (B&GCA) began in 1860 when several women in Hartford, Connecticut grew concerned over the growing number of young boys roaming the streets. Believing that these boys should have a positive alternative, they organized the first Club, and “a cause was born.” In 1906, several Boys Clubs decided to affiliate, and the Federated Boys Clubs in Boston was formed with 53 member organizations. In 1931, the Boys Club Federation of America became Boys Clubs of America. In 1956, they celebrated their 50th anniversary and received a U.S. Congressional Charter. To recognize the fact that girls are a part of the cause, the national organization's name was changed to Boys & Girls Clubs of America in 1990. Accordingly, Congress amended and renewed their charter.

With over 3.3 million boys and girls served; 2,851 club locations spanning across the United States, Puerto Rico, and the Virgin Islands; and over 33,800 trained youth professionals employed at the B&GCA; it is not difficult to see how the organization has grown to be as effective and important for children as it is today. The Boys and Girls Club mission is “to inspire and enable all young people, especially those from disadvantaged circumstances, to realize their full potential as productive, responsible and caring citizens.” It is open to all children, but mainly targets disadvantaged households.

In the spirit of the concerned ladies of Hartford, the B&GCA continues to discourage children from becoming involved with crime and/or gangs by offering a safe and structured environment with caring adult employees and volunteers. Speaking on a financial level, “it takes money to run a Boys & Girls Club -- on average, about \$200 per youth per year. But consider the alternative: keeping a young adult in jail costs taxpayers anywhere from \$25,000 to \$75,000 per year. Boys & Girls Clubs - a proven delinquency prevention program -- are one of the best bargains in America.”

Roxanne Spillett was appointed president of the Boys and Girls Club in 1996, and since then has worked very hard to change their image and policies. By “drawing on input from more than 2,000 volunteers, club professionals and management experts, Spillett led B&GCA through a strategic planning process that is guiding Boys & Girls Clubs into the

21st century.” Her final plan involves three distinct yet equally important goals: the development of new generation-changing program initiatives in education, technology and cultural diversity; planned growth; and increased capacity of local Clubs in the areas of technology, human resources, board and resource development. In an effort to help fulfill these ambitious goals, the UT chapter of ASCE has been volunteering with a local B&GCA for the past four years.

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Edward M. Liddy, Chairman-Elect

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National Programs (taken directly from www.b&gca.org)

Character and Leadership

Helping youth become responsible caring citizens and acquire skills for participating in the democratic process is the main thrust of these programs. They also develop leadership skills and provide opportunities for planning, decision-making, contributing to Club and community, and celebrating our national heritage.

TEENS supreme® Keystone Clubs

Keystone Clubs are chartered small group leadership development clubs for young people ages 14-18. Keystone members elect officers, choose their own activities and plan and implement community service projects. A national charter entitles a Keystone Club to participate in regional and national Keystone conferences. The TEENS supreme Keystone Club program is sponsored by the Taco Bell Foundation.

National TEENS supreme Keystone Conference

Keystone Club members from across the country gather in a different city each year to develop leadership skills, exchange ideas, debate and discuss current issues, and make friends. Each year, Keystone members select a national project for local Keystone Clubs to complete. The combined action of hundreds of local Keystone Clubs throughout the nation results in a project of national significance. The National TEENS supreme Keystone Conference is sponsored by the Taco Bell Foundation.

TEENS supreme Centers

By the year 2000, this new program sponsored by the Taco Bell Foundation will fund the establishment of 100 TEENS supreme Centers in selected Boys & Girls Club facilities nationwide. Clubs with a significant teen population and demonstrating relevant teen programming are eligible to become a TEENS supreme Center site.

National Youth of the Year

Sponsored by The Reader's Digest Association, the National Youth of the Year Program is designed to promote and recognize service to Club and community, academic performance and contributions to family and spiritual life. Clubs select a Youth of the Year who receives a certificate and medallion then enters state competition. State winners receive a plaque and enter the regional competition. Regional winners receive a \$2,000 scholarship and enter a national competition held in Washington, DC. The National Youth of the Year receives an additional \$8,000 scholarship and is installed by the President of the United States.

Torch Club

This small-group leadership development program, sponsored by THE ALLSTATE FOUNDATION, is targeted for youngsters ages 11 to 13. Within some 339 Torch Clubs across the country, members elect officers and plan and implement their own activities and community service projects. Each Torch Club receives an official charter from Boys & Girls Clubs of America.

Education and Career

These programs help youth create aspirations for the future, providing opportunities for career exploration and educational enhancement.

Project Learn

Project Learn reinforces and enhances the skills and knowledge young people learn at school through "high-yield" learning activities at the Club and in the home. Based on Dr. Reginald Clark's research that shows fun, but academically beneficial activities increase academic performance, these activities include leisure reading, writing activities, homework help and games like Scrabble which develop young people's cognitive skills. Project Learn emphasizes collaborations between Club staff, parents and school personnel. Formally evaluated by Columbia University, Project Learn has been proven to boost the academic performance of Club members. The JCPenney Afterschool Fund is the generous sponsor of Project Learn.

Power Hour

A comprehensive homework help and tutoring program, POWER HOUR is designed to raise the academic proficiency of Club members ages 6-12.

Ultimate Journey

This internationally recognized, award-winning program leads Club members ages 6-12 on a fun-filled journey into the amazing world of plants and animals. The Ultimate Journey motivates young people to develop an understanding of and sensitivity to the environment, helping them build the knowledge and motivation to protect our natural resources.

Goals For Growth

This program teaches young people ages 8-12 skills for setting and achieving their own personal, education and career goals. The Goals for Growth program is sponsored by Best Buy Children's Foundation.

Career Explorers Club

This small group program introduces young people ages 13-15 to a wide range of career opportunities by taking them where the action is - work sites, businesses, government agencies, colleges, universities and vocational schools. Sponsored by the Taco Bell Foundation as part of the TEENS supreme Career Prep program, Career Explorers Club provides youth with information about career options and helps them identify the education and training required to reach their goals.

Job Ready

Sponsored by the Taco Bell Foundation as part of the TEENS supreme Career Prep program, JOB READY! is a comprehensive program that teaches young people ages 16-18 effective job-hunting techniques and helps them develop the skills necessary to be successful once on the job.

ClubService

This program, the result of a partnership between Boys & Girls Clubs of America and the Corporation for National Service (AmeriCorps), provides education awards to Club members ages 17 and 18 and Club alumni ages 19-24 who serve their Clubs and communities. CLUBService recognizes young people's service, helps them access higher education opportunities and encourages them to pursue future careers as Club professionals.

Health and Life Skills

These initiatives help youth achieve and maintain healthy, active lifestyles.

SMART Moves

The SMART Moves (Skills Mastery and Resistance Training) prevention/education program addresses the problems of drug and alcohol use and premature sexual activity. Based on proven techniques, the program uses a team approach involving Club staff, peer leaders, parents and community representatives. More than simply emphasizing a "Say No" message, the program teaches young people ages 6-15 how to say no by involving them in discussion and role-playing, practicing resistance and refusal skills, developing assertiveness, strengthening decision-making skills and analyzing media and peer influence. The ultimate goal: to promote abstinence from substance abuse and adolescent sexual involvement through the practice of responsible behavior.

SMART Girls

An outgrowth of the popular and effective SMART Moves program, SMART Girls is a health, fitness, prevention/education and self-esteem enhancement program for girls ages 10-15. The program is designed to encourage healthy attitudes and lifestyles that will enable early adolescent girls to develop to their full potential. The SMART Girls program is sponsored by the Bristol-Myers Squibb Foundation, Inc.

Act SMART

Developed as a joint project between Boys & Girls Clubs of America and the American Red Cross, Act SMART is an HIV/AIDS prevention program designed for Club members ages 6-17.

KIDS IN CONTROL

KIDS IN CONTROL is a 15-session safety awareness program designed to help Club members ages 8-10 develop the personal safety habits and practical skills needed to be safe at the Club, at home and in the neighborhood. The program offers interactive approaches to building Club members' crime prevention and personal safety skills through role-playing, games and other participatory activities. KIDS IN CONTROL is sponsored by Brink's Home Security, Inc.

Street SMART

Boys & Girls Clubs of America's Street SMART initiative, funded by THE ALLSTATE FOUNDATION, consists of three components designed to help young people ages 11-13

effectively resist gangs and violence, resolve conflicts and be positive peer helpers in their communities. It also allows them the opportunity to hold annual events that celebrate anti-gang, anti-violence themes. Street SMART serves as the National Project for Torch Clubs annually, and is available for all Boys & Girls Clubs to use.

Cavity-Free Zone

Cavity-Free Zone was developed in response to the recent U.S. Surgeon General's report on oral health which revealed a silent epidemic of oral disease in America, especially among disadvantaged youth. Underwritten by Crest, Cavity-Free Zone aims to improve the oral health of Club members ages 6-18 nationwide. Through oral health educational program materials, a Web site and collaborative efforts with local dental schools, dental societies and other health care agencies, Cavity-Free Zone will be a catalyst for change in providing dental services to disadvantaged youth

The Arts

These initiatives help young people enhance self-expression and creativity, develop multicultural appreciation, provide exposure to and develop skills in crafts and visual, performing and literary arts:

ImageMakers: National Photography Program

Funded by the Circuit City Foundation, this comprehensive photography program encourages girls and boys to learn and practice photography, expressing themselves in creative and innovative ways. The national initiative delivers a state-of-the-art photography curriculum, provides photographic resources and opportunities for Club members to compete on a national level. ImageMakers provides local, regional and national recognition through an annual photography contest. Winning photos will be displayed nationwide at museums as well as at B&GCA's annual National Conference.

The Circuit City Foundation ImageMakers funding is being passed through to 60 Boys & Girls Clubs nationwide to help them implement a photography curriculum. Ten additional sites were selected for grants to strengthen and highlight excellent photography programs in place. All Boys & Girls Clubs across the country receive the ImageMaker resource guide and materials.

National Fine Arts Exhibit

View the 2001 National Fine Arts Exhibit [Virtual Gallery](#).

Sponsored by L'Oreal, this contest, which encourages creativity through a variety of media, is made up of local, regional and national exhibits. Young people are encouraged to create artwork in any of the following categories: monochromatic drawing, multicolored drawing, pastels, water color, oil or acrylic, print making, mixed media, collage and sculpture. Artwork selected through a national competition is displayed at B&GCA's annual National Conference.

Sports, Fitness, and Recreation

These programs help develop fitness, a positive use of leisure time, reduction of stress, appreciation for the environment, and social and interpersonal skills.

FITNESS AUTHORITY

FITNESS AUTHORITY[®], a new small-group program sponsored by The Sports Authority, Inc., promotes fitness in all youth. FITNESS AUTHORITY provides a fun-filled, motivating fitness experience for members. There is a 12-week curriculum for each of three age groups: FITNESS SQUAD, 6-9; FITNESS MASTERS, 10-14 and FITNESS ALL-STARS, 15-18. Weekly sessions cover every aspect of fitness, drawing upon themes of sports culture and history, self-esteem, nutrition and physical fitness. The annual FITNESS AUTHORITY Club-Wide Pentathlon competition allows Club members of all ages to demonstrate and test their fitness levels.

NIKE Sports Program

The NIKE Sports Program is composed of the following components: NIKE University, NIKE SWOOSH Clubs, NIKE Sports Leadership Camps, NIKE Girls Sports, NIKE Games, and NIKE Daily Challenges. A program overview brochure is available upon request.

NIKE University

NIKE University is a comprehensive sports training program for Club athletic directors. There are three trainings available: NIKE 101 provides participants with essential resources to conduct diverse, high quality physical education and sports programs in Clubs. NIKE 202 is a train-the-trainer course preparing athletic directors to train volunteer coaches in their sports program. NIKE 303 provides resources, information and strategies to increase the scope and quality of the Clubs sports and fitness programs for girls.

NIKE SWOOSH

These groups are teen leadership groups that promote fitness, sports and potential athletics-related careers in Boys & Girls Clubs. Members meet on a regular basis to learn about issues inside and outside their Club related to sports and fitness. SWOOSH Club members ages 13-18 volunteer at least 25 hours as referees, coaches, or in other athletic department support roles. SWOOSH Club leaders can attend NIKE Sports Leadership Camps in each of B&GCA's five regions after the completion of their 25 volunteer hours.

NIKE Sports Leadership Camps

NIKE Sports Leadership Camps are annual, fun-filled, skill and leadership development events held regionally on college campuses for NIKE SWOOSH Club members and their staff chaperones. Each three-day, two-night NIKE Sports Leadership Camp provides opportunities to learn and play new sports, meet NIKE athletes, explore careers in sports and receive tips from college officials about admissions.

NIKE Girls Sports Program

If a girl doesn't participate in sports by age 10, her chances of participating by the time she is 25 are less than 10 percent. NIKE and B&GCA want to assist and guide Clubs in making their sports and fitness programs more equitable for girls. The NIKE Girls Sports Program provides grants, training and development resources, collaborations, and programs.

NIKE Games

The NIKE Games encourage Inter-Club competition within a city or region, allowing youngsters in teams from four or more Clubs to compete in basketball, soccer, volleyball, mini-soccer, track and field, softball and street hockey. Tournaments occur throughout the year. Awards include individual and team recognition.

NIKE Daily Challenges

Fitness and fun combined make NIKE Daily Challenges a non-competitive, yet challenging, popular series of programs. The Jackie Joyner-Kersey Challenge helps girls build new skills via a fun fitness circuit. The Michael Jordan Invent-A-Sport Challenge encourages creativity and fitness, allowing youngsters to create their own game or sport, illustrate and demonstrate the activity and play with peers. In the Ken Griffey Jr. Home Run Challenge, members build basic motor skills through throwing, catching and running games. The Dawn Staley Basketball Challenge offers instruction and practice in dribbling, assisting and shooting. The Jump Rope Challenge improves strength, skills and endurance as participants jump "against the clock."

NIKECORPS

This NIKE program helps place volunteer college-age coaches in Boys & Girls Clubs in targeted cities. Through NIKECORPS, 100 coaches will be selected and trained each year. Each NIKECORPS coach will receive a \$500 stipend to apply toward his or her college tuition in exchange for 100 hours of service in a Boys & Girls Club.

Reviving Baseball in Inner Cities (RBI)

Through a collaboration with Major League Baseball, Boys & Girls Clubs of America has expanded or established baseball and fast-pitch softball programs in more than 50 communities nationwide. All RBI leagues incorporate Quick SMART!, a condensed version of Boys & Girls Clubs of America's SMART Moves prevention/education program designed to teach players to avoid alcohol and other drug use and premature sexual involvement.

Other Specialized Programs

These initiatives emphasize community mobilization and family involvement as strategies Clubs can use to better serve more young people and broaden the impact of all Club programs.

Gang Prevention/Intervention Through Targeted Outreach

In response to the number of youth gangs growing in cities and expanding to suburban

and rural communities, B&GCA has developed a special gang prevention and intervention initiative targeting youth ages 6-18. Through referrals from schools, courts, law enforcement and community youth service agencies, the tested and proven Targeted Outreach program identifies and recruits delinquent youth, or those "at risk" of delinquency, into ongoing Club programs and activities. This initiative is sponsored by the Office of Juvenile Justice and Delinquency Prevention, U.S. Department of Justice.

Family Support

Family support activities, programs and events are designed to benefit Club members by promoting family stability, cohesion and connection. Examples include family fun nights, parenting classes, referral services, job skills training programs and single-parent support groups. This program is funded by The Annie E. Casey Foundation.

ClubTech

Through ClubTech, and thanks to a more than \$100 million donation from Microsoft, B&GCA is providing Clubs with the tools to make Club members and staff effective technology users. Every Club will receive a comprehensive package of the latest Microsoft products – a combined \$88 million software gift. With another \$12.3 million in cash, B&GCA is developing technology programs that will give members basic computer skills; introduce them to digital movie making, music making, photography, graphic design and Web development; and guide staff in using technology to enhance all program offerings. ClubTech also includes extensive technology training opportunities for Club staff at all professional levels.

B&GCA Alumni

RHETT AKINS

Singer/Songwriter

DARRELL ARMSTRONG

Guard, Orlando Magic

JOAN BENOIT SAMUELSON

Olympic Gold Medalist

SHARON SAYLES BELTON

Mayor, Minneapolis

DAVID BRUGGER

President, Association of
America's Public TV Stations

RAY COMBS

Former Family Feud Host/
Comedian(Deceased)

ERIC DAVIS

Outfielder, Baltimore Orioles

EVAN S. DOBELLE

President, Trinity College
Hartford, Conn.

FRANK DeVITO

Former Vice-Chairman
LINTAS Worldwide Advertising

RAYMOND FLYNN

Former Mayor of Boston/
Ambassador to the Vatican

JAMES (LOU) GORMAN

Former General Manager
Boston Red Sox

DENNIS GREEN

Former Head Coach, Minnesota Vikings

MAJ. GENERAL CHARLES HINES

President
PrairieView A&M University
U.S. Army (Ret.)

MICHAEL JORDAN

NBA All-Star

JACKIE JOYNER-KERSEE

Olympic Gold Medalist

ROBERT KERSEE

Track and Field Coach

D.D. LEWIS

Retired Dallas Cowboys Star

SID LUCKMAN

Former Quarterback
Chicago Bears (Deceased)

AL MANGINI

B&GCA Executive (Deceased)

GARY MATTHEWS

Former Chicago Cubs Star

JERRY MAULDEN

President, Entergy Corporation

SEN. GEORGE MITCHELL

Former U.S. Senate
Majority Leader

SIDNEY MONCRIEF

Retired Milwaukee Bucks Star
NBA All-Pro

JOHNNY MORRIS

Former Chicago Bears Star
Sportscaster

EDWARD JAMES OLMOS

Actor, Director

SHAQUILLE O'NEAL
Center, Los Angeles Lakers

JIMMY PIERSALL
Cleveland Indians (Retired)

LOU PINIELLA
Manager, Seattle Mariners

LEE PITTS
Vice President, First Union Bank
Fort Myers, Fla.
Swim Instructor

TERRY PORTER
Guard, Minnesota Timberwolves

JAY RANDOLPH
Sports Commentator

AHMAD RASHAD
NBC Sportscaster
Former Wide-Receiver
Minnesota Vikings

BRIG. GEN. FRANCIS ROBERTS
U.S. Army

BROOKS ROBINSON
Baseball Hall of Fame
Baltimore Orioles

SMOKEY ROBINSON
Singer/Songwriter

FRED ROONEY
Former U.S. Congressman

JOHNNY RUTHERFORD
Retired Race Car Driver

GALE SAYERS
Former Chicago Bears
Running Back

MARK SCHLERETH
Guard, Denver Broncos

JUNIOR SEAU
Linebacker, San Diego Chargers

W. ERROL SEWELL
B&GCA Executive (retired)

C. J. SILAS
Retired Chairman and CEO
Phillips Petroleum

DENNIS SMITH
Author

HANK SOAR
Football Star and
Professional Baseball Umpire

NORMAN STAMPER
Chief of Police, Seattle, WA

DAVE STEWART
Retired Pitching Ace, Oakland A's
and Toronto Blue Jays

DEWEY STOKES
County Executive, Columbus, OH

ROBERT STUTMAN
President, Robert Stutman Associates,
Former Head of the D.E.A., New York
Office

FRANK THOMAS
First Baseman
Chicago White Sox

TERDEMA USSERY II
President and CEO
Dallas Mavericks

MANUEL VILLAFANA
Chairman, ATS Medical

DENZEL WASHINGTON
Academy Award-winning Actor

LENNY WILKENS
Coach, Toronto Raptors

JAMAAL WILKES
Former L.A. Lakers Star

BOB WOOLF
Sports Attorney (deceased)

NELSON WOLFF
Former Mayor, San Antonio, TX

DAVID L. WOLPER
Hollywood Producer

JAMES WORTHY
NBA Hall-of-Famer
Former LA Laker

Appendix B.
Local B&GCA Information

Facility Contact Information

Facility Name	Street Address	E-mail	Area Code 865	
			Phone	Fax
Administrative Office	220 Carrick St., Suite 318 Knoxville, TN 37921	aberry@ bgck.org	544-3825	546-8507
Caswell	407 Caswell Avenue Knoxville, TN 37917		524-1214	524-1215
Christenberry Heights	3916 Carus Road Knoxville, TN 37918		689-5203	689-5203
Halls/Powell	1819 Dry Gap Pike Knoxville, TN 37918		219-7232	219-7662
Laura Cansler	1125 College Street Knoxville, TN 37921		673-8645	524-1812
Laura Cansler Learning Center	1125 College Street Knoxville, TN 37921		546-7439	524-1812
Montgomery Village	4530 Joe Lewis Road Knoxville, TN 37920		579-5377	579-5377
Moses Teen Center	220 Carrick Street Entrance on Hannah St. Knoxville, TN 37921		637-5523	546-8507
Sports Camp- Monday Gym	240 E. Baxter Avenue Knoxville, TN 37917		974-9689	
Western Heights	1417 Oldham Avenue Knoxville, TN 37921		637-6217	637-6217
Walter P. Taylor Homes	315 McConnell Street Knoxville, TN 37915		594-8784	594-8784
Vestal	522 Maryville Pike Knoxville, TN 37920		573-4837	577-6091

Administration Contact Information

<u>Last Name</u>	<u>First Name</u>	<u>Area of Responsibility</u>	<u>E-mail Address</u>
Berry (General Admin.)	Anna Beth	Special Events	aberry@bgck.org
Bivens	Larry	Maintenance	bivens@bgck.org
Brooks	Ernie	Volunteers	ebrooks@bgck.org
Crabtree	Bruce	Government Funds	bcrabtree@bgck.org
Cummings	Christy	Programs	ccumming@bgck.org
Drummond	Kelly	Personnel	drummond@bgck.org
Hull	Sandy	Knoxville Open	shull@bgck.org
Hurst	Lisa	Development	lhurst@bgck.org
Lee	John	President	jlee@bgck.org
Moore	Jim	Finance	jemoore@bgck.org
Myers	Barbara	Daycare Licensing	bmyers@bgck.org
Nichols	Chet	Operations	cnichols@bgck.org
Ragan	Sheri	Marketing	sragan@bgck.org
Rongo	Carolyn	Accounting	crongo@bgck.org

Volunteer Procedure

Boys and Girls Clubs of Greater Knoxville

Volunteer! It's a great way to give back to your community.

The Boys and Girls Clubs of Greater Knoxville invites adults, high school and college students, retirees and corporations to explore volunteer opportunities.

The purpose of our organization is to promote the educational, vocational and character development of boys and girls in a safe and caring environment. Membership is open to youth between the ages of 16 months and 17 years old, with a special concern for the disadvantaged. The Boys and Girls Clubs of Greater Knoxville is one of the most progressive in the state and boasts a membership of more than 3,200.

The most important placement is that an individual's skills, talents and time commitments match and meet the needs of the organization.

Long-term and short-term volunteer opportunities exist in the following areas:

Program Areas:

Tutorial (all subjects, all grades)

Recreation and sports

- coaches, officials, and scorekeepers
- tennis, golf, basketball, volleyball, soccer, aerobics, swimming/water safety

Leadership

Mentoring

Hobbies (e.g. photography)

Arts & crafts

Music

Drama

Reading to pre-school children

Fundraising:

Nike Knoxville Open (See [Website](#))

Knoxville Sports Hall of Fame

D.D. Lewis Golf Tournament

Chris Woodruff Tennis Expo

Tim Irwin Bass Fishing Tournament

Board

Advisory boards (meets monthly and oversees unit programs)

Maintenance

(plumbing, painting, repairs)

The volunteer application procedure:

interest form

application form

interview

reference checks

orientation

training (if necessary)

If you or your organization would like to volunteer, simply fill out the Volunteer Interest form and return it to:

Boys and Girls Clubs of Greater Knoxville

Attn: Ernie Brooks

220 Carrick Street, Suite 318

Knoxville, TN 37921

Or for more information call Ernie Brooks at 865-544-3825 ext. 231.

E-mail – ebrooks@bgck.org

Volunteer Interest Form

Name: _____
(individual or organization)

Contact person: _____
(if organization)

Address: _____

City: _____ State: _____ Zip: _____

Home #: _____ Work #: _____

Best time to contact: _____

Boys and Girls Clubs of Greater Knoxville, Inc.
VOLUNTEER APPLICATION

Position Desired: _____ Today's Date: ____ / ____ / ____

Name: _____ Social Security Number: _____
 [Print] Last First Middle

Present Address: _____
 Street & No. City State Zip

How long have you lived there? _____
 Years Month

Home Phone: _____ Work Phone: _____

APPLICANT'S STATEMENT

I authorize the Boys and Girls Clubs of Greater Knoxville to investigate my driving record, my criminal record and my credit history, and I understand that an investigative consumer report may be prepared whereby information is obtained through personal interviews with neighbors, friends and others with whom I am acquainted. This inquiry would include information as to my character, general reputation, personal characteristics and mode of living.

I grant the Boys and Girls Clubs of Greater Knoxville authority to contact my previous and current employers and I authorize those employers to disclose to the Boys and Girls Clubs of Greater Knoxville all records and other information pertinent to my employment with them.

I certify that all of the information that I provide on this application and in any interviews will be true and accurate. I understand that if I am approved to be a volunteer and any such information is later found to be false or misleading in any respect, I may be immediately dismissed.

Applicant's signature

Date

Where did you learn about our volunteer opportunities?

Are you seeking to volunteer in order to satisfy court-ordered community service? Yes No

****SKILLS AND EXPERIENCES**

What sorts of hobbies, interests and activities do you enjoy?

What is your occupation? _____

Do you have any friends or relatives working here? Yes No If yes, Name: _____ Relationship: _____

Have you ever pled guilty or “no contest” to a crime or been convicted of a crime? Yes No If yes, give date and details for each offense:

Members of the Boys and Girls Clubs are ages 16 months to 18 years. Which age groups would you most enjoy working with? Check as many as you would like!

16 months - 5 years
6 to 8 years old

9 to 12 years old
13 to 18 years old

Is there a particular type of volunteer work in which you are interested? Check all that apply to you.

- Working one-on-one with a single child (within the club settings)
- Helping around the office in general
- Helping with administrative duties
- A variety of duties
- Working directly with a staff member as an assistant
- Working on group projects
- Facilitating trainings or workshops with children
- No preference

****INTEREST INVENTORY**

This section will help you determine what volunteer activities you might like to participate in. Please check the area(s) that interest you. Check as many or as few as you like!

- Tutoring. Which subjects? _____
- Sports Coach/Assistant Official. Which sports? _____
- Music Leader/Assistant. Which types? _____
- Arts and Crafts activity assistant/Instructor
- Helping a child use a computer
- Listening to a child read
- Playing board games
- Assisting with fundraising
- Leading a recreational activity
- Acting as a mentor for teens
- Leading a discussion group
- Chaperoning a field trip
- Serving on a board
- Activities not listed above that I am interested in: _____

****AVAILABILITY**

This section will help determine the best days and times for your volunteer activity. Please mark all the days and times you will be available to volunteer.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time Available							

**** COMMITMENT**

What kind of a time commitment are you willing to make? Please check one.

- One time 9 months - 1 year ongoing _____
 6 weeks - 3 months days _____
 3 months - 6 months weeks _____
 6 months - 9 months months _____

****RECORD OF CURRENT AND PREVIOUS EMPLOYMENT**

Identify your present and previous employers in chronological order with present or first employer listed first. Be sure to account for all period of time including military service and any period of unemployment. If self-employed, give firm name and supply business references.

<i>Employer Present to Previous</i>	<i>Employed</i>	<i>Title or Position</i>	<i>Reason for Leaving</i>
_____ Company	From (mo./year)		
_____ Address			
_____ City, State, Zip	To (mo./year)	Name and Title of <u>Last Supervisor:</u>	
_____ Telephone Number			
_____ Company	From (mo./year)		
_____ Address			
_____ City, State, Zip	To (mo./year)	Name and Title of <u>Last Supervisor:</u>	
_____ Telephone Number			

Have you ever been terminated or asked to resign from any job? Yes No If yes, please explain circumstances: _____

****EDUCATION**

<i>School Name & Location</i>	<i>Year Completed (circle)</i>	<i>Diploma/ Degree</i>	<i>Course of Study or Major</i>	<i>Specialized Training, Skills & Extracurricular Activities</i>
Elementary	4 5 6 7 8			
High School	9 10 11 12			
College/University	1 2 3 4			
Graduate/Professional	1 2 3 4			
Trade or Correspondence				
Other				

****PERSONAL REFERENCES**

List person who know you well [other than relatives and previous employers]:

Name	Occupation	Address	Telephone Number	Number of years known

**** DRIVING INFORMATION**

Do you have a current driver's license? Yes No

State ___ License No. _____ Expiration ___

Have your driver's license ever been suspended or revoked? Yes No If yes, please explain

circumstances: _____

In case of an accident or other emergency, who should we contact?

Name: _____ Relationship: _____

Home

Address: _____
Street City State Zip

Telephone Number: _____

Work

Address: _____
Street City State Zip

Telephone Number: _____

I certify that all of the information that I have provided on this application is true and accurate.

Signature of Applicant

Donation Form

To make a tax deductible donation, print out this form and mail a completed copy to Boys and Girls Clubs of Greater Knoxville to the address referenced below. We are a 501 (C) 3 Corporation and our EIN is 62-0475743.

A contribution of \$ _____

Method of Payment:

Check/Money Order Payable to:
Boys and Girls Clubs of Greater Knoxville

Charge my: MC VISA

Card No. _____

Exp. Date _____

Cardholder Name _____

Name _____

Address _____

City _____ State _____ Zip Code _____

Phone _____

E-mail _____

Mail to: Boys and Girls Clubs of Greater Knoxville
220 Carrick Street, Suite 318
Knoxville, TN 37921

Administrative Office/Moses Teen Center (by MapQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right. 0.17 miles

2: Turn RIGHT onto VOLUNTEER BLVD. 0.35 miles

3: Turn RIGHT onto W CUMBERLAND AVE SW/US-11/TN-1. 0.47 miles

4: Turn LEFT onto 17TH ST SW. 0.73 miles

5: Turn RIGHT onto WESTERN AVE/TN-62. 0.07 miles

6: Turn LEFT onto DEADERICK AVE. 0.10 miles

7: Turn RIGHT onto HANNAH AVE. 0.03 miles

8: Turn LEFT onto CARRICK ST. 0.02 miles

Total Estimated Time:

7 minutes

Total

Distance:

1.93 miles

Caswell (by MapQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right. 0.17 miles

2: Turn RIGHT onto VOLUNTEER BLVD. 0.35 miles

3: Turn RIGHT onto W CUMBERLAND AVE SW/US-11/TN-1. 0.47 miles

4: Turn LEFT onto 17TH ST SW. 0.50 miles

5: Turn RIGHT onto DALE AVE. 0.29 miles

6: Turn SLIGHT RIGHT onto WESTERN AVE/TN-62. 0.42 miles

7: Turn SHARP LEFT onto N BROADWAY ST/TN-33/TN-71. 1.15 miles

8: Turn LEFT onto CASWELL AVE NE. 0.06 miles

Total Estimated Time:

13 minutes

Total

Distance:

3.41 miles

Christenberry Heights (by MapQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right.	0.17 miles
2: Turn RIGHT onto VOLUNTEER BLVD.	0.35 miles
3: Turn RIGHT onto W CUMBERLAND AVE SW/US-11/TN-1.	0.47 miles
4: Turn LEFT onto 17TH ST SW.	0.50 miles
5: Turn RIGHT onto DALE AVE.	0.29 miles
6: DALE AVE becomes unnamed road.	0.03 miles
7: Take the I-275 N ramp towards LEXINGTON.	0.10 miles
8: Merge onto I-275 N.	2.27 miles
9: Take the exit- exit number 2A- towards CENTRAL ST EAST.	0.20 miles
10: Merge onto HEISKELL AVE.	0.15 miles
11: Turn LEFT onto N CENTRAL ST.	0.05 miles
12: N CENTRAL ST becomes BRUHIN RD.	0.73 miles
13: Turn RIGHT onto BREDA DR.	0.35 miles
14: Turn RIGHT onto CARUS RD.	0.02 miles
Total Estimated Time:	Total Distance:
16 minutes	5.67 miles

Halls/Powell (by MapQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right.	0.17 miles
2: Turn RIGHT onto VOLUNTEER BLVD.	0.35 miles
3: Turn RIGHT onto W CUMBERLAND AVE SW/US-11/TN-1.	0.47 miles
4: Turn LEFT onto 17TH ST SW.	0.50 miles
5: Turn RIGHT onto DALE AVE.	0.29 miles
6: DALE AVE becomes unnamed road.	0.03 miles
7: Take the I-275 N ramp towards LEXINGTON.	0.10 miles
8: Merge onto I-275 N.	2.88 miles
9: Take I-75 N towards LEXINGTON.	0.13 miles
10: Merge onto I-75 N.	4.50 miles
11: Take the TN-131/EMORY RD exit- exit number 112- towards POWELL.	0.17 miles
12: Turn RIGHT onto EMORY RD E/TN-131 S.	1.61 miles
13: Turn RIGHT onto DRY GAP PIKE.	0.14 miles
Total Estimated Time:	Total Distance:
22 minutes	11.31 miles

Laura Cansler/Learning Center (by MapQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right. 0.17 miles

2: Turn RIGHT onto VOLUNTEER BLVD. 0.35 miles

3: Turn RIGHT onto W CUMBERLAND AVE SW/US-11/TN-1. 0.47 miles

4: Turn LEFT onto 17TH ST SW. 0.73 miles

5: Turn LEFT onto WESTERN AVE NW/TN-62. 0.35 miles

6: Turn RIGHT onto SHEA ST. 0.15 miles

7: Turn LEFT onto RUSSELL AVE. 0.05 miles

8: RUSSELL AVE becomes COLLEGE ST. 0.09 miles

Total Estimated Time:

9 minutes

**Total
Distance:
2.36 miles**

Montgomery Village (by MapQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right.	0.17 miles
2: Turn RIGHT onto VOLUNTEER BLVD.	0.35 miles
3: Turn LEFT onto W CUMBERLAND AVE SW/US-11/TN-1.	0.06 miles
4: W CUMBERLAND AVE SW/US-11/TN-1 becomes KINGSTON PIKE/US-11/TN-1.	0.12 miles
5: Turn LEFT to take the US-129 S/TN-115 S ramp towards ALCOA.	0.11 miles
6: Merge onto ALCOA HWY.	0.88 miles
7: Take the CHEROKEE TRAIL ramp towards UNIV HOSPITAL.	0.44 miles
8: Stay straight to go onto CHEROKEE TRL.	1.02 miles
9: Turn RIGHT onto EDINGTON RD.	0.77 miles
10: Turn RIGHT onto MARYVILLE PIKE/TN-33.	0.32 miles
11: Turn LEFT onto JOE LEWIS RD.	0.18 miles
Total Estimated Time:	Total Distance:
15 minutes	4.41 miles

Sports Camp/Monday Gym (by MampQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right.	0.17 miles
2: Turn RIGHT onto VOLUNTEER BLVD.	0.35 miles
3: Turn RIGHT onto W CUMBERLAND AVE SW/US-11/TN-1.	0.47 miles
4: Turn LEFT onto 17TH ST SW.	0.50 miles
5: Turn RIGHT onto DALE AVE.	0.29 miles
6: DALE AVE becomes unnamed road.	0.03 miles
7: Take the I-275 N ramp towards LEXINGTON.	0.10 miles
8: Merge onto I-275 N.	0.69 miles
9: Take the EAST BAXTER AVE exit- exit number 1A.	0.13 miles
10: Turn RIGHT onto W BAXTER AVE.	0.53 miles
Total Estimated Time:	Total Distance:
11 minutes	3.25 miles

Western Heights (by MapQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right.	0.17 miles
2: Turn RIGHT onto VOLUNTEER BLVD.	0.35 miles
3: Turn RIGHT onto W CUMBERLAND AVE SW/US-11/TN-1.	0.47 miles
4: Turn LEFT onto 17TH ST SW.	0.50 miles
5: Turn RIGHT onto DALE AVE.	0.29 miles
6: DALE AVE becomes unnamed road.	0.03 miles
7: Take the I-275 N ramp towards LEXINGTON.	0.10 miles
8: Merge onto I-275 N.	0.69 miles
9: Take the EAST BAXTER AVE exit- exit number 1A.	0.13 miles
10: Turn LEFT onto W BAXTER AVE.	0.21 miles
11: Turn RIGHT onto BEAUMONT AVE.	0.39 miles
12: Turn RIGHT onto REED ST NW.	0.19 miles
13: Turn LEFT onto W OLDHAM AVE.	0.07 miles
Total Estimated Time:	Total Distance:
12 minutes	3.56 miles

Walter P. Taylor Homes (by MapQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right.	0.08 miles
2: Turn LEFT onto UT DR SW.	0.71 miles
3: Turn RIGHT onto LAKE LOUDON BLVD.	0.10 miles
4: Take NEYLAND DR/TN-158.	1.35 miles
5: Take the MULVANEY ST exit towards SUMMIT HILL DR.	0.17 miles
6: Keep RIGHT at the fork in the ramp.	0.09 miles
7: Keep LEFT at the fork in the ramp.	0.02 miles
8: Turn LEFT onto MULVANEY ST.	0.07 miles
9: Turn RIGHT onto E SUMMIT HILL DR.	0.50 miles
10: Turn LEFT onto MARTIN LUTHER KING JR AVE.	0.81 miles
11: Turn RIGHT onto MCCONNELL ST.	0.11 miles
Total Estimated Time:	Total Distance:
13 minutes	4.03 miles

Vestal (by MapQuest)

1: Start out going Southwest on ANDY HOLT AVE towards UT DR SW by turning right.	0.17 miles
2: Turn RIGHT onto VOLUNTEER BLVD.	0.35 miles
3: Turn RIGHT onto W CUMBERLAND AVE SW/US-11/TN-1.	0.47 miles
4: Turn LEFT onto 17TH ST SW.	0.50 miles
5: Turn RIGHT onto DALE AVE.	0.29 miles
6: Turn SLIGHT RIGHT onto WESTERN AVE/TN-62.	0.42 miles
7: Turn RIGHT onto HENLEY ST/TN-33/TN-71.	0.73 miles
8: HENLEY ST/TN-33/TN-71 becomes CHAPMAN HWY SW/TN-33/TN-71.	0.93 miles
9: Stay straight to go onto CHAPMAN HWY SW/TN-71/US-441.	0.08 miles
10: Turn SLIGHT RIGHT onto MARTIN MILL PIKE.	0.44 miles
11: Turn RIGHT onto W BLOUNT AVE SW.	0.09 miles
12: Turn LEFT onto MARYVILLE PIKE SW/TN-33.	0.12 miles
Total Estimated Time:	Total Distance:
15 minutes	4.59 miles

Appendix C.
Engineering Activities

Giving personalized attention to the students that attend the Boys and Girls Club is an important quality of volunteers. Typically, these children come from households where they receive minimal attention and encouragement. These children learned at an early age that behaving badly in class and at home was the fastest and most effective way to receive this sought after attention. Therefore, knowing each student's name and a some information about their life will help them to act better during the ASCE activities.

Some ideas for "get-to-know-you" games

I. Concentration

A. Materials

1. Digital camera (the CEE Dept. or the library have them to borrow)
2. White index cards
3. Markers

B. Activity

1. Take a picture of each child
2. Have the children write and decorate their names on the index cards
3. Tape of glue the pictures to index cards
4. Have the engineering students play "concentration" with the pictures and names, while involving the children for "hints"
5. Have the children play the same game with the engineering students pictures and names

C. Purpose

1. For the ASCE members to learn the children's names
2. For the B&GCA members to learn the engineering students names

C. Alternatives and variations

1. This game can be used for engineering activities also. Pictures and words of various objects can be used to familiarize the students with engineering vocabulary and concepts.

II. Wink

A. Materials

1. Enough chairs for the children, placed in a circle

B. Activity

1. The children sit on the chairs in a circle
2. One ASCE member (ASCE A) stands in the middle and chooses one child (Child A) to start the game
3. Child A must call out the name of any other child (Child B)
4. If ASCE A reaches Child A's chair before the call out Child B's name, ASCE gets one point and the game starts over
5. If the ASCE A reaches Child A's chair after they call out Child B's name, then B&GCA gets one point, and ASCE A must then run to Child B's chair before the call out Child C

C. Purpose

1. Since the ASCE member will obviously not know the children at first, the game is designed for the B&GCA to win
2. This is a fun and active game to play, but the children can get out of hand very easily so some care should be taken to keep things calm and orderly.

D. Alternative

1. This game could also be played outside, with everyone standing up
2. This game could also be used for an engineering activity. Vocabulary or concepts could be assigned to each child, and instead of calling out their name they would call out the various assigned words. This is a little more difficult and should be used with older children.

I. Index Card Towers

A. Materials

1. Multi-colored index cards
2. Masking tape

B. Activity

1. Divide the children into teams
2. Assign a time limit
3. Give suggestions as to what will be “graded”, such as height, amount of tape used, prettiness, whether or not it falls down, etc.
4. As the towers are being built, circle the groups to make sure all children are participating, to give suggestions on design, to inform groups of the amount of time left, etc.
5. When the time is up, “grade” the towers, allow groups to look at each other’s, talk about engineering principles such as stability, and have the “awards ceremony.”

II. Pipe Cleaners Bridges

A. Materials

1. Multi-colored pipe cleaners (can be found at any craft store)
2. 1" x 6" x 12" block of Styrofoam (can be found at any craft store)

B. Activity

1. Divide the children into teams
2. Assign a time limit
3. Give suggestions as to what will be "graded", such as height, width, amount of pipe cleaners used, prettiness, allowable loading, etc.
4. As the bridges are being built, circle the groups to make sure all children are participating, to give suggestions on design, to inform groups of the amount of time left, etc.
5. When the time is up, "grade" the towers, allow groups to look at each other's, talk about engineering principles such as tension and compression, and have the "awards ceremony."





III. Paper Airplane Races

A. Materials

1. Construction paper or colored printer paper

B. Activity

1. Divide the children into groups with one ASCE member in charge of each group, but each child should make their own individual airplane(s)
2. Assign a time limit
3. Hold various races for fastest, highest, best tricks, etc.



IV. Clip Art/Art Project

A. Materials

1. Color or black and white pictures (such as printed off from Microsoft's Word Clip Art)
2. Construction or plain white paper
3. Crayons, scissors, and glue (the B&GCA should have these items)

B. Activity

1. Divide the children into teams
2. Assign a time limit
3. As the pictures are being made, circle the groups to make sure all children are participating, to give suggestions or help, inform groups of the amount of time left, etc.
4. Different engineering principles could be emphasized here based upon what pictures are provided for the children and what direction is given on what they should draw. Their picture should "tell a story."
5. When the time is up, encourage each ASCE student leader to have each child individually tell them and their small group about the picture. After all children have talked about their picture, line them up on the floor, wall, or table and allow each child to look at all the others.
6. This activity is meant for smaller children, possibly K through 2nd grade.



V. Poster Board Play

A. Materials

1. Various colors of poster board
2. Markers, scissors, and/or glitter
3. Any other necessary costumes

B. Activity

1. Create the costumes before visiting the children
2. Have a short and simple “play” that the children can perform. Have a demonstration of the play by having ASCE members perform the play while one ASCE member narrates their action in the play.
3. Then allow the children to act out the various parts while one ASCE member still acts as narrator.
4. The reason for a short play is that it can be performed several times, allowing all children to have an opportunity to be in the play
5. Through the repetition, the children will more likely remember what the play was about.
6. Anything could be used as the subject of the play; the pictures on the following play show one version of a play on the hydrologic cycle.



VI. Salt Dough Model

A. Materials

1. Flour
2. Salt
3. Water
4. Oil
5. Food coloring

B. Activity

1. Create a salt dough model before visiting the Boys and Girls Club
2. Salt dough models are typically used to show geographic features, and are very helpful in explaining the hydrologic cycle or just how water flows over the land in general.
3. Younger age groups will need to be taught what a model represents.
4. Various recipes for the salt dough can be found on the internet. Which one is used is left up to the preference of the ASCE member in charge.
5. The pictures on the following page show the model that was built to show the hydrologic cycle. A mountain and a valley showed the students that water flows downhill over the land. Other geographic features could also be incorporated into the model.
6. This is more of a visual activity for the children as opposed to a “hands-on” activity. You should allow for a long question and answer period for the children.

