

Bjorn Norstrom, Carol Smith, and Annika Haglund

# Getting Girls **EX.I.T.E.D** About Project Management



Students are asked to complete projects every day—from a simple PowerPoint presentation to college applications and financial aid forms. Students are expected to complete these projects to certain standards. However, students are often not provided with the tools and skills needed to successfully manage projects, especially complex ones.

As opposed to traditional subjects such as math, science, reading, and writing, project management is not a skill set schools typically teach and assess. This is unfortunate since project management actually is an entire field of study. As many teachers know, numerous students fail assignments and projects not because of lack of content knowledge, but because they lack the skills to manage projects to a successful conclusion. Mastering the process of managing projects is critical for students to succeed in school. That's why Colchester Middle School (CMS) in Colchester, Vermont, and International Business Machines (IBM) in Burlington, Vermont, partnered in a pilot collaboration initiative.

## Origins

Each summer, IBM sites around the world organize a week-long camp specifically designed for middle school girls, called EXploring Interests in Technology and Engineering (EX.I.T.E.). The purpose of the camp is to provide opportunities and to encourage girls to explore science and technology together with female IBM engineers. After participating in the EX.I.T.E. program for one year, Bjorn Norstrom and Carol Smith, the CMS EX.I.T.E. representatives, together with Annika Haglund, the IBM/Colchester Middle School liaison, developed a vision, drafted a proposal for a pilot program, and presented it to a team of female IBM engineers and the Burlington IBM community relations manager. The proposed new program, called EX.I.T.E.<sup>2</sup>, focuses on teaching the girls project management skills and teamwork through incorporating a variety of educational technologies. The purpose is to encourage the girls to explore science and technology through a major hands-on project, using a project management model developed specifically for middle school students.

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### Vision

During the idea stage of the collaboration project between CMS and IBM, we had some specific goals in mind that were eventually articulated into a vision—to create a collaborative program between CMS and IBM that would provide students with opportunities to enhance their knowledge of educational technology and project management through an ongoing mentor/mentee relationship.

These were the four goals:

- Establish a long-term mentor-mentee relationship between engineers and students
- Introduce students to the field of project management and connect it to educational technology
- Encourage girls to pursue further education and careers in science and technology
- Develop a replicable model that can be implemented in any K–12 setting on how education and corporations can collaborate around educational technology

### Program and Project

The pilot project was structured around the CMS EX.I.T.E. club, which met after school once a week. Here, the six girls enrolled completed hands-on activities, documented their progress using various technologies, and communicated with their mentors via MentorPlace. In addition to these activities, the girls went to IBM in early February for a one-day experience and to reconnect with their mentors. The mentors visited our middle school three times during the school year to plan and celebrate progress: once early in the fall, once late in the fall, and once in the spring.

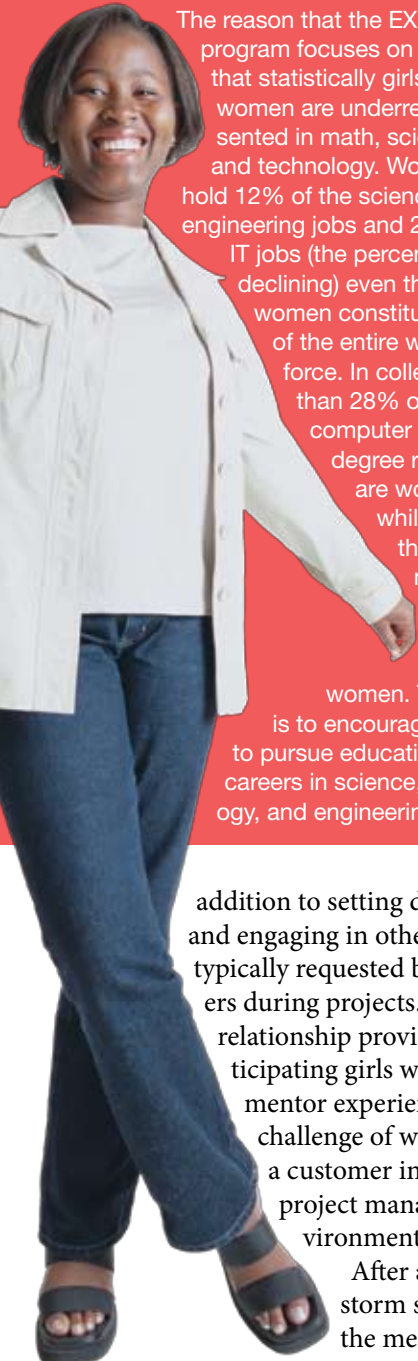
What made this mentor/mentee relationship unique was the dual role of the mentors. The first role was that of a traditional mentor: to provide support, guidance, and encouragement to the mentee. The second role was to act as a customer and investor of the project the girls managed. In this role, the mentor accepted, rejected, or asked for revisions of the work the girls submitted, in



Students from Colchester Middle School created this blueprint as part of their EX.I.T.E. project.

## EX.I.T.E. Program

The EX.I.T.E. program is held in 51 IBM locations in 27 countries. As a year-long follow-up to the EX.I.T.E. summer program, IBM, in collaboration with the participating middle schools, implement a structured program. Each girl gets assigned an IBM mentor and engages in weekly online activities and communication around science and technology topics throughout the school year. The communication and activities are conducted via an online tool called MentorPlace. Because the activities are online, they tend not to offer many hands-on opportunities beyond the use of the Internet.



The reason that the EX.I.T.E. program focuses on girls is that statistically girls and women are underrepresented in math, science, and technology. Women hold 12% of the science and engineering jobs and 20% of IT jobs (the percentage is declining) even though women constitute 45% of the entire workforce. In college, less than 28% of the computer science degree recipients are women, while 9% of the engineering degree recipients are women. The goal is to encourage girls to pursue education and careers in science, technology, and engineering.

addition to setting deadlines and engaging in other activities typically requested by customers during projects. This dual relationship provided the participating girls with both a mentor experience and the challenge of working with a customer in a simulated project management environment.

After a joint brainstorm session with the mentors in ear-

ly September of 2006, the girls reached consensus on the project: to plan for building and managing a pet day care service, in accordance with their personal interests. Following this session, the EX.I.T.E. club began meeting after school on a regular basis. The first meetings focused on understanding project management principles. IBM mentors presented and included four steps: idea, plan, create, and check.

In the idea phase, the girls had to brainstorm ideas for what was needed to build a pet day care, including areas such as materials, space, building and room sizes, parking, and location.

Next, in the plan phase, the girls had to write a Statement of Work (SOW) and submit it to the “customers” (mentors). Once the girls received feedback, they modified the SOW and eventually received a Letter of Acceptance from the customer. We also conducted a telephone conference among all mentors/customers and the girls. The call mimicked a typical long distance work session between clients and customers. The girls presented their blueprint and responded to questions from the customers.

In the create phase, the focus was on designing the entire building and each room in a blueprint format. The girls designed a to-scale blueprint of the building including each room in the correct dimensions, which required mathematical calculations. While the design of the inside of the building was a team effort, the actual rooms were designed by the girls individually depending on individual interest. The EX.I.T.E. club also visited a local pet lodging business to gather ideas, talk with the managers, and determine what their competition had to offer.

The next step focused on producing final versions of individual projects within the larger project. The girls

had unique methods of accomplishing their tasks based on individual learning styles. For example, some girls preferred to use drawing software while other more analytically oriented girls crunched numbers on a calculator, used a compass, and drew with a straight edge. The group members took on their role of cross referencing every individual decision back to the group’s original SOW. While this phase focused on sub-projects, the group of girls still functioned very much as a team, listening to and questioning one another’s decisions.

During the check phase, the girls checked their project against the original directions and discussed lessons learned.

A typical after-school meeting began with the girls checking MentorPlace for mentor/customer feedback on the project they were working on. Once they read the feedback, the girls addressed the feedback as a group and made necessary adjustments to the project per the customers’ requests, with assistance from their mentors.

The culmination of this program included an end-of-the-school-year multimedia presentation in the form of a commercial promoting the pet day care to IBM staff, CMS faculty, and parents. They also created a proposal for starting to build a pet day care.

The girls had the opportunity to use a breadth of hardware and software for a wide variety of purposes. Each phase required the girls to solve problems, document progress, or complete activities using different tools such as:

- Telephones for conference calls with mentors
- Word-processing for writing the SOW and completing the blueprint
- Spreadsheet for the financial aspects of the project

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- Recorders to capture sound for various purposes such as mentor communication and the promotional commercial
- Database software to track fictitious contractors
- Internet for researching information
- MentorPlace for communicating with mentors
- Desktop publishing for producing advertisements
- The Arrange-a-Room online resource for designing individual rooms
- Digital video and still cameras to document progress and create the promotional commercial
- SmartBoard, which contributed greatly to the cohesion of the group
- Slideshow presentation software for presenting their project
- Web design software to create the pet day care Web site
- Multimedia and animation software to produce a promotional commercial

## Results

When this pilot project first started, the expectations were not fully known, neither in terms of outcomes nor day-to-day operations. It was unfamiliar territory for both the CMS representatives and IBM mentors. Subsequently, the first couple of meetings with the girls ended up being similar to a typical middle school class where the CMS representatives introduced a topic as agreed upon with the IBM mentors and then provided activities around that topic that the students completed. Over time, this practice took an interesting turn. The girls became more and more assertive, taking charge of the meetings, and our environment went further and further away from a typical middle school classroom. The girls went from a group of individuals having different goals and visions, dependent on the CMS representatives to facilitate the progress, to jelling into a cohesive unit, sharing the same goals and vision, becoming the

facilitators themselves. They went from dependent learners to independent project managers. Rather than asking, "What are we doing?" they began stating, "Here is what we are doing!" Rather than looking to the adults for answers, they looked to one another. It was a complete change of behavior and learning environment.

We were witnessing a remarkable transformation in terms of the girls taking ownership over the project and assuming leadership during the project process. Some of the girls in the group who are usually introverts during their regular classes opened up and showed sides of themselves that their teachers had not seen before. Teachers observed positive behaviors from several girls outside the club as a result of the EX.I.T.E. experience. Girls who came in with low confidence seemed to display a higher level of confidence in other settings as our program progressed. We also observed girls taking on positive leadership

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roles during social activities outside of the classroom such as in the cafeteria and the hallways. We realized that once offered the right environment, in this case a small group of girls, they seemed to be more confident in their abilities and as a result chose to exhibit behaviors they normally were not comfortable displaying, such as leadership and oral participation.

### Staying Excited

Collaborating with a private sector company offered a great way to provide our middle school girls with an authentic experience in managing a project using a variety of technologies. Through this pilot project, we were able to benefit from each other's strengths: the teaching and pedagogy of the participating CMS teachers and the knowledge of project management

and authentication of the entire experience provided by the IBM mentors. Most important, the collaboration pilot project offered the girls a unique opportunity to engage in a structured engineering and educational technology experience that was tailor made to meet their interests. We hope it will inspire them to pursue more education and possibly a career in math, science, and/or technology.

### Resources

Arrange-a-Room: [www.bhg.com/bhg/category.jhtml?categoryid=/template/data/bhg/category/data/arrangearoom.test.xml&ordersrc=google1roomplan\\_tool&s\\_kwid=room%20design|350274442](http://www.bhg.com/bhg/category.jhtml?categoryid=/template/data/bhg/category/data/arrangearoom.test.xml&ordersrc=google1roomplan_tool&s_kwid=room%20design|350274442)  
 Bureau of Labor Statistics, United States Department of Labor: [www.bls.gov/](http://www.bls.gov/)  
 EX.I.T.E.: [www.ibm.com/ibm/ibmgives/grant/education/camp.shtml](http://www.ibm.com/ibm/ibmgives/grant/education/camp.shtml)  
 MentorPlace, IBM and EdReach, Inc.: [mentorplace.org/login.do](http://mentorplace.org/login.do)

Russell Martin & Associates:  
[www.russellmartin.com/](http://www.russellmartin.com/)  
 Statistics for Women in Science, KPBS:  
[www.kpbs.org/kids\\_family/science/scigirls/women\\_science](http://www.kpbs.org/kids_family/science/scigirls/women_science)



*Bjorn Norstrom is a technology teacher at Colchester Middle School. He is a licensed educational technology specialist holding Microsoft, CompTIA, and Certipoint certifications. He is a 2005 recipient of the Champion of Digital Literacy award.*



*Carol W. Smith teaches seventh and eighth grade science at Colchester Middle School and is the science facilitator for the building. Smith was recognized as an Outstanding Vermont Teacher in 2000. She has been teaching for 17 years.*



*Annika Haglund is an IT systems engineer and project manager with IBM. She also serves as the EX.I.T.E. liaison to CMS. Haglund holds an MS degree in mathematics and certifications in project management and CPIM.*



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