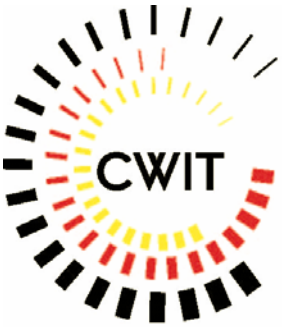


The Center for Women & Information Technology

# COMPUTER MANIA DAY: AN EFFECTIVE INTERVENTION FOR INCREASING YOUTH'S INTEREST IN TECHNOLOGY

## A REPORT TO THE MARYLAND COMMISSION FOR WOMEN

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## Executive Summary

Today, understanding and using technology is as much a required element of the academic experience as reading, writing, and mathematics. Maryland, in particular, has an increasing need to develop a technologically literate workforce because of its close proximity to Washington, D.C. and northern Virginia, where so much of the defense industry and governmental infrastructures are located. But it is not enough that students simply understand and use technology; they must also develop and design it.

As of 2004, women are still significantly underrepresented as computer engineers and computer scientists, and there is little indication that this trend is reversing. If Maryland is expected to continue to advance its status as a leader in information technology (IT) nationally, it must ensure that the brightest minds, including women's, are developed to support and advance our technology industry.

The Maryland Commission for Women commissioned this report as a first step in supporting the development and evaluation of interventions that will encourage girls' and women's full participation in IT and technology related courses and careers. This participation will strengthen Maryland's IT workforce, raise the standard of living for many women, and help to assure that information technology addresses women's needs and expands the possibilities for their lives.

On May 8, 2004, the Center for Women and Information Technology (CWIT) at the University of Maryland, Baltimore County (UMBC) in partnership with thirteen public school districts and seventeen businesses hosted Computer Mania Day, an intervention designed to provide a half-day of technology-related activities geared for 6$^{th}$ through 8$^{th}$ grade girls and their parents and teachers. While boys were welcome, the focus was on girls because of their

continuing under-participation in information technology classes and careers. Over 300 students gathered in small groups of twenty to learn about applications of technology to the world of work through fun and interactive activities demonstrated by women role models. A parent and teacher program complemented the day by providing information about causes for girls' low enrollment in technology courses and what parents and teachers can do to encourage girls to embrace technology.

Student participants completed a survey both before and after the event. *Statistical analysis of the data indicates that participating in Computer Mania Day positively influenced students' general feelings toward technology, their feelings regarding the usefulness and utility of computers and technology, and their feelings regarding women's involvement in technology. Students reported that they were more likely to take a computer course and consider a career in IT after participating in Computer Mania Day. The effect was stronger for non-Whites than White students, suggesting the program may be an even stronger motivator for female minority students to consider programs and careers in IT.*

## Introduction

The United States economy is among the strongest in the world, thanks in large part to the unprecedented productivity, new businesses, and new jobs that have emerged within the burgeoning field of information technology (IT). To retain this preeminence, however, the U.S. must be vigilant in supporting the educational pipeline that feeds the IT workforce. Of concern is the declining participation of women in IT programs around the country. For instance, women's enrollment in computer science and engineering classes has decreased substantially in recent years (Epodoi 2003), and currently, women make up less than twenty percent of university graduates with degrees in computer science and engineering (Olsen 2000). In 2001, women made up only six to eight percent of the engineering and technological workforce in the U.S. (Bruning 2001).

On July 19, 2004, Hawaii Senator Daniel Inouye brought Congressional attention to the national importance of increasing women's participation in technology by recognizing its increasing relevance to homeland security and the future science, technology, engineering and mathematics workforce (Congressional Record No. 100, Session of July 19, 2004, [Page: S8418]). A 2002 report of the National Coalition for Women and Girls in Education, Title IX at 30, gave the federal government a D+ grade for its efforts to provide gender equity with regard to technology opportunities and made several pertinent recommendations, but to date an organized national strategy has yet to be developed.

Information technology is also a key business sector for Maryland. According to the Maryland Department of Business and Economic Development, Maryland is home to more than 9,000 high tech business units, with several thousand more in Washington, D.C. and northern

Virginia.[+] Some of the leading information technology companies in Maryland include Northrop Grumman, IBM, Legato, Sylvan Learning, Merant, Manugistics, Entremed, Micros, Swales Aerospace, and SAIC. Today, Maryland ranks 6th in the nation in Computer Systems Design employment with more than 49,000 jobs, and high-tech firms employ 80 of every 1,000 private sector workers.

Like the nation as a whole, Maryland must develop the talents of all of its citizens to ensure the availability of a highly trained and educated labor pool to attract high tech business to Maryland. Data on women's participation in the IT workforce in Maryland is sparse, but anecdotal information from women IT professionals indicates that state data mirror national trends. Data collected by the University of Maryland, Baltimore County's Center for Women and Information Technology from three Maryland school systems indicate that girls make up less than 20% of elective IT classes. CWIT has also done an initial scan of computer science programs at five colleges and universities in Maryland (one private, four public). Female enrollment in computer science programs ranges from 10% - 20%. Enrollment in computer engineering is even lower at only 8% - 12%.

For Maryland to remain competitive, it must utilize technology to continue making advances in medicine, politics, education, business, manufacturing, agriculture, and national defense. The State of Maryland needs our smartest minds to be focused on technology – including women. Having a limited labor pool hurts the economy and national and state defense and limits the State's ability to advance the society. The first step in encouraging girls' and women's full involvement in IT is to understand the issues that deter them from participating.

[+] http://www.choosemaryland.org/datacenter/bizcomm/industryprofiles/infotech/index.asp. Last accessed 9/30/04.

## Understanding the Issues

### *Deterrence from the Field*

An integral part of the reason women are deterred from entering the scientific, technical, and/or engineering workforce as adults is that they are not encouraged to study subjects related to these fields as children, teenagers, and even college students (Kramarae 1997; Roger and Duffield 2000; Bruning 2001; Bolan 2002; Jenkins 2003). It has been suggested that differences in the socialization patterns of boys and girls have a direct impact on their respective involvement and interest in IT. Gender differences in deterrence or encouragement to use computers and to learn about math and science can begin as early as pre-school (Spender 1997). Boys are encouraged to use toys that involve construction and mechanics, such as building blocks, more often than are girls (Roger and Duffield 2000). Girls are subliminally deterred from activities involving computers and technology by toys, books, advertising, and media imagery (Jenkins 2003). Girls are also actively excluded from construction-related activities by male children and adults of both sexes. These adults can be parents, other family members or friends, and even their school teachers (Roger and Duffield 2000).

Elementary school teachers are disproportionately female, and they are rarely well-educated in the field of IT (Roger and Duffield 2000). Hence, these teachers are often poorly equipped to successfully address issues of gender inequality in the areas of primary science and math. Yet, many teachers seem to believe that they are addressing issues of gender inequality regarding science and math in the classroom, and, in effect, come to believe that a lack of interest in these subjects is a distinctly feminine characteristic (Spender 1997; Roger and Duffield 2000).

If female students are not exposed to math and science at the elementary and middle school levels in the same way or to the same extent boys are, they are left ill-prepared to absorb

the information espoused in technology and engineering classes at the high school and college levels.

***Lack of Role Models***

Due to the lack of women in the IT field, girls rarely come into contact with female role models in the computer science, technology, and engineering realms (Roger and Duffield 2000). At the high school and university levels, women are underrepresented as IT faculty members (Kramarae 1997). If girls are not exposed to science, technology, engineering, and mathematics (STEM) at young ages by caring female role models in these fields, they are often lost as potential members of the IT workforce. Women tend to lose interest in science, technology, engineering, and math during their transition from middle to high school, around the age of 14, so they need to be targeted much younger to maintain their interest, possibly as early as in elementary school (Roger and Duffield 2000; Rosser 2000; Bruning 2001). Girls must also be reassured by attentive guidance counselors and advisors in the academic environment and through well-designed work experience programs that they *can* do well in rigorous math and science courses and that these fields are not just for boys (Roger and Duffield 2000).

***IT: A Male-Dominated Culture***

Not only do girls tend to think they are incapable of excelling in the science, technology, engineering, and math-related arenas, but much research suggests that they are also fearful of entering these fields due to perceived conflicts between careers in these fields and family life (Roger and Duffield 2000; Rosser 2000). Unfortunately, the worries that many girls have regarding the disconnect between maternity and having an IT career are founded. A female scientist and mother of two interviewed by the National Science Foundation stated, "We don't

make allowances for women…to have enough time to have children and pursue their careers" (National Science Foundation 2003a:20).

There is evidence to suggest that women are also deterred from the field of IT because of the perceived lack of practicality or applicability to real-world problems encompassed in IT. Male-oriented pedagogical methods are the norm in STEM courses at the primary, secondary, and tertiary levels. Connecting science, technology, engineering, and math to the arts and humanities and social sciences could be effective in attracting women to IT (Olsen 2000; Roger and Duffield 2000). If images and ideas of IT are constructed to be more gender-neutral, young women may be drawn to careers in the field (Bruning 2001).

In many ways, the field of IT is constructed around a patriarchal cultural model and value system. The general public tends to equate jobs within the realms of science, technology, engineering, and math with masculinity and jobs within the realms of carework and domesticity with femininity (if these are considered "jobs" at all) (Roger and Duffield 2000). Historically, there has been a "male mystique" surrounding computers and technology (Sherman et al. 2000:886), suggesting that careers or study in these fields are mysterious or foreign to women. Women are taught that they must be aggressive to excel in the field of IT, which is in direct conflict with the emphasis on docility and passivity with which they are socialized from birth (Rochester Institute of Technology 2003). In an interview conducted by Rosser (2000), one interviewee stated, "I think women have to prove their competence whereas men have to prove their incompetence" (p. 3). Another interviewee stated, about the faculty at the university for which he works, "Many [of my] male colleagues think that women are where they are because of special treatment, not because of their accomplishments. Women have to constantly prove how good and deserving they really are" (Rosser 2000:3). Women who pursue careers in IT struggle

to find their place in a male-oriented, digital world. Their perceptions of their place in that world are subject to discouraging socialization patterns and aversive pressure by their family, teachers, friends, and anyone else with whom they come in contact.

Today, women are underrepresented in the IT workforce, but they are especially underrepresented within the highest-paying IT occupations. Of workers employed in the IT field, ten percent fewer women than men earn $70,000 or more per year, and in 1999, the median salary for a woman in IT was seventy-seven percent of what a man employed in this field earned (Council of Economic Advisors 2000). Women in IT also make significantly less than men for doing the same job (Menezes 1999). Finally, women make up almost sixty percent of the lowest paid IT employees, such as computer operators.

## Addressing the Gender Gap in Information Technology

### *Interventions*

Outreach and intervention programs can be some of the most effective tools with which to attract young women to STEM subjects and the field of IT (Virginia Space Grant Consortium 1999). Regardless of the focus within STEM, the causes for the under-participation of girls and women are similar, ranging from disparaging perceptions of persons within the fields to failure to prepare adequately for college programs because girls do not enroll in rigorous, elective STEM courses (i.e. Advanced Placement (AP) courses) (Randall et al. 2003; Jenkins 1997). While the goals and methods of the various intervention programs are similar, Elkjaer (1992) notes that the causes and solutions to the under-participation of girls and women in STEM cannot be addressed without careful reflection and research.

Methods for encouraging girls and young women to take rigorous coursework in STEM at the secondary and tertiary levels and to enhance their interest in the world of information

technology and computer science is a common theme in current research. Well-studied interventions have included all-female technology classes, after-school interventions and outreach programs, and summer camps designed to pique girls' curiosity about computers and technology. Programs such as the Science, Technology & Engineering Preview Summer (STEPS) Camp for Girls and Advocates for Women in Science, Engineering, and Mathematics (AWSEM) focus on developing girls' interests in STEM (Gaston 2001; King 2000; NSF 2003b:56; Santo 1997; Society of Manufacturing Engineers 2004). Meanwhile, other programs, including the *World of Technology* and *Alternative Technology* classes, target developing IT application interests specifically (Zehr 1998; Horrocks 2000).

Though a wide range of IT intervention programs are available, many have not evaluated their effectiveness. In response to this deficiency, the American Association of University Women (AAUW) Education Foundation published *Under the Microscope* (2004). *Under the Microscope* reviewed a decade of gender equity projects in the STEM fields to identify programmatic patterns, including their strengths and weaknesses. The report highlighted several key patterns of successful programs, including having field trips or classroom speakers, ensuring that both genders learn about the importance of diversity (not just girls), and providing a network of support. Of the 123 technology projects reviewed, 71% of them were interdisciplinary and 57% of them were only for girls, while 41% of the programs consisted of girls and boys working together. Only 33% of the programs were incorporated within the regular curriculum. Many of the project goals included various aspects of fluency levels of IT, ranging from awareness, motivation, and interest to depth of knowledge (Dyer 2004).

While these and similar interventions have demonstrated some success, the overall impact has been small for a number of reasons. First, interventions are often time and human

resource intensive and, consequently, expensive. This has an impact on the number of girls who can participate. In addition, with relatively small numbers, it is difficult to measure the longitudinal impact of an after school program or class in comparison to a control group with multiple intervening variables to consider. Finally, as students move from middle school to high school or exit from an after school or summer program, sample attrition becomes an issue as it becomes difficult to keep track of the student.

***A New Intervention: Computer Mania Day***

In response to the continued under-representation of girls in elective IT classes, the Center for Women and Information Technology at UMBC sponsors Computer Mania Day. Computer Mania Day is a unique program in that it: (1) explicitly addresses the under-participation of girls and women in IT, (2) serves students and adults (including parents, teachers, counselors, business professionals, and community members) affected by the under-participation of girls and women in IT in separate learning environments, (3) is outside of the students' traditional academic environment, (4) is not presented in the form of an after-school or summer program, (5) specifically addresses applications of IT in a hands-on environment, (6) presents role models to young girls in the form of female high school and college students, faculty members, and business professionals, and (7) has already demonstrated success. Between 1995 and 1998 Howard County Public School System ran Computer Mania Day for girls in their own school district. They reported that girls' enrollment in elective IT classes rose from 20 percent to 50 percent and felt this increase could be attributed to the program. Unfortunately the program ended in 1999 and the numbers have dropped significantly since then.

The Center seeks to spark a new interest or reinforce present interests in IT to encourage students to take more IT courses in middle and high school. Computer Mania Day transfers

learning outside of the students' traditional academic environment into the college atmosphere to familiarize the students with the college environment, while teaching students without the barriers present in a traditional classroom setting.

***Recruitment***

Computer Mania Day is open to all students throughout Maryland and the surrounding states. In 2004, posters and flyers were designed and made available to every middle school in the thirteen partnering counties and Baltimore City (see Table 1).

| Table 1: Computer Mania Day 2004 Partnering County and City School Systems | |
|---|---|
| Baltimore City | Howard County |
| Anne Arundel County | Montgomery County |
| Baltimore County | Prince George's County |
| Calvert County | Queen Anne's County |
| Carroll County | Somerset County |
| Cecil County | St. Mary's County |
| Harford County | |

Additional students were enrolled through the use of public media. Many local papers and television stations ran news stories about the event, and public service announcements were generated through Comcast, the media sponsor. Cost of the event was not a barrier to attendance as there was no charge to participate. Baltimore City and Montgomery County organized buses for their students to attend.

***Participants***

Five hundred and three (503) students registered for Computer Mania Day; two hundred and seventy-three (273) of these students attended Computer Mania Day on May 8, 2004. An additional forty-six (46) students registered during walk-in registration. Of the three hundred and nineteen (319) students who attended, 300 were girls. Students were divided into 30 groups (known as flocks) varying in size, but with no more than 20 students. Boys were grouped

together into two of the flocks. All participants were in the sixth, seventh, or eighth grade and were of diverse ethnicities. The ethnic distribution was as follows: forty-eight percent Caucasian, thirty-five percent African-American, six percent Asian, two percent Hispanic, one percent Native American, seven percent other ethnicities, and two percent of the participants did not wish to disclose their ethnicity. Forty-four percent of the participants were in the sixth grade, thirty percent were in the seventh grade, and twenty-six percent were in the eighth grade. Ages of the participants were not recorded.

County of residence was not recorded, but the location of the school attended according to county was recorded for each participant. Thirty-one percent of the students attended school in Howard County, thirty-five percent attended school in Baltimore County, ten percent attended school in Baltimore City, ten percent attended school in Anne Arundel County, five percent attended school in Montgomery County, one percent attended school in Prince George's County, and eight percent attended school in other counties. Descriptive statistics for the respondents who completed both the pre-test and post-test surveys are included in Table 2 below.

Table 2: Sociodemographic Characteristics of Computer Mania Day Participants Who Completed Both Pre and Post-Test Surveys

| | Frequency | Percent |
|---|---|---|
| Gender (n=197) | | |
| Male | 10 | 5.1 |
| Female | 187 | 94.9 |
| | | |
| Race (n=164) | | |
| Caucasian | 78 | 47.6 |
| African-American | 58 | 35.4 |
| Asian | 9 | 5.5 |
| Hispanic | 3 | 1.8 |
| Native American | 1 | 0.6 |
| Other | 11 | 6.7 |
| Did Not Disclose | 4 | 2.4 |
| | | |
| Location of School (n=221) | | |
| Howard County | 68 | 30.8 |
| Baltimore County | 78 | 35.3 |
| Montgomery County | 11 | 5.0 |
| Baltimore City | 21 | 9.5 |
| Prince George's County | 2 | 0.9 |
| Anne Arundel County | 23 | 10.4 |
| Other County | 18 | 8.1 |
| | | |
| Grade (n=221) | | |
| Sixth | 97 | 43.9 |
| Seventh | 67 | 30.3 |
| Eighth | 57 | 25.8 |

One hundred and fifty-two (152) parents, teachers, and community and business leaders also attended a program providing information about causes for girls' low enrollment in technology courses and what parents can do to encourage girls to embrace technology. One hundred and ninety-seven (197) UMBC students and business and community members volunteered during Computer Mania Day.

Students also attended a short theater production entitled *Wonderful Women in Technology*, which was performed by young associates from Lockheed Martin (the Lockheed Martin Technology Troupe). In addition, students were able to gather information on IT

programs in their school districts by visiting information display tables hosted by thirteen Maryland county school systems.

***The Program***

The keynote speaker was Soledad O'Brien, CNN Anchor for *American Morning*. Also presenting for the parent program were Dr. Freeman Hrabowski, President of UMBC; Katharine Oliver, Assistant State Superintendent for Maryland State Department of Education; Joe Hairston, Superintendent for Baltimore County Public Schools; Jennifer Jones, Sales Center Vice President for AT&T Business; and Claudia Morrell, Director of the Center for Women and Information Technology.

Computer Mania Day began at 10:00 a.m. with the viewing of a four-minute music video developed by CWIT and funded by the National Science Foundation. The video was released in September 2003 and subsequently won Gold and Silver World Medals at the New York Festivals for Music/Lyrics and Motivation, respectively, in January 2004. The video combines vibrant rock music, striking color, flashy images, and text to create energy and excitement around the career possibilities for women in IT and related technology fields.

***The Role Model Sessions***

Role models were women developers or designers of IT who were selected based on their topic suggestion and their ability to interact with middle school girls. Each participated in a two hour training session prior to participating in Computer Mania Day. In addition, each role model was assigned a young woman CWIT Scholar as a helper in the classroom. See Table 3 for the titles of the role model sessions.

| Table 3: Role Model Sessions | |
|---|---|
| "What Lies Beneath… Using Steganography to Hide Messages" | "The Key is You – Using Biometrics for Identification" |
| "Wearable Technology" | "Forward to the Past with Technology" |
| "Globe Trotting Girls: How Artists See the World Using G.P.S. (Global Positioning System)" | "IM a Woman in Technology" |
| "Building the Internet" | "Deep Breathing with IT" |
| "WWW: Wonderful Web Women" | "Shopping @ Data-Mart" |
| "e-health: Using Technology to Enhance Your Fitness" | "Digital Doctoring" |
| "Technology Toyland" | "Tech Talking: Cell Phone Power" |
| "Hardware Rocks" | "Programming Through the Looking Glass" (2 concurrent sessions) |
| "Up, Up, and Away with Hot Air Balloons" | "Comic Fun with IT" |
| | "Using Technology to Touch the Stars" |

***Evaluation and Measures***

Surveys were developed by Shelia Cotten, Assistant Professor of Sociology at UMBC. She has extensive expertise in research methods and survey design. The survey instrument was extensively modified from an earlier survey developed for CWIT by Loyola College Center for Social and Community Research.

All participants completed a registration form, a pre-evaluation survey before their participation in Computer Mania Day, and a post-evaluation survey after participating in Computer Mania Day. The pre-evaluation survey consisted of items about participants' computer ownership and usage, Internet experience, access, and usage, and attitudinal questions related to computers and technology. The post-evaluation survey consisted of items to assess participants' overall feelings regarding Computer Mania Day, their feelings regarding the Lockheed Martin Technology Troupe skit performed at Computer Mania Day, what they liked most and least about the day, whether or not their knowledge of computers and technology increased after participating, whether or not they would recommend Computer Mania Day to their friends, whether or not they would attend an event like Computer Mania Day in the future,

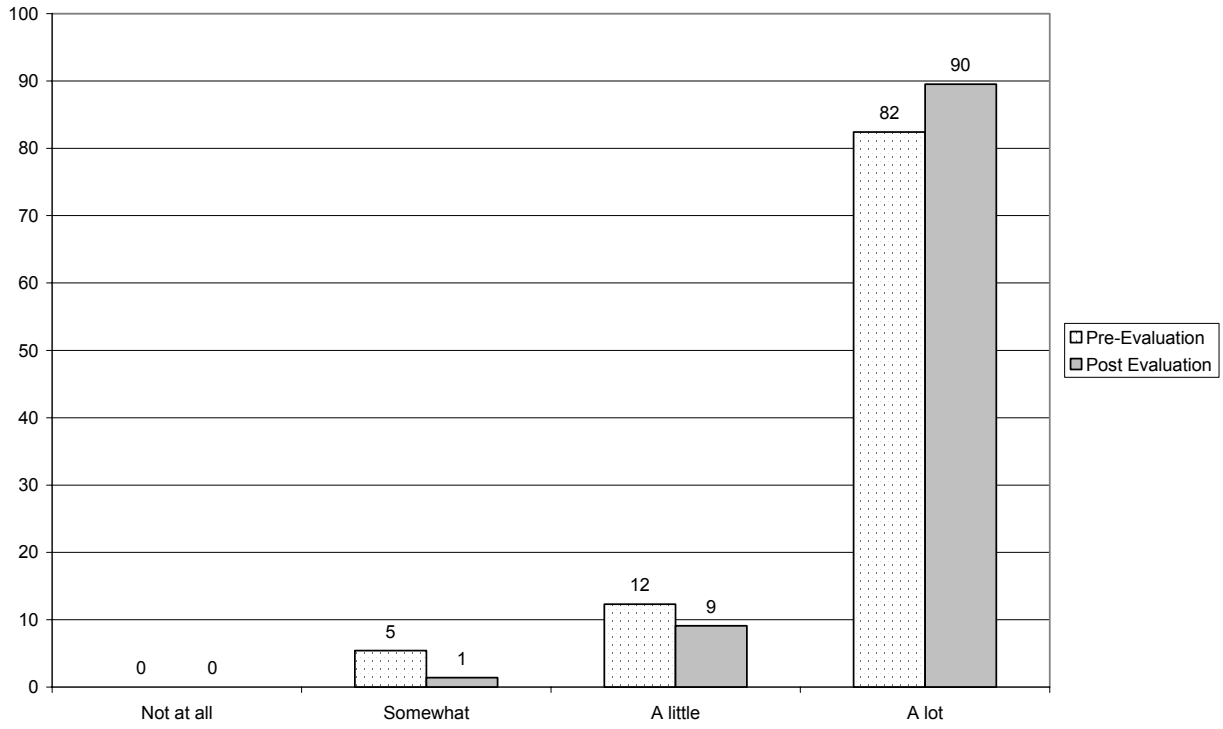
and their preferences regarding future technology-related events. Participants were also asked what two sessions they attended and to rate those sessions. The final section of the post-evaluation survey consisted of eleven of the same Likert scale items from the pre-evaluation survey. From the collected surveys, eleven attitudinal items included on both the pre- and post-evaluation surveys were used to form the Attitudes Toward Technology Scale. Extensive statistical analysis was conducted (which is available upon request) to categorize and analyze the data.

## Results

*Participating in Computer Mania Day positively influenced students' general feelings toward technology, their feelings regarding the usefulness and utility of computers and technology, and their feelings regarding women's involvement in technology, respectively*.

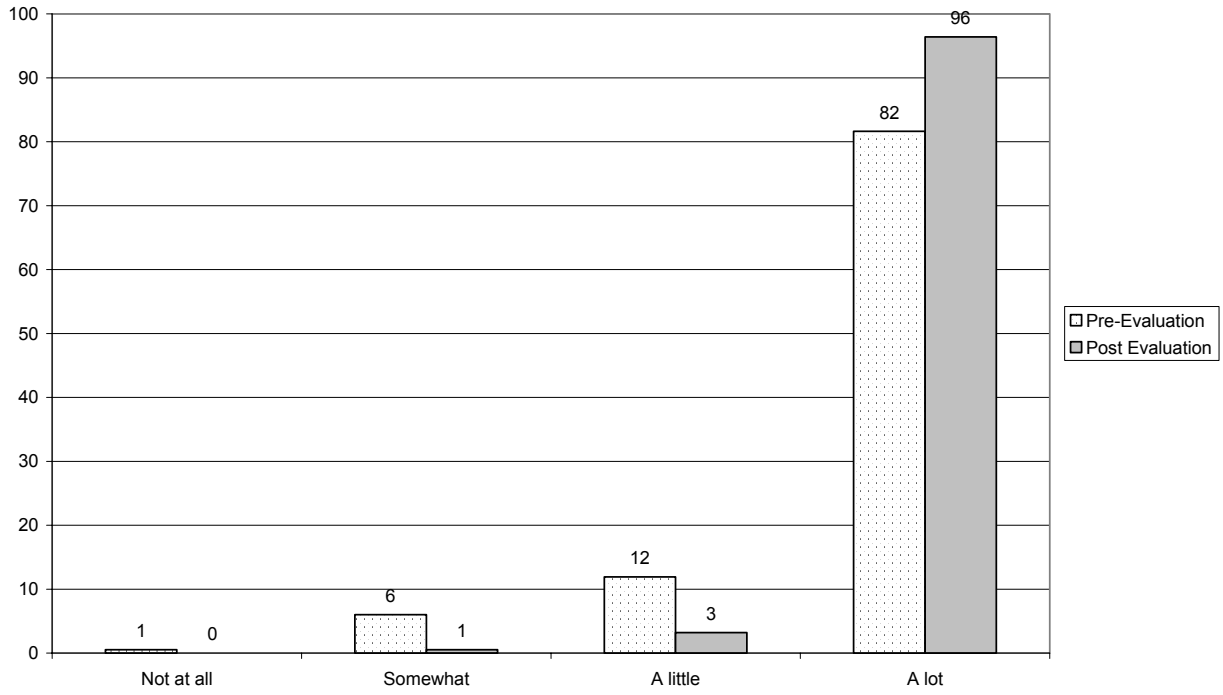
The survey question, "I think computers are cool" had significantly different responses between the pre- and post-evaluations. This suggests that that participating in Computer Mania Day positively influenced participants' attitudes toward computers (see chart 1).

**Chart 1: I think computers are cool (by percent).**




In addition, the measure assessing students' views regarding whether women could be successful in computer and technology fields was significantly different for the pre- and post-evaluations, suggesting that participating in Computer Mania Day positively influenced participants' feelings toward women's involvement in technology (see chart 2). Eighty-two percent of participants responded "a lot" when asked whether women can be successful in computer and technology fields before participating in Computer Mania Day, whereas ninety-six percent of participants agreed with the statement after participating.

**Chart 2: Women can be successful in computer and technology fields (by percent).**

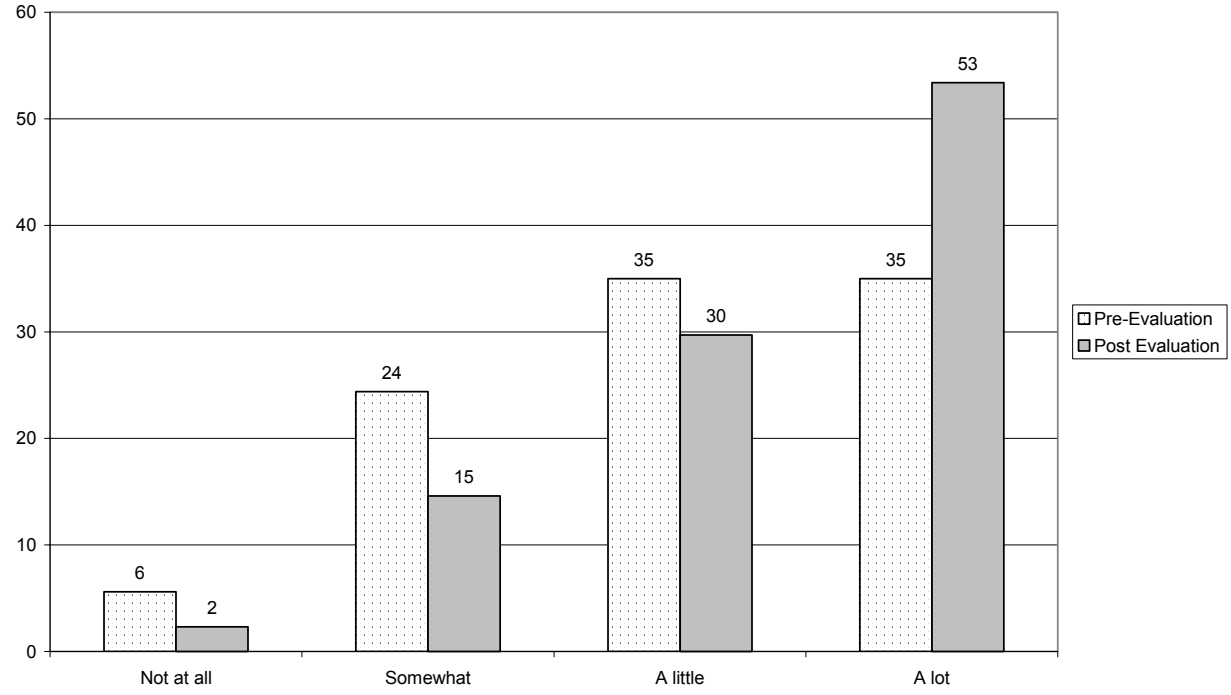



Before participating in Computer Mania Day, twenty-six percent of participants stated that they understood how computers work; after participating, forty-one percent stated that they understood how computers work. This difference was statistically significant. In addition, before participation, forty-two percent of students felt that careers in computers and technology seemed exciting, but after participating in Computer Mania Day, fifty-nine percent felt that careers in these fields seemed exciting. Along the same line, fifty percent of the participants felt that there were many job options in these fields before they attended Computer Mania Day; after participating, eighty-seven percent felt that there were many job options in these fields.

Perhaps most importantly, the measure assessing whether students think they would like a job working with computers or technology differed significantly between the pre and post surveys. This suggests that participating in Computer Mania Day made working in computer

and technology-related fields seem more enticing to students. *Thirty-five percent of participants thought they would like working in these fields before participating in Computer Mania Day and fifty-three percent of participants thought they would like working with computers and technology after participating* (see chart 3).

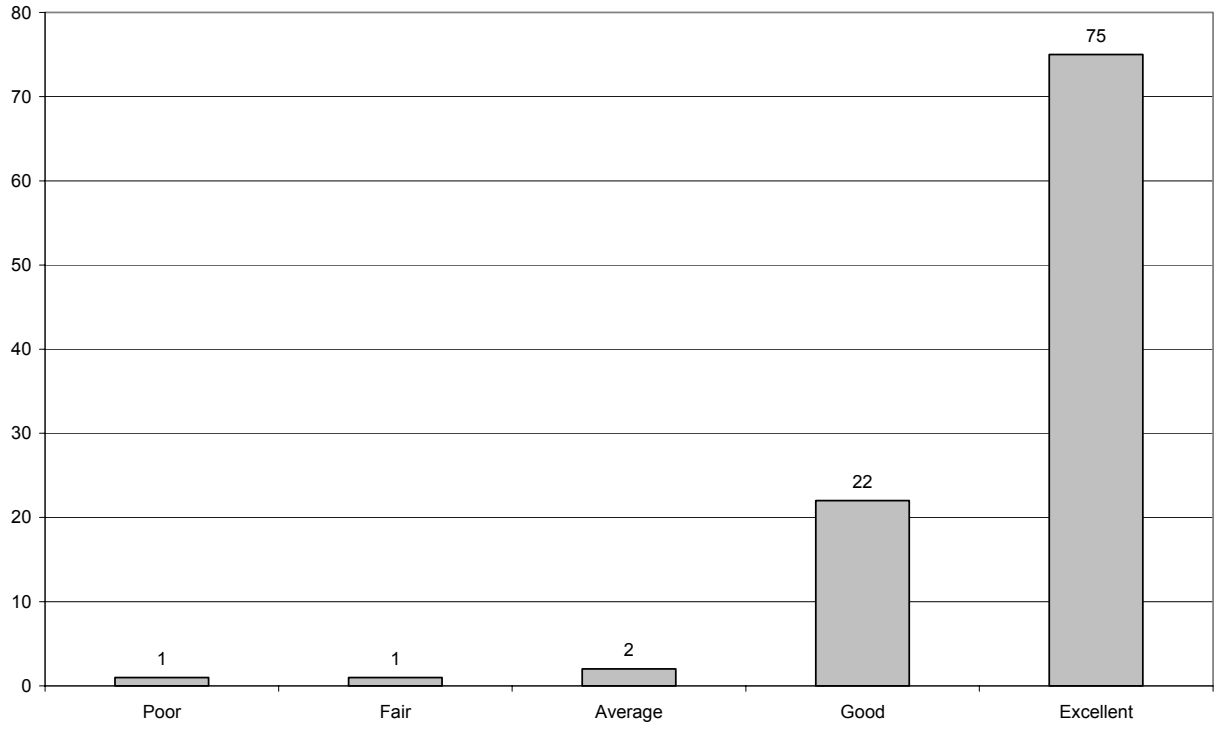
**Chart 3: I think I would like a job working with computers or technology (by percent).**




Additional analysis indicated that more Caucasians than non-Caucasians thought computers were cool and thought women could be successful in computer and technology fields before participating in Computer Mania Day. Yet, more non-Caucasians than Caucasians wanted to be involved in after school activities after participating in Computer Mania Day. This suggests that Computer Mania Day had a strong impact on the participants, but a particularly strong effect on non-Caucasian participants.

Finally, ninety-seven percent of students rated Computer Mania Day as excellent or good (see Chart 4). Additionally, ninety-nine percent of participants said they would recommend Computer Mania Day to a friend.

**Chart 4: Overall, how would you rate Computer Mania Day (by percent)?**




## Discussion

Many of the findings of this study support the claim that intervention programs like Computer Mania Day increase positive attitudes among middle-school age students toward computers and technology. Students tended to have positive attitudes toward computers and technology prior to attending Computer Mania Day, but these attitudes increased further after participation. Significant differences existed in the pre- and post-evaluation responses for the students on many variables. Further studies are needed to determine if these patterns persist over

time and to better understand the interrelationships among interventions, attitudes, and career intentions and outcomes.

In 1998, Howard County reported that their half-day program, upon which this program was modeled, was effective in increasing female participation in elective IT classes from 20% to 50%. That percentage raised the eyebrows of many researchers in Maryland as well as across the U.S. How can a single half day program have such a strong impact? CWIT's challenge was to replicate the data.

Since CWIT is drawing from a much broader population than just Howard County there is some concern that the effect will be too diffuse to measure. The challenge will be to collect data from the schools and look at enrollment trends over time. To date, four school districts are working with UMBC to monitor enrollment in their IT classes. On the positive side, this intervention has several factors that bode well for its success. First, the half-day intervention requires minimal time and effort on the part of the participant. Second, the event can have an impact upon a large numbers of students in a relatively short period of time. Third, Computer Mania Day is less time and resource intensive than after school, summer, and weekend programs and requires little equipment beyond the equipment most colleges and universities already have on their campuses. Of course, the unique quality of UMBC as a research university allowed students not only to understand how IT is used today, but also to get a glimpse of the IT of the future from women role models who are developing leading edge technologies, including applications of IT to art and clothing. *Wearable technology* is a perfect example of the kind of developing technology that engages girls' interests.

Finally, Computer Mania Day also provided programs for parents and teachers, which is often not the case with traditional interventions. Educating everyone at the same time creates a

level of excitement and understanding of the issues that will hopefully increase and sustain the impact of the intervention.

One of the most frequently asked questions asked of the staff at the Center for Women and Information Technology is "Why are there so few girls in IT?" This report has tried to highlight some of the causes. But equally important is the question, "How can we create change?" The Center is working hard to answer that question as well. Computer Mania Day appears to be an effective intervention to add to the resource list. Certainly this study shows that the goals set for the event were achieved and the students and families who participated did benefit. It is our hope that, ultimately, all of Maryland's residents will as well.

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