

MAE JEMISON SPEAKS OUT ABOUT GIRLS, WOMEN, AND SCIENCE

By Rebecca Lanning



Mae Jemison spent eight days aboard Space Shuttle Endeavor in 1992, the culmination of an intensive, five-year training program at NASA. Today, she's an advocate for science education and the advancement of women in science—in addition to running her own biotechnology company and the Dorothy Jemison Foundation. The recipient of the 2007 AAUW Achievement Award, Jemison will address the AAUW National Convention in Phoenix.

As the first African American woman in space, Mae Jemison earned her place in history. But by any measure, Jemison has also had an extraordinarily impressive career. With degrees in chemical engineering and medicine, she has served as a Peace Corps medical officer in Africa, a

physician in California, a professor of environmental studies at Dartmouth, an author, and the founder and CEO of her own biotechnology company—in addition to her work at NASA. With these credentials, Jemison is uniquely positioned to speak out about science education and the role of women in the so-called STEM fields of science, technology, engineering, and mathematics.

Successful Science Education

In her 2001 autobiography, *Find Where the Wind Goes*, Jemison writes that science education is vital in helping young people develop critical-thinking and problem-solving skills. For Jemison, the importance of this connection between science and “real life” isn’t just philosophical; it’s an idea she’s passionate about. Since 1994, Jemison has been bringing kids and science together through The Earth We Share science camps sponsored by the Dorothy Jemison Foundation, a nonprofit organization named for Jemison’s mother, a longtime teacher in the Chicago public schools.

As educators, Jemison says, it’s tempting to “want kids to understand the hypotheses we’re working under. That’s unnecessary. What we have to do is to give them activities that allow them to develop an understanding of ... the link between the science they’re discovering

and what they’re doing in the everyday world.” Kids of all ages need hands-on science experiences, from growing a potato to wiring a flashlight to designing the “perfect” house.

By building on children’s natural curiosity and enthusiasm, teachers can guide students in learning to solve problems and think critically. “All kids love science,” Jemison says. “They’re just excited about it. [You’ll see] little kids jumping around, looking at bugs and snails, touching and feeling, trying things out. ... So when you get into grade school it’s really important to have educational experiences that connect [science] to the real world.”

In spite of her own high-tech background, however, Jemison is quick to criticize what she sees as an overreliance on computers in many schools. “I have a real problem with ... the feeling that if we stick a kid in front of a computer, we’re doing a good job. It’s not developing their critical thinking skills. ... We also need to look at the amount of money we’re spending on computers, which can become obsolete very quickly. I’d rather see money going into the infrastructure and into the labs.”

Jemison argues that many children are receiving substandard science education. Often, the fault lies not with the schools but with parents and other adults who model what Jemison calls “belligerent

ignorance” about the sciences and their relevance. “We consider it okay today to say, ‘Well, I don’t know much about that stuff, so I can’t say anything about it.’”

She cites a favorite James Baldwin quote: “Children have never been very good at listening to their elders, but they have never failed to imitate them.” When adults perpetuate belligerent ignorance rather than promote science literacy, children notice. If we go along with that attitude, she says, “We’re never going to have the kind of educational system that we need.”

What does science literacy look like? According to Jemison, it means that people need to be able to understand and act on science-related issues that affect their lives. “I’m not talking about being able to solve an equation, $E = mc^2$,” she says. “I’m talking about a basic level of understanding, so you can read an article in the *New York Times* and figure out what it means.” Should I support stem cell research? What are organic products, and should I buy them? Should I agree to have my daughter get the new HPV vaccine? “These are issues that we as adults are asked to vote on,” says Jemison. “Do people have any clue how to evaluate them?”

Getting Girls into the STEM Pipeline

An obvious way to increase science literacy among Americans is to increase the

number of girls and women pursuing education and, ultimately, careers in science, technology, engineering, and math. As a student, Jemison often encountered resistance in her pursuit of a science career, so helping to pave the way for other women is a major area of interest. She suggests a number of strategies to encourage girls to enter the STEM fields.

One of the biggest problems is that women in the STEM fields lack visibility. “We need to go down the pipeline and start at the very beginning,” Jemison says, to make sure girls know from an early age that STEM careers are a viable option for them. As girls enter high school and college, they become more aware of gender roles and cultural expectations. Even though they may like math and science and do well academically, they don’t choose careers in those fields because “they don’t see ... role models and people expecting them to go into it.” For example, she says, the young women surveyed in the AAUW report *Tech-Savvy* “made some incredible observations. They said, How come we don’t see women scientists? Or women computer people? Where are they? ... It would make a big difference to them to know those folks were there. There’s an imagery problem.”

Jemison believes that people often create their realities from fantasy, that



Photo courtesy of the National Girls Collaborative Project.

Mae Jemison: A Life in Science

- 1956** Born October 17 in Decatur, Alabama
- 1973** Graduates from Chicago Public Schools at age 16
- 1977** Graduates from Stanford University with degrees in chemical engineering and African and Afro-American studies
- 1981** Earns doctorate in medicine from Cornell University Medical School
- 1983–85** Serves as Peace Corps medical officer for Sierra Leone and Liberia
- 1987** Enters NASA’s astronaut training program
- 1992** Spends eight days in space aboard Space Shuttle *Endeavor*
- 1993** Appears on *Star Trek: The Next Generation*
- 1994** Establishes an international science camp, The Earth We Share
- 1995–2002** Professor of environmental studies at Dartmouth College
- 1999** Founds BioSentient Corporation, a medical technology company
- 2001** Publishes autobiography, *Find Where the Wind Goes*, for young readers
- 2007** Accepts the 2007 AAUW Achievement Award

what they see in movies or on TV or read about in books shapes the way they see their lives and what's possible for them to achieve. She laments the scarcity of women aviators and other scientists—and women of color in particular—in fantasy and science fiction, noting that the media could help make those careers “more visible by showing girls in those roles, whether it's in fiction or on shows.” Jemison has made a contribution to this effort, too, appearing in an episode of *Star Trek: The Next Generation* in 1993.

Jemison also points out that girls who choose to enter STEM fields may have to overcome gender stereotypes. “There's that whole thing about staying clean and neat. You can't stay clean and neat if you're taking apart a car! If you're doing fieldwork, it's hard to stay clean and neat.” Because “women today are very absorbed with what's being shown to them in the media,” she says, it may be especially difficult for girls to select a traditionally male field. “To me, it seems more difficult for girls today. ... [There are] more pressures on girls now than when I was growing up. It's a bombardment now that many of the roles girls see are very highly sexually charged and dependent upon looks.” Confronting such pressures is difficult but not impossible: “Girls grow up wanting people to like them. ... They just need to be stubborn enough to go ahead and say, Well, you might not like me, but that's okay.”

In addition to making STEM careers more visible and helping young women to resist gender stereotypes, explaining that you don't need a doctorate to have a STEM career may also encourage more young women to pursue these fields. According to Jemison, “The vast majority of jobs in STEM fields require only a high school diploma or two years of college. ... We talk about people who got their PhDs or the person who's leading the research project, but most of the factory jobs, the mechanics, the master electricians, the computer techs are in this other place. ... Women don't think about these fields, but these

trades pay well, and women have the ability to do them.”

Women in STEM Careers

What can women today expect if they, like Jemison, overcome the obstacles along the way, earn a degree in a STEM field, and then enter a traditionally male profession? Jemison believes that there has been some improvement in the treatment of women in universities and on the job. Still, she says, “You have all these women, and women of color, who get past all that and [go to college] fully intending to do engineering or the sciences, and then they get discouraged by ... professors [who] don't see them as their colleagues.” The result, she says, is that many women end up getting degrees but not using them.

As a woman in a male-dominated profession, Jemison has often faced discrimination, subtle and otherwise. “Sometimes, you're sitting in meetings and making comments, and people don't respond until some guy says [the same thing]—and then he's brilliant! ... I had to dot my *i*'s and cross my *z*'s and make sure I was there, because otherwise information might not get passed to me. If you make a mistake, it stays with you forever! And ... if one woman makes a mistake, it's attributed to all women. But the successes are not attributed to all women.”

In such an atmosphere, having a trusted adviser to help guide your career can be extremely useful. Jemison received support and encouragement from many people, especially her parents. “I never felt like I was out there alone,” she says. Because she chose a traditionally male field, many of her mentors were men. She found that her experiences working alongside these supporters were often enough to counter less-positive experiences elsewhere. A mentor doesn't have to be a woman or even someone in your field, she explains. “People come along in life who can be very helpful. ... It was just the fact that they were interested in me that was really important.” One of Jemison's favorite advisers was her dance instructor in college: “She told me to be more aggressive about certain things and not to listen to people who said I smiled too much!”

Jemison says she gives the same advice to women entering the STEM fields that she would give to anyone: “You can do it. Period. ... But you have to want to do it, and sometimes people aren't going to want you there. But don't spend your time looking at the obstacles that people are going to put in front of you. Otherwise, you're just going to be hanging out right there with that obstacle. Just look beyond that. It's not always easy, but know that you can do it.”



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