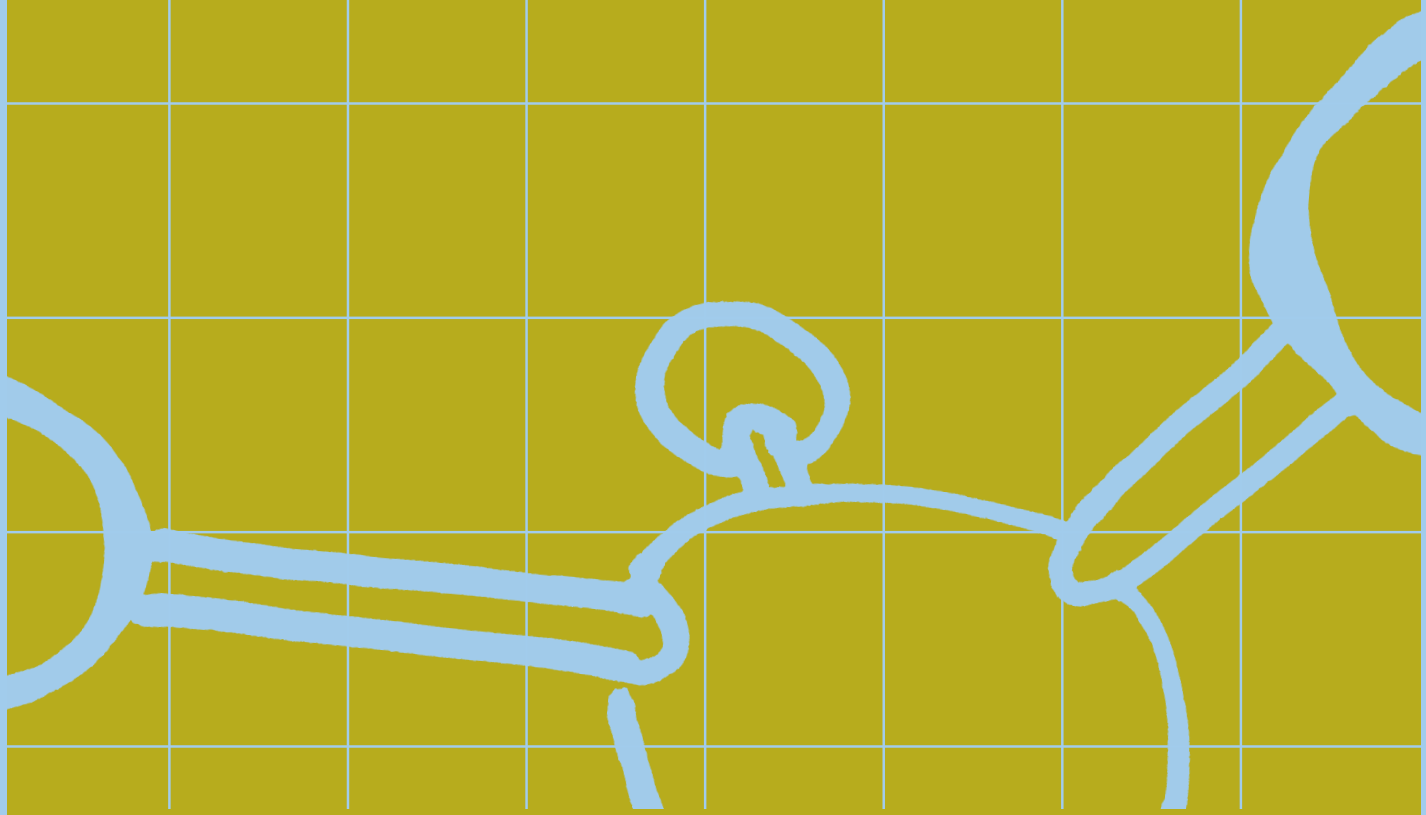
NATIONAL SCIENCE FOUNDATION



NEW FORMULAS FOR AMERICA'S WORKFORCE

GIRLS IN SCIENCE AND ENGINEERING

NATIONAL SCIENCE FOUNDATION

NEW FORMULAS FOR AMERICA'S WORKFORCE
GIRLS IN SCIENCE AND ENGINEERING

TABLE OF CONTENTS

INTRODUCTION • WHY THIS BOOK?

CHAPTER 1 • TEACHING WITH A DIFFERENCE 02
Project Parity 03
Family Tools and Technology 03–05
SMART: Learning by Doing 05–06
Teaching SMART 07–08
Making Connections 09
Interconnections 10
After-School Science Plus 11
Scouts Bridge the Gap With Nosebag Science 12
Science-Based Service Learning 13
Science Horizons for Girl Scouts 14
Traveling Science Programs, Service Learning Teams 14
Tech Trek and TV Production 15
Mountaineering After-School and Summer Camps 15–16
Sisters and Sports Science 16–17
Shampoos, Etc.! Science for Middle School Girls 17–18
FEMME Continuum 19
Science Connections 20
Girls First 21–23
Techbridge 23–25
Girls and Science 26
Women and Astronomy 26–27
Girls for Planet Earth 27
Girls and Technology 28–29
SummerScape: Teaching and Learning Camp 30–32
Science Is for Us 32
Calculate the Possibilities 33
The Douglass Project's Pre-College Program 34–35
Project EFFECT 36
Southern Illinois Support Network 37

CHAPTER 2 • A WELCOMING NEW ENVIRONMENT 38
On the Air With Gender Equity 39
TechGirl: A Website for Middle School Girls 39
The Adventures of Josie True 40
Profiles of Women in Science and Engineering 41
Putting a Human Face on Science 41–42
Women for Women: A Mentoring Network 43
Project EDGE: Mentoring and Teacher Awareness 44
How to be a Mentor (or Mentee) 44–45
Eyes to the Future: Telementoring 45–46
Telementoring Teens 47
MentorNet: E-Mail and Mentoring Unite 48
OPTIONS 48–49
Community-Based Mentoring 49–50
Mentoring Through Cross-Age Research Teams 50
RISE: Research Internship in Science and Engineering 51
Building Bridges for Community College Students 51–52
WISER Lab Research for First-Year Undergraduates 52–53
Supporting Women in Geoscience 53
Undergraduate Research Fellowships 54
Training Graduate Students to Develop Undergraduate Research Projects 54–55
AWSEM: Networking Girls and Women in Oregon 55–56
WISE Beginnings 57–58
WISP: Dartmouth's Support Program 58–59

CHAPTER 3 • COURSES THAT FEED—NOT WEED 60
Early Influences on Gender Differences in Math Achievement 61
Math Mega Camp 61
Single-Gender Math Clubs 62
Weaving Gender Equity Into Math Reform 63
Genderwise: Exporting SummerMath 64
Computer Games for Mathematical Empowerment 64–65
AnimalWatch: Computer-Based Tutor 65–66
Animal World 67
Girls on Track: Applying Math to Community Problems 68–69
GEMS: Exploring Math Through Social Sciences 69
Womenwin: Learning Math Through Transactional Writing 70–71
Calculus Research: Animation and Research Portfolios 71–72
Pathways Through Calculus 73
E-WOMS: Womens Ways of Learning Calculus 73–75
Recruiting Women in the Quantitative Sciences 75–76
Imagination Place 77
Exploring Engineering 78
Developing Hands-On Museum Exhibits 79
Camp REACH: Engineering for Middle School Girls 79–80
Engineering GOES to Middle Schools 80
Hands-On Engineering Projects for Middle School Girls 81
Partners in Engineering 82
Girls RISE 83–84
Engineering Lessons in Animated Cartoons 85
Pre-College Engineering Workshops 85–86
WISE Investments 86
Recruiting Engineers in Kentucky, K–12 87
Realistic Modeling Activities in Small Technical Teams 88
Assessing Women-in-Engineering Programs 89
Teaching Inclusive Science and Engineering 89–90
Gender and Team Decision-Making 90
Developing Visualization Skills 91
Sissies, Tomboys, and Gender Identity 91–92
WISE Scholars Do Engineering Research 92–93
Bring Your Mother to (Engineering) School 93–94
Experiment-Based Physics for Girls 95
Selling Girls on Physical Sciences 96–97
TNT Girls Go to Physics Camp 98
Changing How Introductory Physics Is Taught 99
Teaching Internships in Physics for Undergraduates 100
Girls Online: GO Team! 101
Designing With Virtual Reality Technology 101–102
Why Girls Go to Whyville.net 102–103
Research and Computer Science 103
Ole Miss Computer Camp 104
Making Computer Science "Cool" for Girls 104–105
Computer Camp for Teachers 105
Retooling High School Teachers of Computer Science 106
Plugged In: An Interactive Science Website 106–107
What's in the Box? Diagnosing and Repairing Computer Hardware 107
Summer Research Projects in Computer Science 108–109
Recruiting Women Into Computer Science 109
Improving Diversity in the Software Development Community 110
PipeLINK: Young Women in Computer Science 110–111
Agents for Change: Robotics for Girls 111–113
Self-Authorship and Pivitol Transitions Towards IT 113

Oceanography Camp for Girls 114–115
Jump Start 115–116
Marine and Aquatic Mini-Camp 116
REALM: Really Exploring and Learning Meteorology 117
Girls Dig It Online 117–118
Earth Systems: Integrating Women's Studies 118–119
Women Who Walk Through Time 119
ACES: Adventures in Computers, Engineering, and Space 120
Careers in Wildlife Science 121
Bioinformatics for High School 122
Life Science Biographies 122–123
Apprenticeships in Science Policy 123
Splash: The Math and Physics of Water 124
Engage Learning: Investigating Water Quality 124–125
Women's Images of Science and Engineering 125

CHAPTER 4 • NEW DIMENSIONS IN DIVERSITY 126
Latinas en Ciencia 127–128
MAXIMA: Changing the Way Childen Learn Science 128–130
Role Models Change Hispanic Girls' Job Aspirations 130–131
Biographical Storytelling Empowers Latinas in Math 131–132
Integrating Math and Science With Lego Logo 133
Una Mano al Futuro: Making Science Acceptable for Girls 133
Hispanic Girls Learn Computer-Assisted Design and English 134–135
Student–Peer Teaching in Birmingham, Alabama 136
Improving Science in a Dayton Magnet School 137
TURNAGE Scholars Program 138
Project PRISM 138–139
Feed the Mind, Nourish the Spirit 139
Math Enrichment for Native American Girls 140
Sisters in Science 141–142
Minority Girls in the System 142–143
Enhancing Expanding Your Horizons 144
Saturday Workshops for Middle School Girls 145
The After-School ASSETS Project 145
Sweetwater Girl Power 146–147
The GREEN project 147–148
A Training Model for Extracurricular Science 149
Bringing Minority High School Girls to Science 149–150
GEMS: High School Girls Learn Cosmetics Science 151–152
Futurebound: Minority Women in Community College 152–153
Learning Communities 153–154
Science in the City 155
TARGETS: Counseling Talented At-Risk Girls 155–156
GEOS: Encouraging Talented At-Risk College Women 157
Radio Series on Alaskan Women in Science 158
Out of the Lab: An Alaskan Camp for Girls 158–159
Appalachian Girls Voices 159–160
Action-WISE in Zanesville, Ohio 160–161
Hands-On Science in Rural Virginia Middle Schools 161
Science Connections 162
Master It: A Program for Rural Middle School Girls 163
Training Trainers in Rural Youth Groups 163
Opening the Horizon: Science Education in Rural Ozarks Middle Schools 164–165
The Science of Living Spaces 166
Laboratories Science Camp for Dissimination Traning 167–168
Science for All: Opening the Door for Rural Women 168–169
Internet Explorers 170
Jump for the Sun 170–171
Summer Camp for Rural High School Girls 172
College Studies for Women on Public Assistance 173
Re-entering the Workforce 173–174
Project GOLD: Girls With Disablilities Online 174–175
Math Camp for Deaf High School Girls 175
FORWARD (and Deaf Access) 176–177

CHAPTER 5 • CHANGING THE LEARNING ENVIRONMENT 178
What Works in Programs for Girls 179
Connections: Curriculum, Career, and Personal Development 179–180
The Athena Project 180–181
What Works in After-School Science 181
BUGS: Outdoor Learning Labs 182
Gender Equity Training in Teacher Education 183
Washington State Gender Equity Project 183–184
Equity Initiatives in Houston 184–185
WISE Women at Stony Brook 186–187
Get Set, Go! 188–189
Triad Alliance Science Clubs 189–190
An Education Coalition in Connecticut 191
InGEAR: Blending Gender Equity and Institutional Reform 191–192
GEMS: Learning Gender Equity Online 192–193
Counseling for Gender Equity 193–194
Training Trainers to Encourage Nontraditional Jobs 194–195
WomenTech at Community Colleges 195–196
Mentoring Teams of Teacher Trainers 197
Coding Student Teachers' Classroom Interactions 198–199
New Courses to Draw Women Into Science and Engineering 200
Women's Studies and Science: Can We Talk? 200–201
Changing Faculty Through Learning Communities 202
Making Engineering More Attractive as a Career 202–203
Improving the Climate in Physics Departments 203–204
Why do Some Physics Departments Have More Women Majors? 204–205
Gender and Persistence 205
Tutorials for Change 206
Preparing At-Risk Undergraduates for Graduate School 206–207
Testing Campus-Based Models of GRE Prep Courses 207
Retaining Graduate Students and Junior Faculty 207–208
Breaking the Silences 208–209
Creeping Toward Inclusivity 210–211
Equity, Science Careers, and the Changing Economy 211
Balancing the Equation 211–212
A Guide for Recruiting and Advancing Women in Academia 212
Achieving Success in Academia 213
Collaborating Across Campuses 214
The Team Approach to Mentoring Junior Economists 215
APPENDIX
INDEX

A periodic table of contents

Chapter 1: Teaching with a difference

Chapter 2: A welcoming learning environment

Chapter 3: Courses that feed - not weed

Chapter 4: New dimensions in diversity

Chapter 5: Changing the learning environment

001 Ch — Teaching with a difference	001 Pp — Project Parity	002 Hu — Putting a human face on science	002 Pro — Profiles of women in science and engineering	003 W — Womenwin: learning math through transactional writing	003 inv — Engaged learning: investigating water quality	003 got — Girls on Track: applying math to community problems	004 Max — MAXIMA: changing the way children learn science	004 Rmd — Role models change Hispanic girls' job aspirations	004 Lim — Biographical storytelling empowers latinas in math	004 L^2 — Integrating math and science with Lego Logo	004 At-r — GEOS: encouraging talented small college women	004 sls — The science of living spaces	004 ACg — Out of the lab: an Alaskan camp for ninth grade girls	004 Ap — Appalachian girls' voices	004 AW — Action-WISE on Zanesville, Ohio	004 Hos — Hands-on science in rural Virginia middle schools	004 Sc's — Science connections	004 Tt — Training trainers in rural youth groups	005 eng — Making engineering more attractive as a career	005 impr — Improving the climate in physics departments	005 phy — Why do some physics departments have more women majors	005 pers — Gender and persistence	005 tutor — Tutorials for change	005 wtcc — WomenTech at community colleges	005 shh! — Breaking the silences	
001 Ft^2 — Family tools and technology	001 Nbs — Nosebag science	001 As+ — Afterschool science PLUS	002 W_4 — Women for women in mentoring network	002 Ch — A welcoming learning environment	002 Jt — The adventures of Josie True	003 Sm — Genderwise: exporting summersmith	003 rfrm — Weaving gender equity into math reform	003 life — Life science biographies	003 Why — Why girls go to whyville.net	003 Gem — GEMS: exploring math through social sciences	003 img — Women's images of science and engineering	003 H_2O — Splash: the math and physics of water	003 Wi — WISE investments	004 Una — Una mano al futuro: making science accessible to Latinos	004 Cad — Hispanic girls learn computer assisted design and analysis	004 peer — Student-peer teaching in Birmingham, Alabama	004 Day — Improving science in a Dayton magnet school	004 Turn — Teenage scholars program	004 TarG — TARGETS: counseling talented girls	004 FOR — FORWARD and deaf access	004 Oh — Opening the horizons: science education in rural Ozarks middle schools	005 Hou — Equity initiatives in Houston	005 Sb — WISE women at Stony Brook	005 Bug — BUGS: outdoor learning labs	005 @risk — Preparing at-risk undergraduates for graduate school	005 crep — Creeping towards inclusivity
001 Smrt — SMART: learning by doing	001 Ssl — Science-based service learning	001 Mas — Mountaineering after-school and summer camps	002 How — How to be a mentor (or mentee)	002 Eye^2 — Eyes to the future: telementoring	002 Tel — Telementoring teens	002 OPT — OPTIONS	003 Cg — Computer games for girls' empowerment	003 Aw — AnimalWatch: computer-based math tutor	003 wrld — Animal world	003 Esys — Earth systems: integrating women's studies	003 IP — Imagination Place	003 Path — Pathways through calculus	003 ei — Early influences on gender differences in math achievement	003 mmc — Math mega camp	003 k-12 — Recruiting engineers in Kentucky, K-12	004 PrSm — Project PRISM	004 Feed — Feed the mind, nourish the spirit	004 N'rich — Math enrichment for native American girls	004 Raw — Radio series on Alaskan women in science	004 Mit — Master it: a program for rural middle school girls	004 Lab — Laboratory science camp for middle schools training	004 Pass — College studies in women and public assistance	005 Get! — Get set, go!	005 ntrd — Training trainers to encourage nontraditional jobs	005 ecn — The team approach to mentoring junior economists	005 = — Equity, science careers and the changing economy
001 $Smrt_2$ — Teaching SMART	001 Tsp — Traveling science programs	001 Sis — Sisters in sport science	001 Tkb — Techbridge	001 gtek — Girls and technology	001 Dug — Douglass project's prescYbage program	001 Effct — Project EFFECT	002 X age — Mentoring through cross-age research teams	002 com — Community-based mentoring	003 Hom — Developing hands-on museum exhibits	003 RCH — Camp REACH: engineering for middle school girls	003 Goz — Engineering GOES to middle schools	003 Hop — Hands-on engineering for middle school girls	003 Pie — Partners in engineering	003 E-w — E-WOMS: women's ways of learning calculus	003 Qs — Recruiting women in the quantitative sciences	003 div — Improving diversity in the software development community	003 tom — Sissies, tomboys, and gender identity	004 Sis — Sisters in science	004 Mgrl — Minority girls in the system	004 HSg — Bringing minority high school girls to science	004 Lat — Latinas en ciencia	004 RE-e — Reorienting the workforce	005 tri — Triad Alliance science clubs	005 mnt — Mentoring teams of teacher trainers	005 GRE — Testing campus-based models of GRE prep courses	005 bal — Balancing the equation
001 mcx — Making connections	001 Ttr — Tech trek	001 Sh! — Shampoos Etc!	001 Gsi — Girls in science	001 Sum — Summerscape	001 Sh! — Shampoos Etc!	001 Sisn — Southern Illinois support network	002 RSE — RISE: research internships in science and engineering	002 Edg — Project EDGE: teacher empowerment	003 Real — Realistic modeling and technical teams	003 aW — Assessing women in engineering programs	003 ise — Teaching inclusive science and engineering	003 d-m — Gender and team decision-making	003 dvs — Developing visualization skills	003 GRi — Girls RISE	003 El — Engineering lessons in animated cartoons	003 Pre — Pre-college engineering workshops	003 Calc — Calculus research: animation and research portfolios	003 pol — Apprenticeships in science policy	003 Sg — Single-gender math clubs	004 Eyh — Enchancing expanding your horizons	004 rurW — Science for all: computer fun for rural women	004 gold — Project GOLD: girls online guidebook online	005 Ct — An education science clubs in Connecticut	005 cde — Coding student teachers' classroom interactions	005 Jr. — Retaining graduate students and junior faculty	005 guid — A guide for recruiting and advancing women in academia
001 Icn — Interconnections	001 Sgs — Science horizons for Girl Scouts	001 fem — FEMME continuum	001 wia — Women in astronomy	001 Sius — Science is for us	002 Awe — AWSEM: networking girls and women in science and engineering	002 Fell — Undergraduate research fellowships	002 Bcc — Building bridges for community college students	002 WB — WISE beginnings	003 er — WISE scholars do engineering research	003 mom — Bring your mother to (engineering) school	003 X-P — Experiment-based physics for girls	003 Sg — Selling girls on physical sciences	003 TNT — TNT girls go to physics camp	003 how — Changing how introductory physics is taught	003 TIP — Teaching internships in physics for undergraduates	003 GO! — GO team!	003 Virt — Designing with virtual reality and technology	003 wcs — Recruiting women into computer science	004 SAT — Saturday workshops for middle school girls	004 AsA — The afterschool ASSETS project	004 IE — Internet explorers	004 Mc — Math camp for deaf high school girls	005 in-gr — InGEAR: blending gender equity and institutional reform	005 new — New courses to draw women into science and engineering	005 c+c — Connections: curriculum, career, and personal development	005 ach — Achieving success in academia
001 scx — Science connections	001 gpe — Girls for planet earth	001 Poss — Calculate the possibilities	002 Geo — Supporting women in geoscience	002 Wze — WISER: lab research for first-year undergraduates	002 dev — Training graduate students to develop undergraduate research projects	002 met — Mentor/net: email and mentoring online	003 csR — Research in computer science	003 Ole — Ole Miss computer camp	003 cool — Making computer science cool for girls	003 C4T — Computer camp for teachers	003 tool — Retooling high school teachers of computer science	003 plug — Plugged in!: an interactive science website	003 box — What's in the box? diagnosing and repairing computer hardware	003 rp — Summer research projects in computer science	003 wild — Careers in wildlife science	004 swt — Sweetwater girl power	004 Grpr — The GREEN project	004 Xsci — A training model for extracurricular science	004 Jsun — Jump for the sun	005 gms — GEMS: learning gender equity online	005 cou — Counseling for gender equity	005 cng — Changing faculty through learning communities	005 A — The Athena project	005 eq — Gender equity training in teacher education	005 coll — Collaborating across campuses
	001 Grl^2 — Girls first	002 Ota — On the air with gender equity	002 T-grl — TechGirl: a website for middle school girls	003 LINK — PipeLINK: young women in computer science	003 bot — Agents for change: Robotics for girls	003 Sat — Self-authorship and pivotal traditions toward IT	003 O — Oceanography camp for girls	003 jump — Jump start	003 aqu — Marine and aquatic mini-camp	003 RLM — REALM: really exploring and learning meteorology	003 Dig — Girls dig it online	003 W — Women who walk through time	003 ACE — ACES: adventures in computers, engineering and space	003 EE — Exploring engineering	003 binfo — Bioinformatics for high school	004 Cos — GEMS: high school girls learn cosmetic science	004 Fut — Futurebound: minority women in community colleges	004 Leco — Learning communities	004 Scit — Science in the city	004 Sum — Summer camp for rural high school girls	005 wrks — What works in programs for girls	005 talk — Women's studies and science: Can we talk?	005 after — What works in after school science	005 WS — Washington State gender equity project	

ORIGINS

INVESTING IN PEOPLE, TOOLS, AND IDEAS

One of the National Science Foundation's (NSF's) key strategic goals is to invest in people: to develop a diverse, internationally competitive, and globally engaged workforce of scientists, engineers, and well-prepared citizens.

In 1981, the Equal Opportunities for Women and Minorities in Science and Technology Act acknowledged that it was U.S. policy and in the national interest to encourage all groups to participate in science and engineering. The act mandated that NSF report statistics on underrepresented groups and initiate programs fostering more proportionate representation. Among the suite of programs that followed was the Program for Women and Girls, created in fiscal year 1993, housed in the NSF's Division of Human Resource Development, Directorate for Education and Human Resources.

The initial budget (FY 1993) of about $7 million was used to fund about a dozen projects over the program's first three years. With over $90 million in awards since inception, the NSF program is the largest public or private funding source for efforts expressly addressing the need to broaden girls' and women's participation in science, technology, engineering, and math (STEM). More than 250 grants to date have populated the national STEM education enterprise with new ideas, proven good practices, innovative products, research publications, and a leadership of savvy, experienced educators and education researchers. The grants are relatively small and reach nearly every state in the U.S. A study of the program's impact from 1993 to 1996 showed that the NSF program has been very successful.

The program supports research, student and educator programs, and information dissemination projects that will lead to change in education policy and practice. Program findings and outcomes will lead to understanding, for example, how to maintain girls' interest in science past middle school, how to bring more girls into elective high school math and advanced placement science courses, and how to increase enrollments in undergraduate studies, particularly in engineering, physical sciences, and computer sciences.

Although the program has accomplished much in its short existence, national statistics reveal that much more remains to be done. And, since 1993, the national need for a larger, more science- and computer-literate and skilled, and diverse workforce is ever greater, as we progress toward an increasingly technological job market and a scientifically complex society.

WHY THIS BOOK?

Every NSF grantee shares findings and results with appropriate national communities. Publications, conference papers, newsletters, radio and TV shows, and educational products (guides for educators, curricula, online courses, and so on) are the media of scholarly communication and education improvement. As much as possible, Principal Investigators develop information products. Some of the projects in this volume are nationally known.

Every NSF grant is represented by a project summary, or abstract, on the NSF website <www.nsf.gov>. NSF publications and publicity make known our investments and impacts in all areas of science and engineering. Press releases often highlight individual grants. Despite such regular dissemination of project results, it is still hard to cull a "body of research." This book collects descriptions of nearly 10 years' investment in one place, written for general audiences. The collection shows how even in a relatively short span of time the way issues are described and the focus of new work have changed, due to increasing knowledge and due to the changing social context of the work.

The investments of the Gender Diversity in STEM Education program offer valuable information to a wide spectrum of groups:

- Teachers of science and math education K–12
- Faculty in STEM disciplines
- Counselors
- School administrators working to meet community needs
- Informal education providers (museums, summer camps, after-school clubs, media organizations)
- Teachers specializing in certain subjects (especially physics, mathematics, computer science, and geo-science)
- Faculty in disciplines where diversity is still an issue (engineering, computer science)
- Deans who are planning on improvements to adopt
- Colleges of education seeking continual improvement
- Organizations in the business of continual professional development of teachers
- Organizations that support professionals (women engineers, chemists, computer scientists)
- Foundations seeking to concentrate funding in areas of high need
- Industry promoting image and workforce development through educational outreach programs
- Public media looking at issues of community and national interest
- Education and workforce policymakers
- Parents who want the best for their own children

All of the groups above have a common interest: improved quality of education, improved access to education, and better student achievement, so that our educational systems deliver more science- and computer-literate citizens to society and deliver better-prepared, more diverse workers to the science and engineering enterprise.

MORE INFORMATION	ABOUT NSF: www.nsf.gov	ABOUT THE PROGRAM: www.ehr.nsf.gov/ehr/hrd
ORIGINAL PROJECT SUMMARIES IN THE "AWARDS DATABASE" AT NSF: https://www.fastlane.nsf.gov/a6/A6AwardSearch.htm		
1. ENTER A NAME, STATE ABBREVIATION, NUMBER —ANYTHING 2. ENTER "1544" TO RETRIEVE ONLY GRANTS MADE BY THIS PROGRAM 3. ENTER THE GRANT NUMBER, E.G., "0210794," TO FIND A SPECIFIC GRANT		
ABOUT GENDER AND SCIENCE ISSUES, LINKS ARE AVAILABLE FROM THE PROGRAM'S WEBSITE, ALSO, ANY SEARCH ENGINE CAN FIND NAMES OF PEOPLE AND PROJECTS ETC. ESPECIALLY A DIGITAL LIBRARY DEVOTED TO THE TOPIC AT http://www.edc.org/GDI/GSDL/ WHICH IS BEING DEVELOPED AS A SIGNIFICANT PORTAL WITH FUNDING FROM NSF'S NATIONAL DIGITAL STEM LIBRARY PROGRAM.		
ANY NSF PUBLICATION MAY BE RETRIEVED AT http://www.nsf.gov/pubsys/ods/ TYPE IN THE PUBLICATION NUMBER, E.G., NSF 00-327		

SOME REFERENCES
Balancing the Equation: Where Are Women and Girls in Science, Engineering and Technology? The National Council for Research on Women, 2001.
Land of Plenty: Diversity as America's Competitive Edge in Science, Engineering and Technology. Congressional Commission on the Advancement of Women and Minorities in Science, Engineering and Technology Development, 2000.
National Science Foundation. NSF's Program for Gender Equity in Science, Technology, Engineering, and Mathematics: a Brief Retrospective, 1993-2001. NSF 02-107
National Science Foundation. Gender Diversity in Science, Mathematics, Engineering and Technology Education (GDSE). Program announcement. http://www.ehr.nsf.gov/ehr/hrd/pge.asp
National Science Foundation. Women, Minorities, and Persons With Disabilities in Science and Engineering: 2000. Arlington, VA: 2000. NSF 00-327
Summary Report on the Impact Study of the National Science Foundation's Program for Women and Girls. The Urban Institute, Education Policy Center for NSF, 2000. NSF 01-27
U.S. Department of Education, National Center for Education Statistics. Trends in the Educational Equity of Girls and Women. NCES 2000-030

ACKNOWLEDGEMENTS—THE PROJECT TEAM

At the National Science Foundation

Donald E. Thompson, Division Director, Human Resources Development

Norman Fortenberry, Acting Division Director, Human Resources Development

Ruta Sevo, Senior Program Director

Anh-Chi Le, AAAS Fellow

At Low + Associates

Michael Cosgrove, Executive Vice President

Holly Pollinger, former Director, Science and Technology Communications

Pat McNees, Writer

Sandy Coleman and Ross Bankson, Editors

Andrew Watkins, Assistant Account Executive

Jennifer Krako, Art Director

Brenda Spuij

At large

More than 200 Principal Investigators and their teams who carried out these projects and who responded with additional information, review, and graphics