CHRISTINE M. CUNNINGHAM

Education

1995 Ph.D. Cornell University
Science Education, Curriculum and Instruction
Advisors: William S. Carlsen (principal), Kenneth Strike, George Posner

1991 M.A. & B.A. Yale University
Biology with Honors, Summa cum laude

Dissertation

The Effect of Teachers' Sociological Understanding of Science on Classroom Practice and Curriculum Innovation

Academic/Research Positions

May 2003-present	Vice President of Research & Educator Resource Development Museum of Science, Boston
September 2001-May 2006	Director of Engineering Education Research, Center for Engineering Educational Outreach, Tufts University
April 1998 -December 2001	Co-PI and Project Director, Women's Experiences in College Engineering Project, Goodman Research Group Inc., Cambridge, MA
January 1997-January 2003	Research Associate, Science Education, Cornell University
August 1995-December 1997	Postdoctoral Fellow, Science Education, Cornell University

Funded Projects

Engineering is Elementary: Engineering and Technology Lessons for Children
(PI, Project Director, Grant Author)
National Science Foundation Instructional Materials Development $2,725,620 June 2005-May 2009;
Intel Foundation, $410,000 August 2003-December 2005
Cisco System Foundation $348,724 July 2006-December 2008
Bechtel Foundation, $150,000 November 2007-October 2008
MA Pipeline Fund, $100,000 June 2004-May 2005
Hewlett Packard $50,000 October 2004-December 2005
Millipore $25,000 October 2005-December 2005

Advancing Technological Skills and Literacy (ATLAS) of Elementary Educators: National Science Foundation Advanced Technological Education $740,649 July 2007-June 2010 (PI, Project Director, Grant Author)

Connecting Mathematics, Science, Engineering, Classrooms, and Museums: Liberty Museum Foundation $1,000,000 January 2008-December 2012 (PI, Project Director, Grant Author)

Power Up! Creating Leaders for Community College & High School Technology/Engineering: National Science Foundation Advanced Technological Education, $772,534, July 2004-June 2007 (PI, Grant Author)

Creating Exhibitions for Everyone—A Research Project Planning Grant: National Science Foundation Informal Science Education, $49,982, May 2004-January 2005 (PI, Grant Author)

Tufts Engineering the Next Steps (TENS) Research Experience for Teachers: National Science Foundation GK12, $65,871, July 2003-June 2004 (PI, Grant Author)

Tufts Engineering the Next Steps (TENS) GK12 Project: National Science Foundation GK12, $1,547,795, June 2003-May 2006 (PI, Grant Author)

Leveraging Experience to Accelerate Progress (LEAP): Moving Towards Gender Equity in Engineering Education, Intel Foundation, GE, Mobil Exxon, HP, $90,000, Sept 2002-February 2003 (PI, Grant Author)

Pre-College Engineering for Teachers (PCET): National Science Foundation Teacher Enhancement, $1,738,421, August 2002-July 2007 (PI, Project Director, Grant Author)

Tufts Computer Science, Engineering, and Mathematics Scholarship Program: National Science Foundation Division of Undergraduate Education, $385,0000, September 2002-August 2006 (Co-Author, Evaluator)

Cornell University Sciences Research Partnerships (CERP): National Science Foundation GK12, $1,350,000, February 2000-August 2003 (Co-PI, Grant Co-Author)

Urban Ecosystems Modeling: Preservice and Inservice Teacher Education through Technology-Intensive Curriculum Design: Dwight D. Eisenhower Competitive Inservice Training Grant for Science and Mathematics Education, $116,000, 1999-2001 (PI, Grant Author)

A Comprehensive Evaluation of Women in Engineering Programs: National Science Foundation Research on Educational Policy and Practice, Sloan Foundation $1,200,000, March 1998-December 2001 (Co-PI, Project Director)

Environmental Inquiry: Learning Science as Science is Practiced: National Science Foundation Instructional Materials Development $845,000, January 1997-December 2001

Institute on Science and the Environment for Teachers: National Science Foundation Teacher Enhancement 1995-2000 $694,693; Dwight D. Eisenhower Competitive Inservice Training Grant for Science and Mathematics Education $67,500 (1993), $70,875 (1994), $42,500 (1995), $33,000 (1996), $33,000 (1997), $33,000 (1998) (Project Director, Grant Co-Author)

Invisible College for Science Education Reform: NYNEX $20,000, August 1996-July 1997 (Project Director, Grant Author)

Evaluation

Program Evaluator for Multi-Threaded Instruction: Forming Multi-disciplinary Research Groups to Improve Undergraduate Education, Tufts University
Program Evaluator for Tufts Computer Science, Engineering, and Mathematics Scholarship Program, Tufts University
External Program Evaluator for Virtual Labs, Real Data, Including Biological Materials for Statics and Mechanics of Materials, Cornell University
Program Evaluator for Student Teacher Outreach and Mentorship Program, Tufts University
Program Evaluator for GK12 Program, Tufts University
External Program Evaluator for GE Fund Faculty for the Future Program Support, WEPAN
External Evaluator, National Junior Science & Humanities Symposium, Academy of Applied Sciences
External Program Evaluator for MentorNet: The Electronic Industrial Mentoring Program for Women in Engineering and Science
External Program Evaluation for the Center for Economic and Environmental Development, Allegheny College

Program Evaluator, COSMOS Corporation
External Program Evaluator for the Engineering Concepts for The High School Classroom Replication Project: Partners For Engineering Problem Solving, Dartmouth College
External Program Evaluator for the Engineering Concepts For The High School Classroom, Dartmouth College
External Program Evaluator for the French Creek Environmental Education Project, Allegheny College
External Program Evaluator for the Women in Science Project, Dartmouth College

Awards

Mary Margaret Scoby Award, Technology Education for Children Council, 2007
Leaders to Watch, International Technology Educational Association, 2007
Epsilon Pi Tau, Exemplary Initiation, 2006
Outstanding Leadership Award, American Society of Engineering Education K-12 Division, 2005
College of Agriculture and Life Sciences Excellence in Extension/Outreach Award, Cornell University, 1999
Marvin and Ruth Glock Dissertation Award, Cornell University, 1997
American Educational Research Association Division K Dissertation Award, 1996
National Association for Research in Science Teaching Dissertation Award, 1996
Spencer Dissertation Fellowship, 1994-95
NSF Graduate Research Fellowship, 1991-94
A.D. White Fellowship, Cornell University, 1991-94
Alpheus Henry Snow Prize, Yale University, 1991
Yale Science and Engineering Award, Yale University, 1991
William K. Belnap Prize, Yale University, 1991
John Spangler Nichols Cup, Yale University, 1991
Phi Beta Kappa, Yale University, Inducted 1989, President 1990-91

Memberships and Committees

Member:
American Educational Research Association
American Society for Engineering Education
Program Chair, K-12 Education and Outreach Committee, 2004-5
President, K-12 Education and Outreach Committee, 2006-7
Association of Science and Technology Centers
National Association for Research in Science Teaching
National Science Teachers Association
International Technology Education Association

Advisory Committees:
National Center for Engineering and Technology Education (NCETE), Advisory Board Chair
Institute for P-12 Engineering Research and Learning (INSPIRE)
Pulse of the Planet
MentorNet
Engineering our Future New Jersey
Commonwealth Alliance for Information Technology Education
Center for Compact and Efficient Fluid Power
Women To Watch, Selection Committee
Brookline High School 21st Century Fund

Reviewer:
Journal of Research in Science Teaching
Science Education
National Science Foundation

Journal Articles and Book Chapters

Cunningham, C.M., Lachapelle, C., & Knight, M.T.(in preparation). Children's conceptions of engineering and technology.

Cunningham, C.M. (2007). Elementary teacher professional development in engineering: Lessons learned from Engineering is Elementary. Paper presented to National Academy of Engineering K-12 Engineering Committee.

Cunningham, C.M. (in press). Technology and engineering in museums. Council on Technology Teacher Education 2007 Yearbook.

Cunningham, C.M., Knight, M.T., Carlsen, W.S., Kelly, G. (2007) Integrating engineering in middle and high school classrooms. International Journal of Engineering Education. 23(1) 3-8.

Huttlinger C., Knight, M.T., Carlson, B., Cunningham, C.M. (2006) Engineering in the classroom: A low tech, local approach. The Technology Teacher. 66(2). 18-21.

Bhargava, p., Antonakakis, J., Cunningham, C. M., Zehnder, A. T. (2006) Web-based virtual torsion laboratory. Computer Applications in Engineering Education 14(1). 1-8.

Single, P. B., Muller, C. B., Cunningham, C. M., Single, R. M., and Carlsen, W. S. (2005). MentorNet: E-Mentoring for women students in engineering and science. Journal of Women and Minorities in Science and Engineering. 11(3), 295-309.

Knight, M. T., & Cunningham, C. M. (2004). Building a structure of support: An inside look at the structure of women in engineering programs. Journal of Women and Minorities in Science and Engineering 10(2).

Goodman, I. F, Cunningham, C.M., Lachapelle, C., Thompson, M., Bittinger, K., Brennan, R.T., and Delci, M. (2002) Final Report of the Women's Experiences in College Engineering (WECE) Project. Goodman Research Group, Inc. Cambridge, MA http://www.grginc.com

Trautmann, N. M, Carlsen, W. S., Krasny, M. E., & Cunningham, C. M. (2000). Integrating inquiry. The Science Teacher. 67(6). 52-55.

Single, P., Muller, C. B., Cunningham, C. M. & Single, R. M (2000). Electronic communities: A forum for supporting women professionals and students in technical and scientific fields. Journal of Women and Minorities in Science and Engineering. 6 (2). 115-130.

Cunningham, C. M. (1998). The influence of teachers' sociological understanding of science (SUS) on curricular innovation. Research in Science Education. 28 (2). 243-257.

Cunningham, C. M. & Helms, J. V. (1998). Sociology of science as a means to a more authentic, inclusive and liberatory science education. Journal of Research in Science Teaching. 35. 483-499.

Cunningham, C. M. (1997). Who knows?: The influence of teachers' sociological understanding of science (SUS) on knowledge, authority, and control in the classroom. Journal of Classroom Interaction. 32(2). 24-34

Cunningham, C. M. (1995). Sample curriculum analysis. In G. J. Posner. Analyzing the Curriculum. (pp. 274-303). New York: McGraw-Hill Inc.

Carlsen, W. S., Cunningham, C. M. & Lowmaster, N. (1995). But who will teach it? Review of Benchmarks for Science Literacy. Journal of Curriculum Studies 27. 448-451.

Carlsen, W. S., Kelly, G. J., & Cunningham, C.M. (1994). Teaching ChemCom: Can we use the text without being used by the text? In G. Aikenhead & J. Solomon (Eds.). Science, technology, and society education (pp. 84-96). New York, NY: Teachers College Press.

Kelly, G. J., Carlsen, W. S., & Cunningham, C. M. (1993). Science education in sociocultural context: Perspectives from the sociology of science. Science Education 77. 207-220.

Curricula

Engineering is Elementary Series:
Curricular Units:

A Sticky Situation: Designing Walls (Materials Engineering)
Water, Water Everywhere: Designing Water Filters (Environmental Engineering)
Catching the Wind: Designing Windmills (Mechanical Engineering)
To Get to the Other Side: Designing Bridges (Civil Engineering)
Marvelous Machines: Making Work Easier (Industrial Engineering)
The Best of Bugs: Designing Hand Pollinators (Agricultural Engineering)
Sounds like Fun: Seeing Animal Sounds (Acoustical Engineering)
Just Passing Through: Designing Model Membranes (Bioengineering)
An Alarming Idea: Designing Electrical Circuits (Electrical Engineering)
A Work in Process: Designing and Play Dough Process (Chemical Engineering)
A Stick in the Mud: Siting a Bridge (Geotechnical Engineering)
The Attraction is Obvious: Designing a Maglev Vehicle (Transportation Engineering)
Thinking Inside the Box: Designing a Plant Package (Packaging Engineering)

Storybooks:

Yi Min's Great Wall: A Materials Engineering Story
Saving Salila's Turtle: An Environmental Engineering Story
Leif Catches the Wind: A Mechanical Engineering Story
Javier Builds a Bridge: A Civil Engineering Story
Aisha Makes Work Easier: An Industrial Engineering Story
Mariana Becomes a Butterfly: An Agricultural Engineering Story
Kwame's Sound: An Acoustical Engineering Story
Juan Daniel's Fútbol Frog: A Bioengineering Story
A Reminder for Emily: An Electrical Engineering Story
Michelle's MVP Award: A Chemical Engineering Story
Suman Crosses the Karnali River: A Geotechnical Engineering Story
Hikaru's Toy Trouble: A Transportation Engineering Story
A Gift for Fadil: A Packaging Engineering Storybook

Video:
Industrial Engineering: Making Work Easier (In collaboration with DigiNovations)

TELLY Award in International Competition in the Category "Educational Video Production"
Platinum Award for General Video Production from the National Professional Videographers Association

Environmental Inquiry Series:

Carlsen, W.S., Cunningham, C. M., Trautmann, N. M. & Krasny, M.E. (2003) Watershed Dynamics. Student and Teacher Edition. Arlington. VA: National Science Teachers Association Press

Krasny, M. E., Trautmann, N. M, Carlsen, W. S., & Cunningham, C. M. (2003). Invasion Ecology. Student and Teacher Edition. Arlington. VA: National Science Teachers Association Press

Trautmann, N.M., Krasny, M.E., Carlen, W. S., & Cunningham, C. M. (2003). Decay and Renewal. Student and Teacher Edition. Arlington. VA: National Science Teachers Association Press

Trautmann, N. M, Carlsen, W. S., Krasny, M. E., & Cunningham, C. M. (2001). Assessing Toxic Risk. Student and Teacher Edition. Arlington. VA: National Science Teachers Association Press