

LAURIE D. EDWARDS

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EDUCATION

Ph.D., Graduate Group in Science and Mathematics Education (SESAME)  
University of California at Berkeley, December 1989

Dissertation: *Children's learning in a computer microworld for transformation geometry*

Post-Graduate Certificate in Education (Secondary Teaching Credential, Mathematics)  
University of Sussex, Brighton, England, June 1979

B.A., Mathematics and "Society and Culture" (Double Major)  
University of California at Santa Cruz, June 1978

PROFESSIONAL EMPLOYMENT

2017-present	Co-Director, Multiple Subject Teacher Education Program, Saint Mary's College of California
2014-present	Director, Master of Arts in Teaching Program, Saint Mary's College of California
2014-2017	Chair, Department of Teacher Education, Saint Mary's College of California
2003-present	Professor of Education, Saint Mary's College of California
1999-2003	Associate Professor of Education, Saint Mary's College of California
1999	Lecturer, Department of Computer Science and Mathematics and College of Education, San José State University
1998	Educational Software Producer, Learning in Motion, Inc., Santa Cruz
1990-1999	Assistant Professor of Education, University of California at Santa Cruz

1989-1990	Assistant Professor of Mathematics Education, University of Washington
1984-1989	Graduate Research Assistant, University of California at Berkeley
1983-1984	Technical Support Staff, Signetics Corporation, Sunnyvale, CA
1983	Director, Atari Computer Camp, Faribault, MN
1982-1983	Math Tutor & Computer Lab Assistant, Mission College, Santa Clara, CA
1980-1981	Staff Research Associate, Mathematics Imagery Group (Dr. Kristina Hooper, PI), University of California at Santa Cruz
1978-1981	Mathematics Teacher, Holy Trinity Secondary School, Crawley, England and Santa Cruz High School, Santa Cruz, CA

### TEACHING AND RESEARCH INTERESTS

Mathematics education  
 Mathematics, cognitive linguistics and gesture studies  
 Cognition and instruction  
 Technology and education

### GRANTS AND AWARDS

Faculty Development Grant, St. Mary's College  
 Travel Grant, Active Participant, 2000-2014

Spencer Foundation Grant  
 "Conceptual Foundations of Proof", 2007, \$38,000

LaSallian Scholar Grant, St. Mary's College  
 "Invert and multiply: An investigation of prospective elementary school teachers' understanding of fractions," 2001, \$5000

Departmental Initiative Grant, St. Mary's College  
 "Intensive Technology Workshops for Education Faculty", 2001, \$1000

Professional Development Awards, St. Mary's College, Travel Grants,  
 2000 - 2014

Monterey Bay Area Mathematics Project, California Mathematics Project  
 (co-PI: Professor Bruce Cooperstein, Mathematics), 1996-99, \$195,000

Teacher Research Grant, University of California Office of the President,  
"Constructing geometric knowledge together," 1997-98, \$15,000

Teacher Research Grant, University of California Office of the President,  
"Learning mathematics and language together," 1996-97, \$15,000

Science and Mathematics Equity (Project SAME), National Science Foundation, Special  
Programs for Girls and Women (co-PIs: Miriam Landesman, Gini Matute-Bianchi,  
Trish Stoddardt), 1994-96, \$280,000

Faculty Research Committee Grants, Academic Senate, University of California at Santa  
Cruz:

"The social and cognitive impacts of learning Lego Logo," 1996, \$1500

"Girls' learning in an integrated science, math, and technology context," 1994,  
\$1500

"The social construction of logical reasoning in a computer context," 1993, \$2250

"Social and technological contexts for the development of mathematical  
reasoning," 1992, \$1500

"Children's mathematical reasoning in a computer microworld," 1991-92, \$3700

Division of the Social Sciences Research Awards, University of California at Santa Cruz:

"The social and cognitive impacts of learning Lego Logo," 1996, \$5034

"The social construction of logical reasoning in a computer context," 1993, \$2500

"Children's mathematical reasoning in a computer microworld," 1991, \$5000

Affirmative Action Award, Junior Faculty Development Award Program,  
University of California at Santa Cruz, 1993, \$2250

Pre-Tenure Development Award, Junior Faculty Development Award Program,  
University of California at Santa Cruz, 1992, \$5057

Bilingual Research Group Grant, University of California at Santa Cruz, 1990, \$4869

National Science Foundation, Participant, Catalyst Program to Mentor New Researchers in  
Mathematics Education, 1990-91

Instructional Improvement Grants, Academic Senate, University of California at Santa Cruz:

"A high-quality collection of educational software," 1996, \$5000,

"Hands-on and minds-on materials for learning to teach mathematics," 1993,  
\$1000

Participation in mentored teaching group, 1992, \$1000

"A multimedia educational workstation for the Education Computer Lab," 1992,  
\$3424

"Object Logo," 1991, \$800

Chancellor's Patent Fund Grant, University of California at Berkeley, 1987, \$1800

Constance Dorothea Weinman Scholarship in Instructional Technology, 1987, \$5000

Regents Fellowship, University of California at Berkeley, 1985-86

Graduate Opportunity Fellowship, University of California at Berkeley, 1984-85

Honors in the Major, College Honors, Senior Thesis in Mathematics Passed with Honors,  
Crown College Service Award, University of California at Santa Cruz, 1978

## PRESENTATIONS

### Invited Presentations

- 2015 “The role of gesture and the body in learning & teaching mathematics,” Invited Speaker, Learning and the Brain Conference, San Francisco, CA
- 2013 “Embodied mathematics: From manipulatives to proof,” Invited Speaker, National Council of Teachers of Mathematics Research Pre-Session, Denver, CO
- 2012 “What is meant by multimodality?” Presentation, Gesture Group, University of California at Berkeley
- 2010 “Emerging mathematical experts and proof,” Presentation, V Encontro Estadual de Educação Matemática, Rio de Janeiro
- 2010 “Gestures by advanced mathematics students,” Presentation, Gesture Group, University of California at Berkeley
- 2007 “Gesture, mathematics and conceptual integration,” Center for Research in Mathematics and Science Education, University of California at San Diego
- 2006 “The role of gesture in mathematics,” Sabbatical Presentation, Saint Mary’s College of California
- 2005 “Gesture, memory and problem-solving,” Invited Speaker, Intensive Seminar on the Didactics of Mathematics, Doctoral Program, Department of Mathematics, University of Turin, Italy
- 2003 “Seeing the elephant: Toward a bigger picture of understanding mathematics understanding,” Invited Speaker, Interdisciplinary Seminar on Perception, Body Motion, and Mathematics Learning, Sponsor: TERC & National Science Foundation, Sturbridge, MA
- 2002 "The nature of mathematics: A personal journey," Invited Speaker, Research Forum, 26<sup>rd</sup> International Conference for the Psychology of Mathematics Education, Norwich, England
- 2001 "Evolving understandings of technology, learning, and mathematics: Entwining metaphors", Fostering the Coevolution of Mathematical Learning Practices and

- Technologies, Kluwer Publishing International Workshop, University of London, England
- 1999 "Exploring the territory before proof," Graduate School of Education, Rutgers University
- 1997 "Collaborative mathematical problem-solving in bilingual groups," Education Colloquium, University of California at Santa Cruz
- 1996 "Joint problem-solving in Lego Logo," Developmental Psychology Colloquium, University of California at Santa Cruz
- 1994 "Microworlds as representations," Graduate Group in Science and Mathematics Education, University of California at Berkeley
- 1994 "Microworlds as representations," Learning and Epistemology Group, The Media Lab, Massachusetts Institute of Technology
- 1993 "Tools to think with: Multiple representation software," Invited Speaker, Annual Meeting of the National Council of Teachers of Mathematics, Seattle
- 1993 "Principles for the design of computer-based learning environments," Science, Mathematics and Instructional Technology Centre, University of Sydney, Australia
- 1993 "Cognition and computers," Computer Science Department, University of Sydney, Australia
- 1992 "What are computer microworlds, and what do they have to do with learning mathematics?" Mathematics Department, California State University, Sonoma
- 1992 "Computer environments for learning mathematics," Mathematics Department, California State University at San José
- 1992 "Students as teachers and software designers," Center for Teaching, University of California at Santa Cruz
- 1991 "Computer microworlds and conceptual entities," Graduate Group in Science and Mathematics Education, University of California at Berkeley
- 1990 "Computers and mathematics learning," Interdisciplinary Computer Science Program, Mills College, Oakland, CA
- 1989 "A transformation geometry microworld," Mathematics and Science Education Department, Weizmann Institute of Science, Israel

Conference Presentations

- 2017 “Proof from an embodied point of view.” Research Report. 41st Conference of the International Group for the Psychology of Mathematics Education. Singapore.
- 2012 “Enrica's explanation: Multimodality and gesture.” Research Report. 36th Conference of the International Group for the Psychology of Mathematics Education. Taipei, Taiwan
- 2012 “Embodiment theory and mathematics education.” Roundtable Paper. American Educational Research Association Conference, Vancouver, B.C., Canada
- 2011 “Embodied cognition and mathematics.” Research Report. 35th Conference of the International Group for the Psychology of Mathematics Education. Ankara, Turkey
- 2010 "Doctoral students, embodied discourse and proof." Research Report. 34th Conference of the International Group for the Psychology of Mathematics Education, Belo Horizonte, Brazil
- 2009 "Emerging mathematical experts and proof. " Short Oral Report. 33<sup>rd</sup> Conference of the International Group for the Psychology of Mathematics Education, Thessaloniki, Greece
- 2008 “Conceptual integration, gestures and mathematics.” Research Report. 32<sup>nd</sup> Conference of the International Group for the Psychology of Mathematics Education held jointly with the 30<sup>th</sup> Conference of PME-NA, Morelia, MX
- 2007 “Gesture and mathematical talk.” Third International Conference of the International Society for Gesture Studies, Evanston, Illinois
- 2007 “Investigating the conceptual basis of proof: A preliminary research report.” Conference on Research in Undergraduate Mathematics Education. San Diego
- 2006 “Conceptual basis of proof: Evidence from language and gesture.” Short Oral Presentation, 27<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Prague
- 2006 “Using gesture and conceptual mappings to understand mathematical ideas.” Individual Presentation, American Educational Research Association Conference, San Diego
- 2005 "Gesture and the construction of mathematical meaning." Research Forum, 29th Conference of the International Group for the Psychology of Mathematics Education, Melbourne, Australia
- 2005 “Gesture and mathematical talk: Remembering and problem solving,” Symposium Presentation, American Educational Research Association Conference, Montreal
- 2005 “Metaphors and gestures in fraction talk,” Working Group Paper, Conference of the European Society for Research in Mathematics Education, Sant Feliu de Guixols, Spain

- 2003 “The nature of mathematics as viewed from cognitive science.” Working Group Paper, Third Conference of the European Society for Research in Mathematics Education, Bellaria, Italy
- 2003 “A natural history of mathematical gesture,” Symposium Presentation, American Educational Research Association Conference, Chicago
- 2003 "Embodiment in mathematics: Metaphor and gesture ," Organizer and Presenter, Working Session, 27<sup>nd</sup> Conference of the International Group for the Psychology of Mathematics Education held jointly with the 25<sup>th</sup> Conference of PME-NA, Honolulu
- 2002 "Gesture, metaphor, and embodiment in mathematics," Organizer and Presenter (with Janete Frant and Jan Draisma), Working Session, 26<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Norwich, England
- 2002 “Learning by design: Environments that support girls' learning with technology,” Structured Poster Session, American Educational Research Association Annual Meeting, New Orleans
- 2002 “An instrumental perspective on ‘having the tool do some of the work for you’” (with Chronis Kynigos), Paper Discussion, American Educational Research Association Annual Meeting, New Orleans
- 2002 "Gesture in mathematical thinking, learning and teaching," Organizer and Presenter (with Norma Presmeg and Rafael Núñez), Work Session, Research Pre-Session, Annual Meeting of the National Council of Teachers of Mathematics, Las Vegas
- 2001 “Can cooperative mixed-language groups improve problem solving?” Research Presentation, Annual Asilomar Conference, California Mathematics Council, Pacific Grove, CA
- 2001 "Embodiment, gesture, and mathematics education," Organizer and Presenter (with Janete Frant and Jan Draisma), Working Session, 25<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Utrecht, The Netherlands
- 2000 “Believing, convincing, proving: Response to papers on proof schemes of undergraduate and in-service teachers," Invited Discussant, Symposium, Research Pre-Session, Annual Meeting of the National Council of Teachers of Mathematics, Chicago
- 2000 "Theory of embodied mathematics," Organizer and Presenter (with Rafael Núñez), Discussion Group, 24<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Tokyo, Japan
- 2000 “What do students do with conjectures?” Research Report, American Educational Research Association Annual Meeting, New Orleans

- 1999 "The joint construction of problems and solutions in collaborative bilingual groups," Research Presentation, 21<sup>st</sup> Conference of the International Group for the Psychology of Mathematics Education, Cuernavaca, Mexico
- 1999 "What do students do with conjectures?" (with Rina Zazkis), Short Oral Presentation, 23<sup>rd</sup> Conference of the International Group for the Psychology of Mathematics Education, Haifa, Israel.
- 1997 "Learning mathematics and language together." Short Oral Presentation, 21<sup>st</sup> Conference of the International Group for the Psychology of Mathematics Education, Lahti, Finland
- 1997 "Designing interactive learning environments for gender equity," Symposium Speaker, American Educational Research Association Annual Meeting, Chicago
- 1996 "Girls teach themselves, and boys too: Peer learning in Lego Logo," (with Andrea Coddington), Poster Presentation, American Educational Research Association Annual Meeting, New York
- 1996 "Girls' joint problem-solving in Lego Logo, a design and construction environment," Research Presentation, First International Conference on Activity Theory and Education, University of Havana, Cuba
- 1995 (with Rafael Núñez). "Cognitive science and mathematics education: A non-objectivist perspective." Research Report. 19<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Recife, Brazil
- 1995 "Cognitive science and mathematics," Organizer and Presenter (with Rafael Núñez), Discussion Group, 19<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Recife, Brazil
- 1995 "A Logo educational technology project in Costa Rica," Presentation, II Encuentro Científico entre Profesionales Cubanos y Norteamericanos en Educación, Pinar del Rio, Cuba
- 1994 "Exploring the territory before proof," Organizer and Presenter, Symposium, Research Pre-Session, Annual Meeting of the National Council of Teachers of Mathematics, Boston
- 1993 "Mathematical explorations in Logo," Research Presentation, Fifteenth Annual Meeting, North American Chapter of the International Group for the Psychology of Mathematics Education, Pacific Grove, CA
- 1993 "Learning mathematics in a Boxer microworld," Research Presentation, First International Boxer Conference, Melbourne, Australia



- 1992 “Computers and conjecturing in secondary school geometry,” Working Group, Seventh International Congress on Mathematical Education, Université Laval, Quebec, Canada, August
- 1992 “Naive notions and formal embodiments” (with Rina Zazkis), Research Report, American Educational Research Association Annual Meeting, San Francisco
- 1991 “A computer environment for mathematical reasoning in transformation geometry,” Research Presentation, National Council of Teachers of Mathematics Annual Meeting, New Orleans

### PROFESSIONAL AFFILIATIONS

American Educational Research Association  
 International Group for the Psychology of Mathematics Education  
 California Council on Teacher Education  
 National Council of Teachers of Mathematics  
 California Mathematics Council  
 Math/Science Network  
 International Society for Gesture Studies  
 International Society for Technology in Education  
 American Association of University Professors

### PROFESSIONAL SERVICE

#### Organizations

Treasurer & Secretary, International Committee of the International Group for the Psychology of Mathematics (2008 - 2012)

#### Journals

Member, Editorial Board, *Educational Studies in Mathematics*  
 Member, Editorial Board, *Mathematical Thinking and Learning*  
 Member, Editorial Board, *International Journal of Computers for Mathematical Learning*  
 Member, Editorial Panel, *Journal for Research in Mathematics Education* (1996-99)  
 Reviewer, *Journal of Educational Computing Research*  
 Reviewer, *Journal of the Learning Sciences*  
 Reviewer, *Computers and Education*  
 Reviewer, *Interactive Learning Environments*  
 Reviewer, *Educational Psychology*  
 Reviewer, *School Science and Mathematics*

#### Monograph reviewing

*Journal for Research in Mathematics Education*

Routledge & Keegan Paul

Meeting program reviews

International Group for the Psychology of Mathematics Education  
 American Educational Research Association (Division C, SIG-RME & SIG-EST)  
 European Society for Research in Mathematics Education

Program committee/Local organizer

International Program Committee, 34<sup>th</sup> Annual Meeting of the International Group  
 for the Psychology of Mathematics Education, Belo Horizonte, Brazil 2010

International Group for the Psychology of Mathematics Education-North America  
 Conference, Asilomar, CA. 1993

NATO Advanced Workshop, "The Design of Computational Media to Support  
 Exploratory Learning," Asilomar, CA. 1993

Grant reviewing

National Science Foundation  
 Social Sciences Research Council, Canada  
 Educational Foundation of the Netherlands

PROFESSIONAL CONSULTATION

WestEd, San Francisco, CA  
 Research in Embodied Cognition in Mathematics and Technology Catalyst Grant, San  
 Diego, CA  
 LeapPad, Inc., Emeryville, CA  
 Proyecto EMAT ("Education in Mathematics with Technology" Project), SEP/Cinvestav,  
 Mexico  
 The Learning Company, Inc., Fremont, CA  
 Brooks-Cole Publishing, Cabri-Geometry Software, Monterey, CA  
 Fundación Omar Dengo National Computer Education Project, San José, Costa Rica

COMMUNITY CONSULTATION AND SERVICE

Board of Trustees & Education Committee, Northern Light School, Oakland, CA  
 The Computer Street Academy, Oakland  
 Monterey Bay Area Mathematics Project  
 Barrios Unidos Community Center, Santa Cruz  
 The Math Academy, Santa Cruz and Watsonville High Schools  
 Project Pipeline for Minority Mathematics and Science Teachers, California Department of  
 Education  
 Science Connections, Santa Cruz County Office of Education and U.C. Santa Cruz  
 Expanding Your Horizons Conference for Girls in Mathematics and Science

Middle School Math Alliance, Santa Cruz County Office of Education

## COMMITTEES

### St. Mary's College of California

#### College

Chair, Graduate and Professional Studies Educational Policy Committee 2017-present  
 Technology Planning and Policy Committee 2012 - 2015  
 Education Technology Group 2012 - 2015  
 Graduate and Professional Studies Educational Policy Committee 2009 - 2012  
 Moodle Faculty Advisory Committee, 2011 - present  
 Committee on Committees 2008 - 2010  
 Task Force on E-Portfolios, 2005 - 2007  
 Rank and Tenure Committee, 2005 -2006  
 Faculty Committee for the Advancement of Technology, 2003 - 2006  
 Western Association of Schools and Colleges  
 Accreditation Review Steering Committee, 2001-2004  
 Web-Course Software Evaluation Faculty Committee, 2001-2002  
 New School of Education Building Planning Committee, 2001 - 2005  
 Technology Coordinating Committee/Technology Advisory Committee, 1999-2012  
 Committee on Teaching and Scholarship, 2000-2003  
 Grievance Committee 2001-2004  
 Academic Senate, 2000-2001

#### School of Education

Co-Director, Multiple Subject Credential Program, 2017-present  
 Chair, Teacher Education Department, 2014 -2017  
 Academic Policies Committee 1999-2003, 2007 – 2008, 2012 - present  
 Quality Improvement Committee, 2011 - 2013  
 Director, Multiple Subject Credential Program, 2009 – 2012  
 Director, Master of Arts in Teaching Program, 2011 – present  
 Program Directors Council, 2009 - 2014  
 Administrative Council, 1999-2003  
 Masters Research Committee, 2010 - 2016  
*Ad Hoc* Planning Committee for Curriculum and  
 Instruction Master's Degree 2001-2011  
 Technology Task Force, 2000-2001  
 Financial Planning Task Force, 2000-2001

### University of California at Santa Cruz

#### University, College, and Division

Faculty Representative, All-University Conference on Teaching and Learning  
 Technologies and the Present and Future of the University, 1997

UC-Links K-12/University Collaboration, 1996-97  
 Instructional Technology Planning Committee, 1993-96  
 Academic Senate Committee on Computing and Telecommunications, UCSC, 1994-97  
 Crown College Executive Committee, 1992-96  
 Social Sciences Division, Computer Advisory Committee, 1992-94  
 Third World Teaching Resource Center Advisory Committee, 1992-93  
 Faculty Mentor, South African Fellowship Program, UCSC, 1991-92

### Education Department

Graduate Degrees Committee  
 Teacher Education Committee  
 Colloquium Committee  
 Credential & Masters Admissions Committees  
 Library Committee  
 Doctoral Program Planning Committee  
 Affirmative Action/Scholarship Committee  
 Mathematics Subject Waiver Committee  
 Faculty Search Committees

### PUBLICATIONS

### PUBLICATIONS

#### Books and Monographs

Edwards, L.D. (1979). *Girls and mathematics: Why don't they mix?*, Special Study, P.G.C.E., University of Sussex, reprinted by the Equal Opportunities Commission of the U.K.

#### Edited Books

Edwards, L. D., Ferrara, F., & Moore-Russo, D. (Eds.) (2014). *Emerging perspectives on gesture and embodiment in mathematics*. Charlotte, NC: Information Age Publishers.

diSessa, A., Hoyles, C., Noss, R. with Edwards, L. (Eds.) (1995). *Computers and exploratory learning*, Berlin, Germany: Springer.

#### Journal Articles

Edwards, L. D. (2009). Gestures and conceptual integration in mathematical talk. *Educational Studies in Mathematics*, 70(2), 127-141.

Edwards, L. D. (2009). Gesture, conceptual integration and mathematical talk. *Jornal Internacional De Estudos Em Educação Matemática*, 1(1). Retrieved August 11, 2010, from <http://periodicos.uniban.br/index.php/JIEEM/article/view/2>

- Radford, L., Edwards, L. & Arzarello, F. (2009). Introduction: Beyond words (Special Issue: Gestures and Multimodality in the Construction of Mathematical Meaning). *Educational Studies in Mathematics*, 70(2), 91-95.
- Edwards, L. D. (2003, May). Collaborative problem-solving in mixed-language groups. *Teaching Children Mathematics*, 9 (9), 534-550.
- Edwards, L. D. (1999). Odds and evens: Mathematical reasoning and informal proof among high school students. *Journal of Mathematical Behavior*, 17(4), 489-504.
- Núñez, R.E, Edwards, L.D., & Matos, J.F. (1999). Embodied cognition as grounding for situatedness and context in mathematics education. *Educational Studies in Mathematics*, 39(1-3), 45-65.
- Edwards, L. D. (1998). Embodying mathematics and science: Microworlds as representations. *Journal of Mathematical Behavior*, 17(1), 53-78.
- Edwards, L. D. (1997). Exploring the territory before proof: Students' generalizations in a computer microworld for transformation geometry. *International Journal of Computers for Mathematical Learning*, 2,187-215.
- Edwards, L.D., Coddington, A. & Caterina, D. (1997). Girls teach themselves, and boys too: Peer teaching in a computer-based design and construction activity. *Computers and Education*, 29(1), 33-48.
- Edwards, L. D. (1995). The design and analysis of a mathematical microworld, *Journal of Educational Computing Research*, 12 (1), 77-94.
- Edwards, L. D. (1994). Mathematical explorations in Logo: A report of a pilot study in Costa Rica. *Educational Technology*, 34 (9), 56-61.
- Edwards, L. D. & Zazkis, R. (1993). Transformation geometry: Naive ideas and formal embodiments. *Journal for Computers in Mathematics and Science Teaching*, 12 (2), 121-145.
- Edwards, L. D. (1992). A comparison of children's learning in two interactive computer environments. *Journal of Mathematical Behavior*, 11, (1), 73-82.
- Edwards, L. D. (1991). Children's learning in a computer microworld for transformation geometry. *Journal for Research in Mathematics Education*, 22 (2), 122-137.

### Book Chapters

- Radford, L., Arzarello, F., Edwards, L., & Sabena, C. (2017). The multimodal material mind: Embodiment in mathematics education. In J. Cai (Ed.), *Compendium for research in mathematics education*. Reston, VA: National Council of Teachers of Mathematics.

- Edwards, L. D., & Robutti, O. (2014). Embodiment, modalities and mathematical affordances. In L. D. Edwards, F. Ferrara, & D. Moore-Russo. (Eds.) *Emerging perspectives on gesture and embodiment in mathematics*. (pp. 1-23). Charlotte, NC: Information Age Publishers.
- Moore-Russo, D., Edwards, L. D., & Ferrara, F. (2014). Introduction. In L. D. Edwards, F. Ferrara, & D. Moore-Russo. (Eds.) *Emerging perspectives on gesture and embodiment in mathematics*. (pp. vii-xi). Charlotte, NC: Information Age Publishers.
- Ferrara, F., Robutti, O., & Edwards, L. D. (2014). An exploratory study of multi-modalities in the mathematics classroom: Enrica's explanation. In L. D. Edwards, F. Ferrara, & D. Moore-Russo. (Eds.) *Emerging perspectives on gesture and embodiment in mathematics*. (pp. 105-124). Charlotte, NC: Information Age Publishers.
- Marghetis, T., Edwards, L. D., & Núñez, R. (2014). Embodiment, modalities and mathematical affordances. In L. D. Edwards, F. Ferrara, & D. Moore-Russo. (Eds.) *Emerging perspectives on gesture and embodiment in mathematics*. (pp. 227-246). Charlotte, NC: Information Age Publishers.
- Edwards, L. D. (2009). Transformation geometry from an embodied perspective. In W-M. Roth (Ed.) *Mathematical representation at the interface of body and culture* (pp. 27-44) Charlotte, NC: Information Age Publishers.
- Edwards, L. D. (2002). Learning by design: Environments that support girls' learning with technology. In N. Yellin & A. Rubin (Eds). *Ghosts in the machine: Women's voices in research with technology* (pp. 119-138). New York: Peter Lang.
- Edwards, L. D. & Zazkis, R. (2002). What do students do with conjectures? Preservice teachers' generalizations on a number theory task. In S. Campbell & R. Zazkis (Eds), *Learning and teaching number theory: Research in cognition and instruction* (pp. 139-155). Westport, CT: Ablex.
- Edwards, L. D. (1995). Microworlds as representations. In A. diSessa, C. Hoyles, R. Noss, with L. Edwards (Eds.), *Computers and exploratory learning* (pp. 127-154). Berlin: Springer.
- diSessa, A., Hoyles, C., Noss, R., Edwards, L. (1995). Computers and exploratory learning: Setting the scene. In A. diSessa, C. Hoyles, R. Noss, with L. Edwards (Eds.), *Computers and exploratory learning* (pp. 1-12). Berlin: Springer.
- Edwards, L. D. (1992). A Logo microworld for transformation geometry. In C. Hoyles & R. Noss (Eds.), *Learning mathematics and Logo*. (pp. 127-155) Cambridge, Ma: MIT Press.

#### Refereed Conference Proceedings

- Edwards, L. D. (2017). Proof from an embodied point of view. In Kaur, B., Ho, W. K., Toh, T. L., & Choy, B. H. (Eds). *Proceedings of the 41th Conference of the*

- International Group for the Psychology of Mathematics Education, Vol. 2* (pp. 297-304), Singapore: PME.
- Robutti, O., Edwards, L. D., & Ferrara, F. (2012). Enrica's explanation: Multimodality and gesture. In Tso, T. Y. (Ed.). *Proceedings of the 36th Conference of the International Group for the Psychology of Mathematics Education, Vol. 3*, (pp. 27-34). Taipei, Taiwan: PME
- Edwards, L. D. (2011). Embodied cognitive science and mathematics. In B. Ubuz (Ed). *Proceedings of the 35th Conference of the International Group for the Psychology of Mathematics Education, Vol. 2* (pp. 297–304). Ankara, Turkey: PME.
- Edwards, L. D. (2010). Doctoral students, embodied discourse and proof. In M. M. F. Pinto & T. F. Kawasaki (Eds). *Proceedings of the 34th Conference of the International Group for the Psychology of Mathematics Education, Vol. 2* (pp. 329 -336), Belo Horizonte, Brazil: PME.
- Edwards, L. D. (2008). Conceptual integration, gestures and mathematics. In O. Figueras, J. L. Cortina, S. Alatorre, T. Rojano & A. Sepúlveda (Eds). *Proceedings of the 32<sup>nd</sup> Conference of the International Group for the Psychology of Mathematics Education held jointly with the 30<sup>th</sup> Conference of PME-NA, Vol. 2* (pp. 423 - 430), Morelia, Mexico: PME.
- Edwards, L. D. (2005). The role of gestures in mathematical discourse: Remembering and problem solving. In H. Chick & J. Vincent (Eds). *Proceedings of the 29th Conference of the International Group for the Psychology of Mathematics Education, Vol. I* (pp. 135-138), Melbourne, Australia: PME.
- Arzarello, F. & Edwards, L. D. (2005). Gesture and the construction of mathematical meaning. In H. Chick & J. Vincent (Eds). *Proceedings of the 29th Conference of the International Group for the Psychology of Mathematics Education, Vol. I* (pp. 123-127), Melbourne, Australia: PME.
- Edwards, L. D. (2005). Metaphors and gestures in fraction talk. *Proceedings of the Fourth Conference of the European Society for Research in Mathematics Education*, Barcelona, Spain: University of Barcelona.
- Edwards, L. D. (2002). The nature of mathematics: A personal journey. In A. Cockburn & E. Nardi (Eds.), *Proceedings of the 26<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Vol. I* (pp. 43-50). Norwich, England: University of East Anglia.
- Edwards, L. D. (1999). The joint construction of problems and solutions in collaborative bilingual groups. In F. Hitt & M. Santos (Eds.), *Proceedings of the 21<sup>st</sup> Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Vol.II.* (pp. 559-565). Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education.
- Edwards, L. D. & Núñez, R. (1995). Cognitive science and mathematics education: A non-objectivist perspective. In D. Carraher & L. Meira (Eds.), *Proceedings of the*

*19<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Vol. I.* (pp. 79-87). Recife, Brazil: Universidade Federale de Pernambuco.

Edwards, L. D. (1994) Making sense of a mathematical microworld: A pilot study from a Logo project in Costa Rica. In J. Ponte & J. Matos (Eds.), *Proceedings of the 18<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Vol. I.* (pp. 110-118). Lisbon, Portugal: University of Lisbon.

Edwards, L. D. (1992). Reasoning and representation in first year high school students. In W. Geeslin & K. Graham (Eds.), *Proceedings of the 16<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Vol. I.* (pp. 209-216). Durham, N.H.: University of New Hampshire.

Edwards, L. D. (1991). A comparison of children's learning in two interactive computer environments. In F. Furinghetti (Ed.), *Proceedings of the 15<sup>th</sup> Conference of the International Group for the Psychology of Mathematics Education, Vol. II.* (pp. 1-8). Assisi, Italy: Program Committee of the 15th PME Conference.

Edwards, L. D. (1991). A Logo environment for reasoning in transformation geometry. In C. Gutierrez (Ed.), *Memoria, V Congreso Internacional sobre Logo y Encuentro Internacional sobre Telemática Educativa*, (pp.176-178). San José, Costa Rica: University of Costa Rica.

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TGEO: A computer microworld for transformation geometry (Unpublished Macintosh software)

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### Doctoral Students

*Committee member:*

Lance Coad (2013). *Being Mathematical: An Exploration of Epistemological Implications of Embodied Cognition*, (External Examiner, Unpublished doctoral dissertation). Curtin University, Perth, Australia.

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