APRIL CORDERO MASKIEWICZ

Biology Department
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EDUCATION

Ph.D. Mathematics and Science Education (Division of Biological Sciences) 2006
University of California, San Diego & San Diego State University
Dissertation: *Rethinking Biology Instruction: Applying DNR-based Instruction to the Learning and Teaching of Ecology*

M.A. Teaching and Learning: Curriculum Design (Biology Education) 2000
University of California, San Diego
Thesis: *Meaningful Science - Transforming Knowledge through Real World Connections and Computers*

Single Subject Clear Credential 1992
University of California, San Diego
1992 Physical Science, 1997 Life Science, 1998 CLAD

B.S. General Biology 1988
University of California, San Diego

APPOINTMENTS

Professor of Biology, Point Loma Nazarene University, San Diego, CA 2007-present
Formerly **Associate Professor of Biology** (2009-2015)
Formerly **Assistant Professor of Biology** (2007-2009)

- Instructor for (a) biology courses for both majors and non-majors, and (b) education and biology courses for biology graduate students.

Director of University NOW program – College level biology for underrepresented high school students. Point Loma Nazarene University, San Diego, CA 2009-present

Postdoctoral Researcher, Department of Chemistry and Biochemistry 2006-2007
University of California, San Diego

Project Goals: To identify and characterize the differences in epistemological beliefs and attitudes about chemistry among various science majors enrolled in introductory chemistry courses.

Graduate Research Associate, Mathematics and Science Education Program, 2004-2006
University of California, San Diego

Adjunct Faculty, Physics Department, 2003
San Diego State University

Taught a reform-based physical science curriculum for liberal studies undergraduates. The course integrated hands-on experiments, computer tools, and small group and whole class discussions.

Graduate Research Associate, Physics Department, Education focus 2001-2003
San Diego State University

Teaching Professor (formerly called Lecturer) **& Secondary Science Supervisor for Science Education.** Education Studies, University of California, San Diego 2000-2001
- Instructor for single subject credential students
- Supervisor for intern students in secondary science classrooms

OTHER K-16 TEACHING EXPERIENCE

Professional Development Instructor
- San Diego Science Faith Alliance – Teachers Grades k-12 2012 &2015
- Biology by the Sea – Summer, Christian School Teachers Grades 6-12 2011,'12,'14
- SDSU Learning Progressions Project – Grades 3-6 teachers 2009, Aug
- University Content Specialist, San Diego City Schools Summer Institute 2005 &'06

High School Biology Teacher 1996-2000
Rancho Buena Vista High School, Vista, CA 1992-1993

Middle School Science Teacher
Temecula Middle School, Temecula, CA 1995-1996
Lincoln Middle School, Vista, CA 1991-1992

GRANTS & CONTRACTS

SCIO Visiting Scholar at Oxford University, UK. Project: *Oxford Interdisciplinary Seminars in Science and Religion: Bridging the Two Cultures of Science and the Humanities*, organized by SCIO with funding from Templeton Religion Trust. ~$17,000. 2015-2016

Principal Investigator D. Allen, with Co-Is A. Maskiewicz, K. Sirum, G. Uno & S. Elrod. *Faculty Development Network for Undergraduate Biology*. National Science Foundation RCN-UBE, NSF DBI#1346570, $498,753.00 2014-2019

Principal Investigator J. Batzli, with Co-Is A. Maskiewicz, L. Hartley, J. Knight, & B. Desy. *Meeting at the Threshold: Generating hypotheses for classroom research that investigates how current curricula and learning progressions address threshold concepts in genetics and evolution.* Introductory Biology Project Catalytic Mini Grant, National Science Foundation RCN-UBE, $2000.00 2014-2015

Principal Investigator F. Goldberg with Co-Is D. Hammer, J.Coffey, A.Maskiewicz & S. Bendall. *Learning Progressions for Scientific Inquiry: A Model Development in the Context of Energy*. National Science Foundation DRK12 #0732233, $4,048,416.00 2008- 2012

Principal Investigator L. Hartley with Co-Is A. Maskiewicz, C D'Avanzo & J. Momsen. *Identifying differences in discourse and teaching about matter and energy in biology, chemistry, and physics courses, and the challenges this poses for learners of biology.* Introductory Biology Project Catalytic Mini Grant, National Science Foundation RCN-UBE, $2000.00 2010-2011

BOOKS & REFEREED CHAPTERS

Watkins, J., Coffey, J., Maskiewicz, A. & Hammer, D. (in press). An account of teachers' epistemological progress in science. In G. Schraw, J. Brownlee, L. Olafson & M. VanderVeldt (Eds.), *Teachers' Personal Epistemologies: Evolving Models for Transforming Practice*. Charlotte, NC: Information Age Press.

Maskiewicz, A. (2015). Navigating the Challenges of Teaching Responsively: An Insider's Perspective. In A. Robertson, R. Scherr & D. Hammer (Eds.), *Responsive Teaching in Science & Mathematics* (pp.105-125). New York: Routledge.

Lodahl, M. E., & Maskiewicz, A. C. (2014). *Renewal in Love: Living Holy Lives in God's Good Creation*. Kansas City: Beacon Hill Press

REFEREED PAPERS

Lineback, J. & Maskiewicz, A. (revisions). Common elements that promote productive scientific reasoning in responsive teaching classrooms. *Science Education.*

Batzli, J., Knight, J., Hartley, L. Maskiewicz, A., & Desy, E. (in press). Crossing the threshold: Bringing biological variation to the foreground. *Life Sciences Education; CBE*

Silva, M. & Maskiewicz, A. (2016). Understanding Causal Relationships in Food Webs Using Data Rich Problem Tasks. *American Biology Teacher,* 78(8), 635-641.

White, J. & Maskiewicz, A. (2014). Understanding Cellular Respiration in terms of Matter and Energy within Ecosystems. *American Biology Teacher*, 76(6), 408-414.

Maskiewicz, A. & Lineback, J. (2013). "Misconceptions are so yesterday". CBE-*Life Sciences Education,* 12,(3), 352–356.

Maskiewicz, A. (2013, April). *Navigating the Challenges of Teaching Responsively: An Insider's Perspective.* Paper presented at National Association of Research in Science Teaching - San Juan, Puerto Rico.

Maskiewicz, A. & Winters, V. (2012). Understanding the Co-Construction of Inquiry Practices: A Case Study of a Responsive Teaching Environment. *Journal of Research in Science Teaching,* 49(4), 429-464.

Maskiewicz, A., Griscom, H. & Welch, N. (2012). Using targeted active-learning exercises and diagnostic question clusters to improve students' understanding of carbon cycling in ecosystems. *Life Sciences Education; CBE,* 11, 58-67.

Hartley, L., Momsen, J., Maskiewicz, A. & D'Avanzo, C. (2012). Energy and matter: Differences in discourse in physical and biological sciences can be confusing for introductory biology students. *BioScience*, 62(5), 488-496.

Alvarado, M. & Maskiewicz, A. (2011). Teaching High School Physiology Using a Popular TV Medical Drama. *The American Biology Teacher,* 73(6), 322-328.

Maskiewicz, A. & Winters, V. (2010). Interpreting elementary science teacher responsiveness through epistemological framing. In Gomez, K., Lyons, L., & Radinsky, J. (Eds.) *Learning in the Disciplines: Proceedings of the 9th International Conference of the Learning Sciences* (ICLS 2010) - Volume 1, Full Papers. International Society of the Learning Sciences: Chicago IL.

Maskiewicz, A. (2006). *Applying DNR-based instruction to the learning and teaching of ecology.* Paper presented at Annual Conference of the National Association of Research in Science Teaching – San Francisco, California.

Maskiewicz, A., Guelman, C., & Goldberg, F. (2004). *Teachers' understanding of their role as learning facilitators in "making sense" discussions.* Paper presented: National Association of Research in Science Teaching –Vancouver, Canada.

Fisher, K. & Maskiewicz, A. (2002). *A blended model for college science teaching on the internet: As affordable and time-convenient but more interactive than lectures.* Paper presented at the American Association for the Advancement of Science – Pacific Division, Hawaii.

PROFESSIONAL CONFERENCE PRESENTATIONS

Steele, T., Semmler, L., Beavis, Z. and Maskiewicz, A. (2016, February). *The Science and Religion Club at Point Loma Nazarene University*. Poster presentation at The American Scientific Affiliation's 2016 Winter Day Conference: Practical Applications of Faith and Science, Southern California Christians in Science Chapter. Pasadena, CA.

Maskiewicz, A., Marbach-Ad, G., Allen, D., Elrod, S., Sirum, K. & Uno, G. (2015, April). *Developing, supporting, and sustaining a national professional developer network to enhance undergraduate biology education (NSF RCN-UBE).* Poster presentation at National Association of Research in Science Teaching Annual International Conference – Chicago, IL.

White, J. & Maskiewicz, A. (2014, Nov). Ecospheres! Engaging Students in Energy and Matter Dynamics in Ecosystems. Presentation at the National Science Teachers Association annual conference – Long Beach, CA.

Maskiewicz, A. (2013, August). *Applying Education Theory to Conduct Ecology Education Research: What does that mean?* Presentation in Symposium titled: "Using Education Theory: Learning From the Past to Shape the Future of Ecology Teaching" at the Ecological Society of America's 98th Annual Conference – Minneapolis, MN.

D'Avanzo, C. & Maskiewicz, A. (2013, August). *How to Use Teaching Issues and Experiments in Ecology (TIEE) in Your Teaching and to Publish in TIEE.* Organized Workshop presented at the Ecological Society of America's 98th Annual Conference – Minneapolis, MN.

Maskiewicz, A., Vanderburg, D., & Powell, L. (2012, August). **Helping students develop principle-based accounts of ecosystem functioning; A study of the effectiveness of an instructional intervention.* Poster presented at the Ecological Society of America's 97th Annual Conference – Portland, OR.
*Poster also presented at Society for the Advancement of Biology Education, 2nd Annual Conference – Minneapolis, MN (2012, July).

D'Avanzo, C., Hartley, L. & Maskiewicz, A. (2012, August). *How to Use Teaching Issues and Experiments in Ecology (TIEE) in Your Teaching and to Publish in TIEE*. Organized Workshop presented at the Ecological Society of America's 97th Annual Conference – – Portland, OR.

Goldberg, F., Bendall, S., Hammer, D., McKean, M., Coffey, J., Maskiewicz, A., Lineback, J. & Jaber, L. (2012, November). *Browser-based resource for responsive teaching in science: A product of the Learning Progressions in Scientific Inquiry Project*. Poster presented at Discovery Research K-12 meeting – Washington, D.C.

Maskiewicz, A., Schramm, J., Doherty, J. & D'Avanzo, C. (2011, August). *Using Qualitative Information to Improve Your Teaching and In Your Research: An Introduction to Conducting and Analyzing Interviews*. Organized Workshop presented at the Ecological Society of America's 95th Annual Conference - Austin, Tx.

Michelotti, R. & Maskiewicz, A. (2011, October). *Context-based Learning of Genetics by Means of Authentic Practice*. Poster presented at the National Association of Biology Teachers, Professional Development conference - Anaheim, CA.

Coffey, J. & Maskiewicz, A. (2010, November). *The Dynamics of Progress: A case study of elementary teachers' engagement in science.* Poster presented at Discovery Research K-12 meeting – Washington, D.C.

Maskiewicz, A., Griscom, H. & Welch, N. (2010, August). *Using active-learning strategies to address student misunderstandings of global climate change*. Presentation in Symposium titled: "Where's the Carbon? - Increasing Public Understanding of Global Warming with Improved College Science Education" at the Ecological Society of America's 95th Annual Conference – Pittsburgh, Pennsylvania.

Maskiewicz, A. & Winters, V. (2010, June). *Interpreting elementary science teacher responsiveness through epistemological framing.* Paper presented at the Ninth International Conference of the Learning Sciences – Chicago, IL.

Anderson, D. & Maskiewicz, A. (2009, October). *Getting your Students thinking and talking about biology*. Presentation at the California Science Education Conference - Palm Springs, California.

Griscom, H., Maskiewicz, A. & Welch, N. (2009, August). *Using DQCs and active learning strategies to assess ecology students' alternative conceptions about carbon cycling in ecosystems*. Poster presented at the Ecological Society of America's 94th Annual Conference – Albuquerque, New Mexico.

Hartley, L., Anderson, C.W., Wilke, B., Schramm, J., D'Avanzo, C., Abraham, B., Arnett, A., Dickman, A., Griscom, H., Maskiewicz, A. and Picone, C. (2009, August). *Student Reasoning Related to Matter and Energy Flow through Ecosystems: Lessons from Diagnostic Question Clusters.* Poster presented at the Ecological Society of America's 94th Annual Conference – Albuquerque, New Mexico.

Maskiewicz, A. (2009, July). *Using Data-rich Problem Tasks to Facilitate Students' Deep Understanding and Promote Biological Ways of Thinking.* Poster presented at Transforming Undergraduate Education in Biology: Mobilizing the Community for Change Conference – Washington, D.C.

Goldberg, F., Hammer, D., Coffey, J., Bendall, S. & Maskiewicz, A. (2009, June). *Learning Progressions in Scientific Inquiry*. Poster presented at Discovery Research K-12 meeting – Washington, D.C.

Maskiewicz, A. & Sawrey, B. (2007). *Comparing First Year Science Majors Survey Responses on Colorado's CLASS-Chem with Interview Data.* Poster presented at Gordon Research Conference: Chemistry Education Research and Practice – Lewiston, Maine.

Goldberg, F., Williams, B., Maskiewicz, A. (2004). *Which falls faster, a bowling ball or a* soccer *ball? -- A study of a small group learning about falling objects*. Presentation at Conference: Integrating Science & Math Education Research into Teaching - Orono, Maine.

Guelman, C., Goldberg, F. & Maskiewicz, A. (2004). *Teachers' Implementation of the Constructing Ideas in Physical Science (CIPS) Curriculum.* Poster presented at CCMS Knowledge Sharing Institute – Evanston, Illinois.

Maskiewicz, A. & Goldberg, F. (2002). CIPS - *A middle school physical science curriculum: Challenges in promoting student learning and teacher implementation*. Presentation at Conference: Integrating Science & Math Education Research into Teaching – Orono, Maine.

INVITED LECTURES, PRESENTATIONS, & PANELS

2016, August. *"Doctor is In" The PLNU Way: Why I Chose PLNU and Why PLNU Chose Me*. Panel discussion for new faculty at PLNU, San Diego, CA.

2016, February. *The E Word*. Invited TEDxPLNU presentation. San Diego, CA.

2016, January. *Creation Care: Hearing God's Heart, Responding to God's Call*. Invited speaker at Journey Church, San Diego, CA.

2015, November. *Oxford Experience, July 2015*. Invited speaker at the Point Loma Nazarene University Wesleyan Center Scholar Talks, San Diego, CA.

2015, November. *Teaching scientific reasoning skills using data sets*. Invited speaker at Science & Faith Alliance Foundation's Science Teachers Professional Development Day. Horizon Preparatory School, Rancho Santa Fe, CA.

2014, June. *Faith and Science Forum: Reconciling faith and Biological Evolution.* Invited speaker at Mission Hills United Church of Christ, San Diego, CA

2014, February. *The Burden*. Film panel discussant with Congressman Scott Peters, Andrea Marr with the Truman National Security Project, Dr. Rosco Williamson with PLNU, and Nicole Capretz with the City of San Diego. San Diego, CA.

2014, April. *Hope For Our Energy Future.* Invited speaker at Creation Care forum, Solana Beach Presbyterian Church.

2014, March. *Faith and Science Forum: Reconciling faith and Biological Evolution.* Invited speaker at University City United Church of Christ, San Diego, CA

2013, Nov. *Organizing your Active Learning Curriculum*. Guest speaker for the new faculty seminar, organized by the Center for Teaching and Learning at Point Loma Nazarene University

2013, Sept. *Faithful Science Seminar: Viewing Creation through the lenses of Science & Faith*. Presenter and panel discussant at New Life Nazarene Church in Cupertino, CA.

2012, Dec. *Bag it.* Panel discussant for a film presentation sponsored by the SEA club at Point Loma Nazarene University

2012, Nov. *Organizing your Active Learning Curriculum*. Guest speaker for the new faculty seminar, organized by the Center for Teaching and Learning at Point Loma Nazarene University

2012, Sept. *When Heaven Meets Earth* with Susan Emmerich. Panel discussant for a video presentation sponsored by the SEA club at Point Loma Nazarene University

2012, July, *From The Dust* movie preview. Panel discussant for video presentation sponsored by the American Scientific Affiliation.

2012, June. *Genesis Colloquium: How do our institutions teach origins of life from a Christ-centered and biblically-integrative perspective?* Invited speaker with PLNU President Robert Brower, PLNU Provost Kerry Fulcher, and Biologos' president Darrel Falk. Biola University.

2012 April. *Creation Care Event - The Church and the State Confront Climate Change: As Allies or Adversaries?* Presenter and panel member at Solana Beach Presbyterian Church.

2010, Aug. *Creating a Community in your Classroom*. Panel member in discussion organized by the Center for Teaching and Learning at Point Loma Nazarene University convocation.

2010, June. *Student Challenges in Learning about Global Climate Change*. Presenter/Consultant for Science Education Association of San Diego (SEASAND) planning meeting. San Diego, California.

2010, June. *Engaging students through active learning.* Invited speaker for Technology Integrated Learning Environments (TILE) workshop on Understanding and Supporting Motivation in Students. Point Loma Nazarene University.

2010, April. *Creating a Community in your Classroom.* Panel member in discussion organized by the Center for Teaching and Learning at Point Loma Nazarene University.

2009, Nov. *Implementing Active Learning Strategies for the DQC Project*. Presentation at the Diagnostic Question Cluster, Cohort 2, Workshop. Detroit, Michigan.

2009, Aug. *Implementing Active Learning Strategies for the DQC Project*. Presentation at the Diagnostic Question Cluster Workshop at the Ecological Society of America's 94th Annual Conference – Albuquerque, New Mexico.

2007, Nov. *Using DNR in the classroom.* Guest speaker for Mathematics Education Seminar, University of California, San Diego – San Diego, California.

2006, Oct. *The application of DNR based instruction to the ecology classroom.* Guest speaker for Mathematics and Science Education Seminar, University of California, San Diego – San Diego, California.

2006, Aug. *The application of DNR based instruction to the ecology classroom.* Invited Speaker for graduate level ecology course, Point Loma Nazarene University, San Diego, CA.

PROFESSIONAL HONORS

BioLogos Voices speakers bureau (2016 – 2019)

Teachers Noticing Teachers professor (PLNU, Fall 2010)

Jean Fort Dissertation Prize (UCSD, 2006)

Academic Honors: Honor Society Phi Kappa Phi (2002-2006)

TA Excellence in Teaching Award (UCSD Biology Dept) (2004-2005)

Recognition for the Athena Pinnacle Educator Award – Educational Nominee (2000)

MASTER'S THESIS ADVISING & UNDERGRADUATE HONORS STUDENT ADVISING

Advisor for Biology M.S. Thesis:

Doug Dolter (2016). Title: *The Effects of Argumentative Discourse on High School Students' Conceptual Understanding of Natural Selection*.

Karoly Tippets (2015). Title: *Mechanisms and Outcomes of Genetic Variation as a Threshold Concept for Understanding Evolution by Natural Selection.*

Marin Silva (2015). Title: *Using Data Rich Problem Tasks to Promote Understanding of Causal Relationships in Ecosystems*.

Elizabeth Ferguson (2014). Title: *An Exploration of Graphing Software Program Selection and Relative Proficiency Among Undergraduate Biology Students*

Josh White (2013). Title: *Student Sense Making in a DRP task on Cellular Respiration in Producers*

Ron Michelotti (2012). Title: *Context-based Learning of Genetics by Means of Authentic Practice*

Damien Vanderburg (2011). Title: *Creating Cognitive Puzzlement in High School Biology Students: The Application of the Necessity Principle in Ecosystems Ecology*

Julie Gallagher (2011). Title: *Identification of Alternative Conceptions held by High School Students Regarding Stem Cells and Stem Cell Research*

Michelle Baun (2011). Title: *Using Case Studies for High School Students' Learning of Abstract Concepts in Molecular Genetics*

Marisa Alvarado (2009). Title: *The Use of Integrated Media and its Effects on Student Content Learning of Human Physiology*

Jessica DiGrazia (2008). Title: *Identifying student ideas about Nutrition*

Melissa Hedgecock (2008). Title: *An Analysis Of Conceptual Cartoons In Promoting Conceptual Understanding Of Cell Division*

Rachel Tannenbaum (2008). Title: *Using analogies in the biology classroom*

Co-Advisor for Biology M.S. Thesis:

Mike Rall (2009). Title: *Design and Use of Conceptual Cartoons as a Tool for Conceptual Change in High School Biology Classes*

Will Jacoway (2009). Title: *Development and Application of a two tier instrument to evaluate students' conceptions of natural selection*

Committee Member for Biology M.S. Thesis:

Matthew Nasont (2016). Title: *Comparison of massed versus distributed use of natural selection concept cartoons in a secondary biology curriculum*

Marilyn Reed (2014). Title: *Use of inquiry based-pedagogy during organism dissection to improve scientific questioning skills of middle school students*

Jessica Pimental (2013). Title: *Examining change in high school students' conceptual understanding of variation*

Casey Vogel (2013). Title: *Scaling Ability and Atom and Cell Conceptions and Their Implications for Understanding Cellular Functions by Middle School Students*

Patty Evans (2013). Title: *A Revision of the Conceptual Inventory of Natural Selection for Middle School Students*

Daniel Dwyer (2012). Title: *Using Interview Data from Non-Major Biology Students To Improve the Conceptual Inventory of Natural Selection*

Muriel Gross (2011). Title: *The* u*se of Biology Concept Cartoons to Assist Low performing Middle School Students in Their Understanding of Natural Selection*

Jocelyn Brommelsiek (2010). Title: *The Effects of Application-based Inquiry Curriculum on Students' Understanding of the Nature of Science*

Nina Button (2010). Title: *The Validity of a Two-Tiered Diagnostic Assessment for Identifying College Students' Ideas About Meiosis and Mitosis*

Janessa Grube (2009). Title: *Identifying college student ideas about osmosis and diffusion.*

Sarah Estes (2009). Title: *Evidence for Natural Selection Alternative Conceptions present in Upper Division Majors.*

Mary Ann Rall (2008). Title: *Using Concept Cartoons and the Conceptual Inventory on Natural Selection to Evaluate the Progression of Students' Understanding of Natural Selection*

Anita Plagge (2008). Title: *The relationship between college students' biology knowledge and support of stem cell research*

Undergraduate Honors Project Advisor

Bryson Menke (present). Title: *Science and Christian Faith*.

Marie Holman (2010). Title: *Documenting the Evolution of One Student's Learning Trajectory in an Introductory Ecology Course.* Biology Department

Undergraduate Honors Project Committee member

Connor Voss (2016). Title: *Design and synthesis of 2-(2-sulfonamido)phenylbenzimidazole derivatives as potential IspF inhibitors.*

Lindsay Semmler (2016). Title: *Synthesis of a water-soluble radicinin derivative for use as an antibacterial agent in grapevine.*

Dylan Poorboy (2015). Title: *Analysis of Occupancy for Mammalian Species in the Tropical Montane Ecosystems of Costa Rica*. Biology Department

Kelsey Alexander (2015). Title: *The Concerted Nature of Isocyanates*. Chemistry Department

Eduardo (Po) Alvarez (2014). Title: *Integrating Occupancy Modeling and Interview Data to Assess Threats to Jaguars (Panthera onca) and Prey Species in Tapanti National Park, Costa Rica.* Biology Department.

Laurel Hasper (2013). Title: *Barbara Kingsolver's Animal Dreams Though An Eco-Feminist Lens.* Literature, Journalism, & Modern Languages Department.

Elizabeth O'Casey (2009). Title: *National Parks: A Look into Community Involvement as a Vital Conservation Component.* History and Political Science Department.

UNIVERSITY COURSES TAUGHT

Point Loma Nazarene University, San Diego, CA

Biology 101: Human Biology and Bioethics
Biology 105: Ecology and Conservation
Biology 211: Ecological and Evolutionary Systems
Biology 215: Animal Biology
Biology 487: Senior Seminar
Biology 611: Science Education Seminar (graduate level)
Biology 643: Research Design (graduate level)
Biology 683: Evolution

University of California, San Diego, CA

TEP 129 A, B, & C: Introduction to Teaching and Learning (Secondary)
TEP 179 A, B, & C: Single Subject (Secondary) Internship Practicum
TEP 175: Secondary Science Teaching Practices

San Diego State University, San Diego, CA

Natural Science 412A: Processes and Inquiry in Physical Science – physical science for liberal studies undergraduates