

## Jennifer Evarts Lineback, Ph.D.

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### Education:

- 2012      Ph.D. Mathematics and Science Education  
University of California, San Diego & San Diego State University, San Diego, CA  
Thesis title: *Mrs. Miller's evolution in teaching science as inquiry: A case study of teacher change*
- 1997      M.S. Zoology  
Miami University, Oxford, OH  
Thesis title: *Spatial and temporal variation in nitrogen and phosphorus release from sediments in a eutrophic reservoir*
- 1995      B.S. Zoology  
B.A. Chemistry  
Miami University, Oxford, OH

### Professional experience:

- 2019-present    Professor, School of Education & Biology Department  
Department chair, Cross-Disciplinary Studies  
Point Loma Nazarene University, San Diego, CA
- 2015-2019      Associate Professor, School of Education & Biology Department  
Point Loma Nazarene University, San Diego, CA
- 2012-2015      Part-time Faculty, School of Education & Biology Department  
Point Loma Nazarene University, San Diego, CA
- 2005-2007      High School Science Teacher  
International School of Port of Spain, Trinidad & Tobago
- 2001-2005      High School Science Teacher  
Landon School, Bethesda, MD
- 1998-2001      Middle/High School Science Teacher  
Palmer Trinity School, Miami, FL
- 1997-1998      High School Science Intern  
Miss Porter's School, Farmington, CT

**Courses taught in current position:**

Undergraduate: Genetics (Biology), Secondary Science Methods (Biology), Elementary Math Methods (Education)

Graduate: Science Education Seminar (Biology), Ecology of Plants and Animals (Biology), Research Design (Education)

**Research Experience:**

2016-present Scholarship of teaching and learning at the post-secondary level, specifically in the areas of science (biology and chemistry) and educational research design

2016-2017 Co-PI on the IDEA funded research project entitled, *“Improving student learning and classroom experience using mentoring in weekly observation and planning: Measuring success through targeted IDEA Teaching Methods and PRO scores*, Jo Clemmons (PI).

2013-2016 Educational consultant for *SDSU Noyce Mathematics and Science Master Teaching Fellowship Program* (National Science Foundation). Lisa Lamb (PI), Randy Philipp, Susan Nickerson, Donna Ross, and Kathy Williams (co-PIs).

- Assisted in the analysis of teacher and student progress across mathematics and science learning objectives, 2014 - 2016
- Coded video recordings of participating grade 6-12 mathematics and science teachers’ classroom instruction, 2013 - 2016
- Assisted in development of scoring rubrics for assessing middle and high school mathematics and science teachers along different dimensions (i.e. teachers’ elicitation of student ideas, quality of teachers’ facilitation of student discourse, teachers’ content understanding), 2013-2014

2008-2012 Graduate Research Associate for *Learning Progressions for Scientific Inquiry: A Model Implementation in the Context of Energy*, (National Science Foundation grant 0732233). Fred Goldberg (PI), Sharon Bendall, Janet Coffey, David Hammer, April (Maskiewicz) Cordero (co-PIs).

- Assisted in the generation and promotion of a browser-based electronic resource for science educators and professional developers interested in engaging in and supporting responsive teaching, 2012
- Assisted in generation of pilot curricular and professional development materials for use by the elementary and middle school teachers associated with our project and the larger educational community, 2008-2011

- Collaborated with project staff regarding conceptualization of student and teacher learning and possible “learning progressions” in the context of scientific inquiry instruction, 2008-2011
- Assisted in ongoing research by operating video equipment and debriefing teachers as they implemented novel instructional approaches, 2008-2010

- 2007-2008 Graduate Research Associate working with Drs. Kathleen Fisher and Kathy Williams to develop, validate, and administer conceptual assessments in biology at the undergraduate level
- Assisted in creating, revising, administering, and analyzing undergraduate conceptual assessments in five areas of biology: osmosis and diffusion, evolution and natural selection, cell division, energy, and the natural of science.
  - Conducted semi-structured individual interviews concerning students’ understanding of diffusion and osmosis.
  - Administered conceptual assessments to a population of biology experts. Results served to help modify the assessments and provide external validation for the instruments.
- 2002 HHMI Fellowship Research Assistant comparing mammary gland morphologies and immunohistochemistries of the short-tailed fruit bat (*Carollia perspicillata*) and the mouse (*Mus musculus*), National Institutes of Health.
- 1995-1997 Graduate Research Assistant for the *Four Mile Creek Watershed Project* (National Science Foundation grants DER 9318452 and DER 0235755) collecting, filtering, and biochemically analyzing water samples.

### **Publications:**

Lineback, J. E. & Jansma, A. (in press) Development of spatial and critical thinking skills for biochemistry students utilizing the visualization software PyMOL. *Journal of Chemical Education*.

Dorrell, M. I. & Lineback, J.E. (2019). Using shapes and codes to teach the central dogma of molecular biology: A hands-on inquiry-based activity. *The American Biology Teacher*, 81, 202-209.

Lineback, J. E. (2015). Methods to assess teacher responsiveness *in situ*. In A. Robertson, R. Scherr, and D. Hammer, (Eds.), *Responsive Teaching in Science and Mathematics* (pp. 203-226). New York: Routledge.

Lineback, J. E. (2015). The redirection: An indicator of how teachers respond to student thinking. *Journal of the Learning Sciences*. 24(3): 419-460. DOI:

[10.1080/10508406.2014.930707](https://doi.org/10.1080/10508406.2014.930707) (NOTE: first available online in June 2014)

Maskiewicz, A. C. & Lineback, J. E. (2013). Misconceptions are so 'yesterday'! *CBE – Journal of Life Science Education*, 12, 352-356.

Fisher, K. M., Williams, K. S., & Lineback, J. E. (2011). Osmosis and diffusion conceptual assessment. *CBE – Journal of Life Science Education*, 10, 418-429.

Lineback, J. E. & Goldberg, F. (2010). *Using changes in framing to account for differences in a teacher's classroom behavior*. In K. Gomez, L. Lyons, & J. Radinsky (Eds.), *Learning in the Disciplines: Proceedings of the 9th International Conference of the Learning Sciences (ICLS 2010) - Volume 1, Full Papers* (pp. 145-152). International Society of the Learning Sciences: Chicago IL. [Also under Conference Presentations]

Nowlin, W. H., Evarts, J. L. & Vanni, M. (2005). Release rates and potential fates of nitrogen and phosphorus from sediments in a eutrophic reservoir. *Freshwater Biology*, 50, 301-322.

Evarts, J. L., Rasweiler, J. J., Behringer, R. R., Hennighausen, L. & Robinson, G.W. (2004). A morphological and immunohistochemical comparison of mammary tissues from the short-tailed fruit bat (*Carollia perspicillata*) and the mouse. *Biology of Reproduction*, 70, 1573–1579.

#### **Manuscripts under revision/in preparation:**

Lineback, J.E. & Athans, K. The effectiveness of experiential coding activities on novice qualitative researchers. *Manuscript in preparation*.

#### **Conference Presentations:**

Lineback, J.E. (October 2018). *Mutagenesis Part II: Design your own experiment*. Round table presented at American Society of Human Genetics – Undergraduate workshop, San Diego, CA.

Lineback, J.E. (April 2018). *Improving graduate student literature reviews through writing workshop-embedded peer review*. Round table presented at the American Education Research Association international meeting, New York, NY.

Lineback, J.E. (May 2017). *The effectiveness of experiential coding activities on novice qualitative researchers*. Paper presented at the American Education Research Association international meeting, San Antonio, TX.

Williams, K.S., Fisher, K.M., & Lineback, J.E. (August 2012) *BioHUB: An internet HUB for the Conceptual Assessment in Biology (CAB) community*. Paper presented at the Ninety-seventh Annual Meeting of the Ecological Society of America, Portland, OR.

Lineback, J.E. & Lardy, C. (March 2011). *Using authentic activities in the classroom*. Paper presented at the National Science Teachers of America National Conference on Science Education, San Francisco, CA.

Lineback, J. E. & Goldberg, F. (June 2010). *Using changes in framing to account for differences in a teacher's classroom behavior*. Paper presented at the Ninth International Conference of the Learning Sciences, Chicago, IL.

Williams, K.S., Fisher, K.M., Anderson, D.L., Smith, M.U., & Lineback, J.E. (January 2008). Using diagnostic test items to assess conceptual understanding of basic biology ideas: A plan for programmatic assessment. Paper presented at the Second Conceptual Assessment in Biology (CAB II) meeting, Asilomar, CA.

Barnett, T., Botti, J., & Evarts, J. L. (November 2004). Ethics in the classroom. Presentation at the Association of Independent Maryland Schools (AIMS) Annual Fall Conference, Baltimore, MD.

Evarts, J. L. & Vanni, M. J. (May 1997). Sediment release of phosphorus in Acton Lake. Paper presented at the Ohio Lake Management Society's first annual Ohio Limnology Conference, Delaware, OH.

Evarts, J. L. (November 1996). Nutrient release from sediments to open waters in Acton Lake. Paper presented at the Ohio River Basin Consortium for Research and Education's Twelfth Annual Scientific Symposium, Oxford, OH.

#### **Poster Presentations:**

Lineback, J.E. (May 2019). *Peer review as a vehicle to develop student writing*. Poster presented at: MSED 25<sup>th</sup> year reunion – San Diego, CA

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

Lineback, J.E. (2012, January). *Characterizing "redirections": A method to describe teacher change*. Poster presented at: A Tribute to the Career of Dr. Judith Sowder: Linking Research and Practice in Mathematics Education – San Diego, C.A.

Coffey, J.E., Maskiewicz, A.C., Hammer, D., Jaber, L., Finkelstein, C., Radoff, J., Bendall, S., Goldberg, F., & Lineback, J. (2010, December). *The Dynamics of Progress: A case study of elementary teachers' engagement in science*. Poster presented at: DRK-12 PI meeting - Washington, D.C.

Goldberg, F., Bendall, S., Winters, V. Lineback, J.E., Hammer, D., Coffey, J., Sikorski, T.R., Cunningham, J.M., Finkelstein, C., Radoff, J. & Maskiewicz, A. (2009, November). *Learning Progressions in Scientific Inquiry*. Poster presented at: DRK-12 PI meeting – Washington, D.C.

Williams, K.S., Fisher, K.M., Lineback, J. (2009, July). *Learning how students think about science: Developing diagnostic questions*. Poster presented at: Transforming Undergraduate Education in Biology: Mobilizing the Community for Change Conference – Washington, D.C.

#### **Grants & Fellowships:**

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| 2018      | PLNU's Center for Teaching and Learning (CTL) Writing Retreat recipient  |
| 2018      | RASP grant recipient (PLNU) to fund attendance at AERA conference in New York City   |
| 2017      | SOE Dean's grant recipient (PLNU) to fund attendance at AERA conference in San Antonio, TX   |
| 2016-2017 | IDEA Impact Grant recipient (Co-Pi with Jo Clemmons, Ph.D.) to implement and research progressive instructional pedagogies with fellow science faculty |
| 2007      | San Diego State University College of Sciences Fellowship to assist with biology education research with Drs. Kathy Williams and Kathleen Fisher       |
| 2002      | HHMI Teacher Fellowship to assist with molecular biology research (NIDDK) at the National Institutes of Health, summer 2002                            |

#### **Awards and Honors:**

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| 2010 | Inducted into the SDSU chapter of the Phi Kappa Phi Honor Society  |
| 2005 | Recognized in Who's Who Among American Teachers (9 <sup>th</sup> edition)                                    |
| 1995 | Awarded the Birely J. Landis scholarship by the faculty of the Dept. of Zoology, Miami University, 1995-1996 |

1994 Inducted into the Gamma Theta Phi local chemistry honor society, Miami University, September 1994

**Invited Talks:**

- 2016 Science/Faith Alliance (San Diego, CA): Gave talk and led discussion with local science educators about teaching responsively in a science classroom, October 2016
- 2014 Mission Hills, United Church of Christ (San Diego, CA): Gave talk and led discussion entitled "*Reconciling Faith and Biological Evolution*" with colleague April Cordero Maskiewicz (PLNU), June 2014
- 2014 University City, United Church of Christ (San Diego, CA): Gave talk and led discussion entitled "*Reconciling Faith and Biological Evolution*" with colleague April Cordero Maskiewicz (PLNU), April 2014
- 2011 Johnson STEM Magnet School (San Diego, CA): Shared thoughts about being a scientist and a science educator with second graders for Career Day, June 2011.

**Master's theses directed:**

- 2017 Andrade, J. Promoting the implementation of high school parent educational workshops among the Hispanic community. Master's thesis, Point Loma Nazarene University, San Diego, CA, December 2017.
- 2017 Christiansen, L. Competition in middle school physical education. Master's thesis, Point Loma Nazarene University, San Diego, CA, August 2017.
- 2017 Rodgers, E. Teachers' attitudes towards visual arts assessment: A study examining the state of current visual arts assessment in high schools. Master's thesis, Point Loma Nazarene University, San Diego, CA, August 2017.
- 2017 Sanders, R. The effect of drawing (as a writing tool to construct meaning) on the reading comprehension of third graders. Master's thesis, Point Loma Nazarene University, San Diego, CA, August 2017.
- 2017 Coletti, M. Implementation of differentiation in inclusive classrooms. Master's thesis, Point Loma Nazarene University, San Diego, CA, March 2017.
- 2016 Malapit, K. Effects of a self-monitoring intervention on homework completion and accuracy. Master's thesis, Point Loma Nazarene University, San Diego, CA, December 2016.

- 2016 Booth, C. Student perspectives of motivation in math review. Master's thesis, Point Loma Nazarene University, San Diego, CA, August 2016.
- 2016 Clabaugh, C. Traditional vs. digital literacy methods and their effect on early childhood literacy development. Master's thesis, Point Loma Nazarene University, San Diego, CA, August 2016.
- 2016 Lopez, R. Early childhood education programs' correlation to student behavior. Master's thesis, Point Loma Nazarene University, San Diego, CA, May 2016.
- 2016 Vallo, V. The effects of flashcard drilling on sight word recognition in kindergarten. Master's thesis, Point Loma Nazarene University, San Diego, CA, May 2016.

**Professional Organizations:**

- American Educational Research Association (AERA) - member
- National Association of Biology Teachers (NABT) - member
- National Council of Teachers of Mathematics (NCTM) - member
- National Science Teachers Association (NSTA) – member

**Professional Service:**

Board of Institutional Review (BIR) member for the California Commission for Teacher Credentialing (CTC): Reviewer for preliminary alignment for multiple-subject and single-subject credentialing institutions

Manuscript reviewer for peer-reviewed journals:

- *Teacher Education Quarterly (TEQ)*
- *Journal for Research in Mathematics Education (JRME)*
- *BioScience*

Facilitator for California Teacher Summit discussion groups (PLNU site)