

Laura A. Shafer
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EDUCATION

- University of California**, Davis, CA 2017
Graduate School of Education
September 2017
Ph.D., Science Education
Dissertation Title: *Professional Development for NGSS Science Practices-based Instruction: Understanding the design and facilitation of learning experiences for science teachers created by teacher leaders*
Committee Members, Cynthia Passmore (chair), Rebecca Ambrose, Rick Pomeroy
- University of California**, Davis, CA 2011
M.A., Science Education
Thesis Topic: *Metacognitive strategies supporting problem solving in Chemistry*
- University of California**, Davis, CA 2010
California Single Subject Credential,
Authorizations for English learners, Science Grades 7-8 and Secondary Science Biology and Chemistry
- Hood College**, Frederick, MD 1987
B.A., Biology,

EXPERIENCE

- Knowles Teaching Initiative** 2018-present
Program Officer for Teacher Development
- Implement the mission of the Knowles Teaching Initiative to support exceptional early career teachers in becoming agents of educational improvement who positively influence mathematics and science education across the county.
 - Work with a team to plan, direct, coordinate and evaluate the Teaching Fellow Program in the assigned years and support Fellows in accordance with the Knowles Teaching Initiative's mission and intention of the Knowles Teaching Initiatives Board of Trustees.

Program Manager, Sacramento Area Science Project

- Developed and maintained connections of support and a culture of collaboration with school districts and county offices of education in the greater Sacramento region
- Developed scopes of work and budgets for professional development workshop series for K-12 educators, administrators, county offices of education, and language resource personnel to support understanding and implementation of NGSS and the integration of CCSS
- Developed and coordinated teacher leadership capacity for co-constructing and facilitating professional development workshop series for K-12 educators, administrators, county offices of education, and language resource personnel to support understanding and implementation of NGSS and the integration of CCSS
- Designed and facilitated professional development workshop series for K-12 educators, administrators and language resource personnel to support understanding and implementation of NGSS and integration of CCSS
 - Solano County Office of Education (2017)
(18 hours) K-12 teachers
 - Fairfield-Suisun Joint Unified School District (2015-2017)
(35 hours) K-12 educators and K-12 administrators
 - Vallejo City Unified School District (2016-2017)
(40 hours) K-12 educators
 - San Juan School District (2016-2017)
(40 hours) K-12 teachers
 - Woodland Joint Unified School District (2016)
(16 hours) English Language Specialists and k-6 educators
 - Dixon Joint Unified (2016)
(4 hours) K-6 educators
 - Roseville City School District (2016)
(7 hours) 6-8 educators
 - Vacaville Unified School District (2015-2016)
(24 hours) k-12 educators

Dinner with a Scientist (DWAS) Program Coordinator, A partnership with Sacramento Area Science Project, University of CA, Davis and The Powerhouse Science Center, Sacramento, CA

- Establish venues and funding through registration and philanthropic funds to coordinate efforts that provide a unique opportunity for hundreds of junior high and high school students in the greater Sacramento region to identify first hand what it means to “do” science and begin to see themselves not just as critical consumers of science but to acknowledge the possibilities and realities of becoming a scientist themselves
- Place secondary science teachers in direct contact with university, industry, and businesses that employ people in the STEM fields and collaborate with Career Technical Education (CTE) programs in our region

- Strengthen our visibility and partnerships with businesses such as Genentech, Hewlett-Packard, Invers Limit, PASCO scientific, Bayer Crop Science, California Environmental Protection Agency, and local media station

Teacher Lesson Study Team Facilitator iiSEE Project Integrating Science and Engineering Education (iSEE) Project (iSEE; PI: Dr. Judi Kusnick)-A professional development program designed to assist teachers and the school district in the implementation of Next Generation Science Standards (NGSS) with an emphasis on the inclusion of engineering education.

- Coordinated four teacher lesson study teams (Biology, two Chemistry, sixth grade science)
- Logged, recorded and moderated teachers' conversations during lesson design meetings
- Provided appropriate resources required for lesson study
- Recorded classroom instruction
- Facilitated debriefing of classroom instruction

Graduate Student Researcher,

Innovations in STEM Teaching and Research Project (ISTAR);PI: Dr. Cynthia Passmore)-A partnership of university scholars and thirty K-12 teachers to collaboratively understand the intersection between the Next Generation science and engineering practices (NGSS) and the mathematical reasoning practices as laid out in Common Core State Standards (CCSS)

- Developed pre-and post- observation interview protocol aimed at understanding how teacher-collaborators' instruction changed during participation in the project.
- Facilitated, recorded, and analyzed teacher lesson design meetings.
- Recorded and analyzed classroom instruction
- Co-constructed a web site (see www.practices-resource.com) to serve as a platform to promote discussions among educators about approaches to instruction and to provide strategies for more authentic ways to engage students in NGSS and CCSS
- Fostered a culture of collaboration between university scholars and K-12 public school educators

Workshop Consultant

2015-present

- Super Science in the River City May (2017) *NGSS Intermediate: Exploring phenomena through the lens of multiple crosscutting concepts.*
- Super Science in the River City May (2017) *Interactions with Energy: Developing and using evidence based models to show relationships in systems. Exploring transfers of energy in systems and the outcomes of those transfers.*
- Science in the River City January (2017) *NGSS: Understanding the learning progressions of MSPS1B and HSPS1B Chemical Reaction Processes*

- Integrating Science and Engineering Education (iSEE) Project Summer Institute July (2016): *Crosscutting Concepts: Designing a 3-dimensional learning experience*
- Science in the River City Summer Institute June (2016) *Crosscutting Concepts: An introduction to K-12 grade level learning progressions*
- Science in the River City Summer Institute June (2016) *Design Team Room Host: Facilitated teacher NGSS lesson design meetings*
- Science in the River City Summer Institute June (2016) *Welcome Presentation: NGSS innovations in science instruction progress*
- Science in the River City Summer Institute June (2016) *Closing Card Sort: Identification of instructional shifts to support an equitable classroom culture in the context of NGSS*
- Super Science in the River City May (2016) *Scientific Phenomena: Entry points to lesson design 1.) Applying scientific principles and evidence to construct explanations about the effects of changing temperature or concentration on the rate of reactions 2.) Engaging student in reasoning that focuses on the number and energy of collisions between molecules 3.) Emphasizing dialogue and writing strategies to support student communication of explanations*
- Super Science in the River City May (2016) *NGSS: Intermediate session examining the NGSS science and engineering practice progressions*
- Science in the River City March (2015) *Structure and Function: Through the lens of Sickle Cell disease.*

TEACHING EXPERIENCE

University of California, Davis, CA

Teacher Supervisor: Science Cohort 2016-2018
 Provided supervision for six pre-service teacher candidates in a variety of field placements—Physics, Biology, Chemistry, seventh grade life and eighth grade physical sciences. Utilized appropriate technologies to provide and coordinate immediate feedback for pre-service teacher candidates. Developed and implemented approaches for working individually and collectively with resident mentor teachers.

Teaching Assistant Spring 2015
 Introduction to Schools: EDU 100-graded and provided individual feedback on class assignments. Designed and implemented Constructivists school curriculum.

Teaching Assistant Winter 2014
 Inquiry into Classroom Practice: Traditions and Approaches EDU 206A-Graded and provided individual feedback on study in action research projects and facilitated the development of teacher action research projects.

Teaching Assistant Fall 2013
 Education Psychology: Learning human development and schools EDU110-Graded and provided individual feedback on class assignments.

Fairfield High School, Fairfield CA 2012-2015

High School Science Teacher

Honors Biology, Biology, Honors Chemistry, and Chemistry

Created an equitable classroom culture by developing and implementing a thematic Biology NGSS science practices-based curriculum that provided access and relevance for all students while increasing the rigor of student learning outcomes.

Designed and implemented NGSS science practice-based instruction for Chemistry students that engaged students in figuring out real world phenomena to build their own understanding of core Chemistry concepts. Provided curricular design support for colleagues in my district by offering a series of professional development workshops. Facilitated weekly collaborations with colleagues.

Rodriquez High School, Fairfield, CA 2011-2012

High School Science Teacher

Integrated Science and Conceptual Physics

Developed inquiry based lessons that used real world phenomena as access points for developing an understanding of core science concepts. Developed and facilitated after school tutoring sessions for all science students. Participated in district wide pacing guide committee. Developed district wide summative assessments.

Fairfield High School, Fairfield, CA 2010-2011

High School Science Teacher

Conceptual Physics and Chemistry

Developed inquiry based lessons that used real world phenomena as access points for developing an understanding of core science concepts. Served on committee for the development of STEM professional learning community to establish a STEM learning sequence.

SCIENCE RESEARCH EXPERIENCE

Veterans Administration, Washington D.C. 1991-1995

Molecular Biology Research Assistant

Isolated genes encoding early liver specific regulatory factors responsible for hepatocyte formation. Completed embryonic mouse dissections, constructed cDNA libraries, isolated and sequenced subtractive clones. Facilitated small group learning sessions analyzing scientific literature and laboratory procedures to promote scientific inquiry.

Johns Hopkins University, Baltimore, MD 1987-1991

Molecular Biology Research Assistant

Characterized the type I insulin-like growth factor by isolating overlapping genomic clones from human placental cDNA library. Sequenced unique clones for mapping of SM/IGF binding site. Prepared anti-peptide antibodies in rabbits representing suspected

SM/IGF binding sites. Synthesized peptides representing rat type I receptor and the location of binding site of human type (III) receptor.

PUBLICATIONS

Shafer, L., and Passmore, C. (*in preparation*) Examining the Knowledge Pathways Teacher Leaders Access: Designing and facilitating professional development around NGSS science practices-based instruction.

Forsythe E, Voyles N, Shafer L., Mishra B, Sidaway A, Korman L, Mishra L. 1995. Growth inhibition of a human colon cancer cell line by antisense oligonucleotides to IGFBP-2, *Gastroenterology*, (108) 4

Mishra L, Shafer L., Voyles, N Mishra B, Gearhart J, Mezey E. 1993. Characterization of a novel stage-specific gene (SC32) isolated from developing liver. *Gastroenterology*, (104) 4

Cooke, D. Bankert L., Roberts, C.T., LeRoith, D., Casella, S. 1991. Analysis of the human type I insulin-like growth factor receptor promoter region. *Biochemical and Biophysical Research Communications* (177) 3

CONFERENCE PRESENTATIONS

Examining the Instantiation of Teacher Leader Knowledge During the Enactment of Professional Development, Paper presentation at the National Association for Research in Science Teaching Conference, San Antonio, TX, April 2017

Professional Development for NGSS Science Practices-based Instruction: Understanding the design and facilitation of learning experiences created by teacher leaders for science educators, Presentation at The Graduate Group in Education Research Seminar, Davis, CA, November, 2016

Examining Knowledge Pathways Teacher Leaders Leverage: Designing and facilitating professional development around NGSS science-practices based instruction, Paper presentation at the National Association for Research in Science Teaching Conference, Baltimore, MD, April 2016

Documenting, Characterizing, and Understanding Science Teacher Growth and Learning in the Context of NGSS, Paper presentation at the National Association for Research in Science Teaching Conference, Baltimore, MD, April 2016

Innovative Approaches to NGSS Lesson Design, Presentation at The California Science Teacher Association Conference, Sacramento, CA, October 2015

Supporting Teachers in Scientific Practices: Designing in-person and digital learning environments for teachers, Symposium presentation at the National Association for Research in Science Teaching Conference, Chicago, IL, April 2015

Activity Before Content: Connecting classroom instruction to real world examples.
Presentation at the California Science Teacher Association Conference. San Jose, CA,
October 2012

Stoichiometry: A Stumbling Block for Students. Presentation at the California Science Teacher
Association Conference Pasadena, CA, October 2011

Characterization of SC32, a novel marker identifying early liver development. Paper
presentation at the Molecular Genetics of Development Symposium, Airle, VA, April 1994

FELLOWSHIPS AND AWARDS

UC Davis Graduate Group in Education Scholarly Promise Award (2017)
UC Davis Graduate Group in Education Travel Award (2016-2015)
UC Davis Graduate Group in Education Fellowship Award (2014-2013)
Payne Scholarship Award (2010)