Danielle B. Harlow

Associate Professor, Science Education,
Gevirtz Graduate School of Education
University of California, Santa Barbara, CA 93106-9490
dharlow@education.ucsb.edu
http://education.ucsb.edu/harlow

Education

2007	Ph.D.	Instruction and Curriculum – Science, University of Colorado, Boulder Dissertation: *From learning science to teaching science: What transfers?*
1998	M.S.	Geophysics, 1998, Stanford University, Stanford, CA
1996	B.S.	Physics, Valparaiso University, Valparaiso, IN

Professional Experience

2014-present	Associate Professor, Department of Education, UC-Santa Barbara
2007-2014	Assistant Professor, Department of Education, UC-Santa Barbara
1999-2001	Physics Teacher (Peace Corps Volunteer), Minaki Sekondari, Tanzania
1998-1999	Instructor, Department of Physics, University of Arizona

RESEARCH

Publications (*Student co-authors, **K-12 teacher co-authors)

[42] **Harlow, D.,** & *Hansen, A., Balancing collaborative and individual work: An example of a school-based maker education project. Presented at *FabLearn 2015*. Stanford, CA Sept 26-27, 2015.

[41] **Harlow, D**., *Dwyer, H., *Hansen, A. K. *Hill, C., *Iveland, A., *Leak, A., Franklin, D**.,** (in press). Computer programming in elementary and middle school: Connections across content. In M. Urban and D. Falvo (Eds.) *Improving K-12 STEM educational outcomes through technological integration.* Hershey, PA: IGI Global.

[40] *Dwyer, H., *Hill, C., *Killian, A., *Iveland, A., Franklin, D., **Harlow, D**., (in press). How students read block-based programs: Predictions, Visual Cues, and Affordances. *To be presented at the International Computing Education (ICER) Conference.*

[39] **Harlow, D.,** & *Leak, A., (in press) Points of coherence: Leveraging teaching strategies from multiple content areas to teach elementary school science. *International Electronic Journal of Elementary Education.* March.

[38] *Killian, A, *Dwyer, H., *Hill, C., *Iveland, A., **Harlow, D.,** Franklin, D. (2015, June). Interactive design by children: A construct map for programming. Proceedings of *ACM SIGCHI - Interactional Design for Children (IDC*), Boston, MA. p. 267-270. doi: 10.1145/2771839.2771893

[37] *Killian, A., * Iveland, A., *Dwyer, H. Franklin, D. & **Harlow, D.** (in press). Programming science digital stories: Computer science and engineering design in the science classroom, *Science and Children.*

[36] *Emery, K., **Harlow, D**., Whitmer, A., & Gains, S. (2015). Confronting Ambiguity in Science. *The Science Teacher*. February 2015.

[35] *Hill, C., *Dwyer, H., *Martinez, T., **Harlow, D.,** Franklin, D. (2015) Floors and Flexibility: A block based programming environment for 4th-6th grade. *ACM Special Interest Group Computer Science Education (SIGCSE) 2015 proceedings.*

[34] Franklin, D., *Hill, C., *Dwyer, H., *Killian, A., *Iveland, A., **Harlow, D.** (2015) Getting started researching and teaching computer science in upper elementary school. *ACM Special Interest Group Computer Science Education (SIGCSE) 2015 proceedings.*

[33] Goldberg, F., Robinson, S., Price, E., **Harlow, D. B.** and McKean, M. (2014). *Learning Physics*. Montezuma Publishing, San Diego State University, San Diego, CA.

[32] **Harlow, D**., & *Leak, A. (2014). Mapping the development of students' ideas in order to understand learning in a collaborative programming environment, *Computer Science Education*. 24:2-3, 229-247, doi: 10.1080/08993408.2014.963360 (available at http://escholarship.org/uc/item/258730k0)

[31] Franklin, D., **Harlow, D.** & the Octopi Team (2014). Kids Enjoying Learning Programming (KELP-CS) – Module 1. A computer science curriculum for elementary school students. http:s//discover.cs.ucsb.edu/kelpcs/educators.html

[30] Price, E., Goldberg, F., Robinson, S., **Harlow, D**., McKean, M., *Keene, S, & *Czarnocki, K. (2014). Development and evaluation of a large-enrollment active-learning physics curriculum. *Proceedings of the 2013 Physics Education Research Conference.* Doi: 10.1119/perc.2013.pr.059

[29] *Dwyer, H., *Hill, C., *Carpenter, S., **Harlow, D.,** & Franklin, D., (2014). Identifying Elementary Students' Pre-Instructional Ability to Develop Algorithms and Step-by-step Instructions. ACM Special Interest Group Computer Science Education (SIGCSE), 2014 Proceedings, 511-516. 10.1145/2538862.2538905

[28] **Harlow, D.,** (2013). Engineering design thinking: A new goal for all children. *Santa Barbara Independent,* November 20, 2013, available at http://www.independent.com/news/2013/nov/20/engineering-design-thinking-new-goal-all-children/

[27] *Dwyer, H**.,** *Boe, B., *Hill, C., Franklin, D., & **Harlow, D.** (2014). Computational Thinking for Physics: Programming Models of Physics Phenomenon in Elementary School. *Proceedings of the 2013 Physics Education Research Conference.* American Association of Physics Teachers. 133-136, doi: 10.1119/perc.2013.pr.021 (available at http://www.escholarship.org/uc/item/1xm9t73x)

[26] **Harlow, D.,** Bianchini, J., *Swanson, L., & *Dwyer, H. (2013). Potential teachers' understanding of model-based science instruction: A knowledge in pieces approach. *Journal of Research in Science Teaching (JRST),* 50(9) 1098-1126. doi: 10.1002/tea.21108

[25] *Swanson, L. & **Harlow, D**. (2013). Using video of children as anchors in an online forum for elementary school teachers: A tool for positioning oneself as knowledgeable

about physics. *Contemporary Issues in Technology and Teacher Education – Science, 13(3), 219-241.* http://www.citejournal.org/vol13/iss3/science/article1.cfm

[24] **Harlow, D.**, Nylund-Gibson, K., *Iveland, A., *Taylor, L. (2013). Secondary students' views of the role of creativity in engineering and art: A latent class analysis. *Creative Education*, *4*(5). 315-321. doi; 10.4236/ce.2013.45047

[23] **Harlow, D.** (2013). An investigation of how a physics professional development course influenced the teaching practices of five elementary school teachers. Advance online publication. *Journal of Science Teacher Education.* doi: 10.1007/s10972-013-9346-z

Print edition: **Harlow, D.** (2014). An investigation of how a physics professional development course influenced the teaching practices of five elementary school teachers. *Journal of Science Teacher Education.* 25(1), 119-139. doi: 10.1007/s10972-013-9346-z

[22] **Harlow, D.,** *Swanson, L., & Otero, V. (2012). Prospective elementary teachers' analysis of children's science talk in an undergraduate physics course. Advance online publication. *Journal of Science Teacher Education.* doi: 10.0007/s10972-012-09319-7

Print edition: **Harlow, D.,** *Swanson, L., & Otero, V. (2014). Prospective elementary teachers' analysis of children's science talk in an undergraduate physics course. *Journal of Science Teacher Education,* 25(1), 97-117. doi: 10.0007/s10972-012-09319-7

[21] Goldberg, F., Price, E., Robinson, S., **Harlow, D**., McKean, M. (2012). Developing the learning physical science curriculum: Adapting a small enrollment, laboratory and discussion based physical science course for large enrollments. *Physical Review Special Topics-PER*, 8, 010121. doi: 10.1103/PhysRevSTPER.8.010121

[20] Goldberg, F., Robinson, S., Price, E., Kruse, R., **Harlow, D.** (2012). *Learning Physical Science (LEPS*). Mt. Kisco, NY: It's About Time.

[19] **Harlow, D.** (2012). The excitement and wonder of teaching science: What pre-service teachers learn from facilitating family science nights. *Journal of Science Teacher Education, 23*, 199-220. doi: 10.1007/s10972-012-9264-5

[18] *Stewart, A., **Harlow, D.** & DeBacco, K. (2011). Students' experience of synchronous learning in distributed environments. *Distance Education*, *32*(3), 357-381. doi: 10.1080/01587919.2011.610289

[17] **Harlow, D.,** & *Nilsen, K. (2011). Virtual Inquiry Experiences. *Science and Children*, *49*(4), 42-45.

[16] **Harlow, D.,** *Swanson, L., Nylund-Gibson, K., & *Truxler, A. (2011) Using latent class analysis to analyze children's responses to the question, "What is a day?" *Science Education*, 95 (3), 477-496. doi: 10.1002/sce.20437

[15] **Harlow, D.** (2010). Structures and improvisation in inquiry-based instruction: a teacher's adaptation of a model of magnetism activity. *Science Education*, *94* (1), 142-163. doi: 10.1002/sce.20348.

[14] **Harlow, D**. (2010) Uncovering the Hidden Decisions that Shape Curricula. *Proceedings of the 2010 Physics Education Research Conference*. Melville, NY: AIP Conference Proceedings.

[13] **Harlow, D**., *Swanson, L., *Dwyer, H., & Bianchini, J. (2010). Learning Pedagogy in Physics. *Proceedings of the 2010 Physics Education Research Conference*. Melville, NY: AIP Conference Proceedings.

[12] Goldberg, F., Price, E., **Harlow, D.,** Robinson, S., Kruse R., McKean, M., A. (2010) Development and Evaluation of a Large Enrollment, Active Learning Physical Science Curriculum. *Proceedings of the 2010 Physics Education Research Conference*. Melville, NY: AIP Conference Proceedings. (Finalist for best paper award)

[11] Otero, V. & **Harlow, D.** (2009). Getting started in qualitative physics education research, in C. Henderson and K. Harper (Eds.) *Getting Started in PER*, *Reviews in PER Vol. 2*. College Park, MD: American Association of Physics Teachers. http://www.compadre.org/PER/document/ServeFile.cfm?ID=9122&DocID=1218

[10] **Harlow, D.,** & *Swanson, L. (2009). Positioning ideas: Creating and relating physics identities through video analysis.. *Proceedings of the 2009 Physics Education Research Conference.* Melville, NY: AIP Conference Proceedings.

[9] **Harlow, D.** (2008). How elementary teachers use what we teach. *Proceedings of the 2007 Physics Education Research Conference.* Melville, NY: AIP Conference Proceedings.

[8] **Harlow, D.** (2007). *Elementary science and everyday thinking: K-5 activities to supplement PET and PSET*. Armonk, NY: It's About Time.

[7] **Harlow, D**., & Otero, V. (2007). Beyond concepts: Transfer from inquiry-based physics to elementary classrooms. *Proceedings of the 2006 Physics Education Research Conference*. Melville, NY: AIP Conference Proceedings.

[6] **Harlow, D.,** & Otero, V. (2006). Talking to learn physics and learning to talk physics. *Proceedings of the 2005 Physics Education Research Conference*. Melville, NY: AIP Conference Proceedings.

[5] **Harlow, D. B**., & Otero, V. K. (2005). Collaboration physics. *Science and Children*, *43*(5), 31-35.

[4] Otero, V., Peressini, D., Anderson, K., Ford, P., Garvin, T., **Harlow, D**., Mears, C., Reidel, M., Waite, B. (2005). Integrating technology into teacher education: A critical framework for implementing reform, *Journal of Teacher Education*, *56*(1), 8-23. doi: 10.1177/0022487104272055

[3] **Harlow, D.,** & Otero, V. (2005). Learning physics by listening to children. *Proceedings of the 2004 Physics Education Research Conference*. Melville, NY: AIP Conference Proceedings.

[2] **Harlow, D.,** & Otero, V. (2004). An examination of children's scientific argumentation. *Proceedings of the 2003 Physics Education Research Conference*. Melville, NY: AIP Conference Proceedings.

[1] Hunter, D., **Boyd[1], D.,** Hawley, W. (1995) The massive star populations in ionized gas shells in M33 and M31. *Astrophysics Journal Supplement*, *99*, 551-563.

PRESENTATIONS

Invited Presentations

[20] **Harlow, D.** (2015, March). *Preparing The Next Generation of Innovators with the Next Generation Science Standards.* Invited plenary talk at MRL RET Professional Development, Santa Barbara, CA.

[19] **Harlow, D.** (2015, January). *Learning about teaching and learning in Next Generation PET.* Invited presentation at the meeting of the American Association of Physics Teachers (AAPT), San Diego, CA.

[18] **Harlow, D.** (2014, February). *STEM Ed 2.0: Thinking Differently about Science, Technology, Engineering, and Math EDUCATION.* Invited talk at UCSB Trustees event, Santa Barbara, CA.

[17] **Harlow, D.** (2013, July). Innovation, Inquiry, Improvisation and Integration. Invited talk at MRL RET Professional Development, Santa Barbara, CA.

[16] **Harlow, D.** (2013, May). *Teachers: Scientists of students' ideas and engineers of students' learning.* Invited colloquium talk at California State Polytechnic University, Pomona, CA.

[15] **Harlow, D.** (2013, April). *Exhibits 50% presentation and discussion.* Invited talk to Santa Barbara Children's Museum Board and Committees, Santa Barbara, CA.

[14] **Harlow, D.** (2013, March). *How the Santa Barbara Children's Museum will support students' success with the Next Generation Science Standards.* Invited talk to Santa Barbara Children's Museum Board, Santa Barbara, CA.

[13] **Harlow, D.** (2013, January). *Once upon a data set: Representation and creativity*. Invited presentation at the meeting of the American Association of Physics Teachers (AAPT), New Orleans, LA.

[12] **Harlow, D.** & Johnson, S. (2012, October). *Is it magic? No, it's science.* Harding University Partnership School visit, Santa Barbara, CA.

[11] Bianchini, J. A., **Harlow, D. B**., Lewin, B., & Johnson, S. (2012, April). *What is current in K-12 STEM education*? Invited symposium conducted at All Gaucho Weekend, University of California, Santa Barbara, CA.

[10] **Harlow, D.,** & Johnson, S. (2011, July). *Changing cookbook laboratories to inquiry.* School for scientific thought workshop, Santa Barbara, CA.

[9] **Harlow, D**. (2010, July). *Inspiring and inquiring: Insights from teaching teachers for teaching general education physics and astronomy.* Invited colloquium talk at the University of Montana, Missoula, MT.

[1] Maiden name is Danielle Marie Boyd

[8] **Harlow, D**. (2010, July). *Uncovering the hidden decisions that shape curricula*. Invited plenary talk at the Physics Education Research Conference (PERC) and the meeting of the American Association of Physics Teachers (AAPT) Bridging Session, Portland, OR.

[7] Green, J., **Harlow, D.,** *Frame, A. (2010, May). *Students' learning complex ideas in innovative technology-enabled contexts*. Presentation to the California Council of Science and Technology.

[6] **Harlow, D**., Kok, R., & Lippencot, A. (2009, October). *Content Area Tasks*. Invited panel discussion at the Performance Assessment for California Teachers (PACT) Conference, Santa Barbara, CA.

[5] **Harlow, D.** (2009, June). *Teaching for the year 2027: Creativity, inquiry, and improvisation*. Invited plenary talk at the Frontiers and Foundations of Physics Education Research (FFPER) conference, Bar Harbor, ME.

[4] **Harlow, D.** (2009, June). *Pulled by questions, pushed by theory: The forces on my research*. Invited talk at the Frontiers and Foundations of Physics Education Research (FFPER) conference, Bar Harbor, ME.

[3] **Harlow, D.,** & *Kang, E. (2008, November). *Developing MST mini-PACT: Assessment in Science*. Invited presentation at the Performance Assessment for California Teachers (PACT) Conference, Santa Barbara, CA.

[2] Otero, V., & **Harlow, D.** (2008, July). *Getting started in physics education research: Qualitative methods*. Invited talk at the meeting of the American Association for Physics Teachers (AAPT), Edmonton, Canada.

[1] **Harlow, D.** (2004, August). *Teaching and learning in a Tanzanian physics class*. Invited talk at the American Association of Physics Teachers (AAPT) conference, Sacramento, CA.

Peer-Reviewed Presentations

[31] **Harlow, D.,** & *Hansen, A., Balancing collaborative and individual work: An example of a school-based maker education project. Presented at *FabLearn 2015*. Stanford, CA Sept 26-27, 2015.

[30] *Leak, A., *Farag, M., & **Harlow, D**. (2015). From interest to inquiry: Leveraging student interest to teach science practices in Kenya. Paper presented at NARST, Chicago, IL.

[29] *Kalainoff, M., Neff, G., & **Harlow, D**. (2015). Group interactions contributing to differential opportunities for learning in a general chemistry studio learning environment. Paper presented at NARST, Chicago, IL.

[28] *Nilsen, K., & **Harlow, D**. (2015). University Students' Place-Based Teaching Practices in an Outreach Program. Paper presented at the Annual Meeting of the American Educational Research Association (AERA), Chicago, IL.

[27] *Dwyer, H. A, *Iveland, A., *Killian, A., *Hill, C., Franklin, D., & **Harlow, D**. (2015). Programming languages and discourse: investigating the linguistic context in learning

computer science during elementary school. Paper presented at the Annual Meeting of the American Educational Research Association (AERA), Chicago, IL. (Nominated for Annual Best Poster Award)

[26] *Hill, C., *Dwyer, H., *Martinez, T., **Harlow, D.,** Franklin, D., (2015) Floors and Flexibility: A block based programming environment for 4th-6th grade. ACM Special Interest Group Computer Science Education (SIGCSE) 2015 March, 2015, Kansas City, MO.

[25] *Hill, C., *Dwyer, H., **Harlow, D.,** Franklin, D., (2015) Getting started researching and teaching computer science in upper elementary school. ACM Special Interest Group Computer Science Education (SIGCSE) 2015 proceedings. March, 2015, Kansas City, MO.

[24] *Adam, G., **Harlow, D.** *Dominguez, V. (2014). What motivates STEM teachers to attend professional development? A case study in Chilean high schools. presented at *Frontiers in Education Conference,* October 22-25, 2014, Madrid, Spain.

[23] *Hill, C., **Harlow, D**., & Franklin, D. (2014). La Playa: A programming environment for elementary school classes, SoCal_CWIC, April 5-6, Carlsbad, CA.

[22] *Nilsen, K., *Iveland, A., *Stewart, E., Bianchini, J., **Harlow, D.,** & Thorsh, J. (2014). *Undergradates' cognitive resources for understanding environmental literacy,* presentation at National Association for Research in Science Teaching (NARST), Pittsburgh, PA, March 30-April 2., 2014.

[21] *Dwyer, H., *Hill, C., *Carpenter, S., **Harlow, D.,** & Franklin, D., (2014) Identifying elementary students' pre-instructional ability to develop algorithms and step-by-step instructions. ACM Special Interest Group – Computer Science Education (SIGSCE), March, 2014, Atlanta, GA.

[20] Bianchini, J., **Harlow, D.,** *Iveland, A., *Nilsen, K., *Stewart, E., Figuero, L., Feldwinn, D., Gautier, C., Johnson, S., & Thorsh, J. (2013, April). *Undergraduates' cognitive resources for understanding environmental literacy*. Presentation at the American Educational Research Association (AERA), San Francisco, CA.

[19] *Kalainoff, M**.,** Neff, G., Green, J., & **Harlow, D.** (2013, March). *How lecture and lab functions are integrated in an undergraduate general chemistry studio learning environment*. Presentation at the General Chemistry Symposium, Cleveland, OH.

[18] *Nilsen, K., & **Harlow, D.** (2012, April). *Children learning technical design with physical and digital robots*. Presentation at the annual meeting of the American Educational Research Association, (AERA), Vancouver, Canada.

[17] **Harlow, D**., & *Emerson, A. (2012, April). *The shape of idea flow: 3rd grade students' sharing ideas developed through Logo programming*. Presentation at the annual meeting of the American Educational Research Association (AERA), Vancouver, Canada.

[16] **Harlow, D.,** *Swanson, L., *Dwyer, H., & Bianchini, J. (2011, April). *Integrating pedagogy and content in an undergraduate physics course: What was learned?* Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST), Orlando, FL.

[15] *Nilsen, K., **Harlow, D**., Lahey, B., & Burleson, W. (2011, April). *Children learning technological design and engaging in problem solving with an ALERT robot.* Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST), Orlando, FL.

[14] *Emerson, A., **Harlow, D**., & *Byar, A. (2011, April). *Moving and making ideas: Students using XO laptops to create, discover, and share ideas*. Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST), Orlando, FL.

[13] *Nilsen, K., & **Harlow, D.** (2011, April). *Children learning technological design with an ALERT Robot*, presentation at the meeting of the American Educational Research Association (AERA), New Orleans, LA.

[12] *Frame, A., *Nilsen K., & **Harlow, D**. (2011, April). *Synchronous learning in distributed spaces: Students' experiences in a graduate education program*, presentation at the meeting of the American Educational Research Association (AERA), New Orleans, LA.

[11] **Harlow, D.,** *Swanson, L., *Truxler, A., & **Puglisi, J. (2009, April). *"A day is when I play:" How 1st-8th grade students understand the word "day."* Presentation at the annual meeting of the American Educational Research Association (AERA), San Diego, CA.

[10] **Harlow, D**. (2009, April). *Improvising inquiry: the knowledge required to engage students in model-building*. Presentation at the annual meeting of the American Educational Research Association (AERA), San Diego, CA.

[9] **Harlow, D.** (2009, April). *Improvising Inquiry: the knowledge required to engage students in model-building*. Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST), Orange County, CA.

[8] Otero, V. & **Harlow, D.** (2008, April). *Evolution of students' model building practices*. Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST), Baltimore, MD.

[7] **Harlow, D.** (2008, April). From learning science to teaching science: What transfers? Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST) National Meeting, Baltimore, MD.

[6] Otero, V. & **Harlow, D.** (2008, April). *Evolution of students' model building practices*. Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST), Baltimore, MD.

[5] **Harlow, D.** (2008, April). *From learning science to teaching science: What transfers?* Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST) National Meeting, Baltimore, MD.

[4] Briggs, D., **Harlow, D.,** & Geil, K. (2007, April). *Measuring the flexible application of student-centered instruction*. Presentation at the annual meeting of the American Education Research (AERA), Chicago IL.

[3] Otero, V., & **Harlow, D**. (2005, March). *Classroom contexts and curricula for helping teachers develop identities as "science people."* Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST), Dallas, TX.

[2] **Harlow, D.,** & Otero, V. (2006, April). *Talking to learn physics and learning to talk physics*. Presentation at the annual meeting of the National Association for Research in Science Teaching (NARST), San Francisco, CA.

[1] Geil, K., Briggs, D., **Harlow, D**., & Otero, V. (2006, April). *Measuring sophistication of beliefs about teaching and learning*. Presentation at the annual meeting of the American Educational Research Association (AERA) National Meeting, San Francisco, CA.

Contributed Presentations

[43] **Harlow, D.,** and Franklin, D., Facilitated breakout session "K-6 Computer Science Education Research" CE-21 PI conference, January 21-22, 2015, Baltimore, MD

[42] Goldberg, F., Robinson, S., Price, E., **Harlow, D.**, Andrew, J., (2015, January). PET, PET, and LPS will become NextGenPET. *American Association of Physics Teachers.* San Diego, CA.

[41] *Carpenter, S., **Harlow, D.** (2015, January). Internships in High School STEM Academies for Undergraduate Physics Majors. *American Association of Physics Teachers.* San Diego, CA.

[40] *Leak, A., *Cheung, P., **Harlow, D.** (2015, January). How Quantum Mechanics History Informs our Understanding of Scientific Models. *American Association of Physics Teachers.* San Diego, CA.

[39] Goldberg, F., Robinson, S., Price, E., **Harlow, D.**, Andrew, J., (2015, January). Using NextGen PET to Prepare Elementary Teachers for the NGSS. *American Association of Physics Teachers.* San Diego, CA.

[38] *Law, M., *Leak, A., **Harlow, D.** (2015, January). What is your evidence? Undergraduate students' writing about changing models. *American Association of Physics Teachers.* San Diego, CA.

[37] **Harlow, D.** (2014, August). Teaching Design Thinking through Computer Science: The KELP-CS Curriculum. *KELP-CS Professional Development Workshop.* Santa Barbara, CA.

[36] Goldberg, F., Price, E., Robinson, S., **Harlow, D**., McKean, M., *Keene, S, & Czarnocki, K. (2013, July). *Including evidence in lecture-format courses: comparing videos and hands-on experiments and simulations.* Physics Education Research Conference (PERC). Portland, OR.

[35] Price, E., Goldberg, F., Robinson, S., **Harlow, D**. , McKean, M., *Keene, S, & Czarnocki, K. (2013, July). *Development and evaluation of a large-enrollment active-learning physics curriculum.* Physics Education Research Conference (PERC). Portland, OR.

[34] *Dwyer, H., *Boe, B., *Hill, C., Franklin, D., & **Harlow, D**. (2013, July). *Computational thinking for physics: programming models of physics phenomenon in elementary school.* Physics Education Research Conference (PERC). Portland, OR.

[33] **Harlow, D.,** & Nylund-Gibson, K. (2013, July). *Using latent class analysis to explore patterns of student responses in physics education research.* Physics Education Research Conference (PERC). Portland, OR.

[32] *Dwyer, H., & **Harlow**, D. (2013, July). *Using intersectionality to investigate affective reactions to college mathematics.* Poster at American Association of Physics Teachers, Portland, OR.

[31] *Emery, K., Whitmer, A., **Harlow**, D. & Gaines, S. (2012, September). *How do middle school students make decisions about socioscientific issues related to water, biodiversity and carbon?* Poster at Long Term Ecological Research All Scientists Meeting (LTER ASM*),* Estes Park, CO.

[30] **Harlow, D.** (2012, February). *Learning to identify and value children's ideas through informal science*. Presentation at the meeting of the American Association of Physics Teachers (AAPT), February 2012, Ontario, CA.

[29] *Nilsen, K., & **Harlow, D.** (2012, February). *Evaluating teacher candidates' inquiry instruction and academic language development.* Presentation at the meeting of the American Association of Physics Teachers (AAPT), Ontario, CA.

[28] *Emerson, A., & **Harlow, D**. (2012, February). *Students using XO laptops to create, discover and share ideas*. Presentation at the meeting of the American Association of Physics Teachers (AAPT), Ontario, CA.

[27] *Carpenter, S., & **Harlow, D**. (2012, February). *Teaching science processes to elementary students through outreach on motion*. Presentation at the meeting of the American Association of Physics Teachers (AAPT), Ontario, CA.

[26] *Emery, K., Whitmer, A. & **Harlow**, D. (2012, February). *Culturally Relevant Ecology, Learning Progressions, and Environmental Literacy*, Environmental Science Literacy MSP Project Winter Meeting, Santa Barbara, CA.

[25] *Emerson, A., *Collins, A., Lenaburg, L., **Harlow, D.,** Bianchini, J., & Scott, S., Graduate students' perceptions of scientific collaborations after researching in China, American Association of Physics Teachers (AAPT), July 2011, Omaha, NE.

[24] *Emerson, A. & **Harlow, D.,** Mathematics in Cameroon: from text to talk in the classroom, American Association of Physics Teachers (AAPT), July 2011, Omaha, NE.

[23] *Emerson, A., & **Harlow, D**. (2010, July). *Embracing confusion: Students' attitudes toward confusion for model-based inquiry*. Presentation at the meeting of the American Association of Physics Teachers (AAPT), Portland, OR.

[22] **Harlow, D**., *Swanson, L., *Dwyer, H., *Emerson, A, & *Moon, S. (2010, July). *Learning about teaching and learning in PET*. Presentation at the meeting of the American Association of Physics Teachers (AAPT), Portland, OR.

[21] Goldberg, F., Price, E., **Harlow, D**., Robinson, S., Kruse, R., & McKean, M. (2010, July). *A development and evaluation of a large enrollment, active learning physical science curriculum*. Presentation at the Physics Education Research Conference (PERC), Portland, OR.

[20] **Harlow, D**., Conrad, P., & *Swanson, L. (2010, February). *Playing inquiry-based science: Video games for science teachers*. Presentation at the meeting of the American Association of Physics Teachers (AAPT), Washington, DC.

[19] **Harlow, D.** (2009, July). *Professional development through parallel teaching and learning experiences*. Presentation at the meeting of the American Association of Physics Teachers (AAPT), Ann Arbor, MI.

[18] **Harlow, D**., & *Swanson, L. (2009, July). *Developing pedagogically-relevant physics content knowledge through asynchronous online discussions*. Presentation at the meeting of the Physics Education Research Conference (PERC), Ann Arbor, MI.

[17] **Harlow, D.** (2008, January). *Improvising Inquiry*. Presentation at the meeting of the American Association for Physics Teachers (AAPT), Baltimore, MD

[16] **Harlow, D.** (2007, August). *How elementary teachers use what we teach: The impact of PER at the K-5 level*. Presentation at the Physics Education Research Conference (PERC), Greensboro, NC.

[15] **Harlow, D**. (2007, July). *The impact of an inquiry-based physics course on teachers' practices*. Presentation at the meeting of the American Association for Physics Teachers (AAPT), Greensboro, NC.

[14] **Harlow, D.** (2006, July). *What do teachers learn about teaching in physics courses?* Presentation at the Physics Education Research Conference (PERC), Syracuse, NY.

[13] Otero, V., Jalovec, S., & **Harlow, D.** (2006, July). *SWOSing and models of learning that can explain it*. Presentation at the Physics Education Research Conference (PERC), Syracuse, NY.

[12] **Harlow, D.** (2006, July). *How do physics courses for teachers impact their teaching?* Presentation at the American Association for Physics Teachers (AAPT) National Meeting, Syracuse, NY.

[11] Perkins, K., McKagen, S., Adams, W., Dubson, M., **Harlow, D.,** Koch, L., Loeblein, P., & Wieman, C. (2006, July). *New developments in the PhET interactive simulations*. Presentation at the American Association for Physics Teachers (AAPT) National Meeting, Syracuse, NY.

[10] McKagen, S., Perkins, K., Adams, W., **Harlow, D**., Dubson, M., Malley, C., Reid, S., LeMaster, R., & Wieman, C. (2006, July). *Teaching quantum mechanics with PhET simulations*. Presenatation at the American Association for Physics Teachers (AAPT) National Meeting, Syracuse, NY.

[9] **Harlow, D.,** & Otero, V. (2005, August*). Learning to teach; teaching to learn: The STEM-Colorado experience*. Presentation at the American Association for Physics Teachers (AAPT) National Meeting, Salt Lake City, UT.

[8] **Harlow, D**., & Otero, V. (2005, August). *Talking to learn physics and learning to talk physics*. Presentation at the Physics Education Research Conference (PERC), Salt Lake City, UT.

[7] **Harlow, D.,** & Otero, V. (2005, January). *Analyzing children's ideas: An authentic application of physics content knowledge*. Presentation at the American Association for Physics Teachers (AAPT) National Meeting, Albuquerque NM.

[6] **Harlow, D.,** & Otero, V. (2004, August). *Learning physics by listening to children*. Presentation at the American Association for Physics Teachers (AAPT), Sacramento, CA.

[5] **Harlow, D.,** & Otero, V. (2004, January). *Changing beliefs about teaching and learning: STEM-TP Colorado*. Presentation at the meeting of the American Association of Physics Teachers (AAPT), Miami Beach, FL.

[4] **Harlow, D.** & Otero, V. (2003, August). *Can third grade students develop sophisticated conceptual models?* Presentation at the meeting of the American Association for Physics Teachers (AAPT), Madison WI.

[3] Otero, V., Cobanoglu, D., & **Harlow, D.,** (2003, January). *The subtle role of "tacit theory" in educational research*. Presentation at the American Association for Physics Teachers (AAPT) conference, Austin TX.

[2] **Harlow, D.,** & Otero, V. (2003, August). *Can third grade students develop sophisticated conceptual models?* Presentation at the Physics Education Research Conference (PERC), Madison WI.

[1] **Boyd, D.,** Hunter, D., & Hawley, W. (1995, January) *The Formation, Ionization, and Stellar Populations of Three Gas Shells in M33*. Presentation at the 185th of the American Astronomical Society (AAS) meeting, Tucson, AZ.

CONTRACTS AND GRANTS

Years	Source	Title	Amount	Role
2015-2016	UCSB	Faculty Senate: Making Meaning and Making Models, 3D printing in K-8 classrooms	$6,800	PI
2015-2016	UCSB	Faculty Outreach Grant: Teaching the Next Generation of Innovators: Computer Programming and the Next Generation Science Standards (NGSS)	$8,200	PI
2014	NSF	US-Finland Planning Visit: Transformed Social Interaction and Telecollaboration for Collaborative Learning, NSF-1427729 (10/01/14-9/31/15)	$40,791	Co-PI (PI Turk)
2014-2016	Chevron	Developing a modular NGSS-aligned undergraduate physical science curriculum, 100Kin10 grant funded by Chevron	$350,000	Co-PI (PI Goldberg)
2014-2015	NSF	2014 Supplement to CNS-1240985	$60,272	Co-PI (PI Franklin)
2014-2015	NSF	2014 REU Supplement to CNS-1240985	$16,000	Co-PI (PI

				Franklin)
2014-2015	NSF	2013 REU Supplement to CNS-1240985	$12,000	Co-PI (PI Franklin)
2013-2015	NSF	CER: Developing Elementary (Learning) Progressions to Integrate Computational Thinking (DEPICT),	$599,895	Co-PI (PI Franklin)
2012-2013	Hellman Foundation	Children's Engineering Design Thinking, Hellman Family Faculty Fellowship	$24,000	PI
2012-2013	UCSB Regents	Assessing Children's Engineering Design Thinking, UCSB Regents Junior Faculty Fellowship	$7500	PI
2011-2013	NSF	Developing a Large Enrollment Guided Inquiry Conceptual Physics Course DUE-1044172	$174,996	Co-PI (lead PI Goldberg)
2010-2011	UC	Connected Learning: Narrowing Santa Barbara's Digital Divide through the One Laptop per Child Project, University of California Faculty Outreach Grant	$19,914	PI
2008-2010	NSF	Developing an interactive undergraduate physical science course appropriate for large-enrollment format courses. National Science Foundation (CCLI-0717791)	$499,946	Co-PI (lead PI Goldberg)
2008-2009	EAF	Inquiry into Inquiry, 2008-2009, Education Advancement Foundation.	$24,000	Co-PI (lead PI Jacob)
2009-2010	UCSB Faculty Senate	Innovative Games for Engaging Teachers in Inquiry Teaching (I GET IT)	$5309	PI

TEACHING

University Teaching

University of California, Santa Barbara
Elementary Science Teaching Procedures: Science, Spring 2008-2015
Physics & Everyday Thinking: F09, W12, W14
Technology in Learning Contexts: W08, F08, W11, W12, S15
Introduction to Qualitative Research: F08, F09, F10
Introduction to Educational Research: F13, 14

University of Colorado, Boulder
Elementary Science Theory & Methods: Instructor, Fall 2005 - Spring 2007
Physics for Elementary Teachers: Instructor, Summer 2005, 2006, 2007
The Nature of Science and Science Education: Instructor, Fall 2004

University of Arizona, Tucson
Introductory Physics Laboratory: Instructor, 1998-1999

Stanford University
Science, Mathematics, and Engineering (SME) Core, Teaching Assistant Fall 1997

K-12 Teaching

Mathematics Engineering Science Achievement (MESA) Advisor, 2002-2004
Teacher, Science Discovery, Boulder, Colorado, Summer 2002, 2003
High School Physics Teacher, Tanzania, East Africa, 1999-2001
Science Teacher, NASA Scholars, Tucson, Arizona, 1998-1999
Science Teacher, Science & Environmental Education (SEED), Stanford, 1996-1998

SERVICE and LEADERSHIP

Leadership in National Organizations

2013-2014	Treasurer, Physics Education Research Leadership and Organizing Council (PERLOC)
2011-2014	Elected representative, Physics Education Research Leadership and Organizing Council (PERLOC)
2009-2011	Member, Pre-High School Committee, American Association of Physics Teachers (AAPT)
2004-2007	Member, Minorities in Physics Committee, American Association of Physics Teachers (AAPT) 2004-2007

Consulting

2015	NAEP items expert panel

Statewide Service

2009-2010	Participant in California STEM Initiative (CSI), Thinkers Group

UCSB and Department Service

2015-present	Department of Education Admission Committee member
2015 -present	UCSB Faculty grants committee
2014- present	Education Personnel committee
2014 -present	OCTOS committee on teacher professional development
2104-present	STELLER faculty mentor
2012-present	Noyce Faculty Champion
2012-2014	Advisory Board for Instructional Technology Certificate Program
2010-present	Department of Education Technology Committee member
2010-present	Center for Computing Education and Diversity member
2007-present	Science Math Initiative Curriculum Committee member
2010-2011	Emphasis Leader, Teaching & Learning
2009-2011	One Laptop per Child, UCSB faculty advisor
2008-2010	Department of Education Fellowship Committee member
2008-2009	Department representative to Faculty Legislature
2007-2008	Department of Education, Recruitment Committee member

Community Service

2014 - present	Advise Santa Barbara School District, NGSS
2011-present	Exhibits Advisor, Wolf Museum of Exploration + Innovation (MOXI)
2010-2012	Harding Elementary University Partnership Committee member
2009-2010	South Coast Science Project, professional development

Reviewing and Refereeing Activities

Reviewer, *Journal of STEM Education*
Reviewer, *Journal of Research in Science Teaching (JRST)*
Reviewer, *Science Education*
Reviewer, *Physics Education Research Conference Proceedings*
Reviewer, *Physical Review Special Topics – Physics Education Research*
Reviewer, *American Journal of Physics – PER section*
Reviewer, *Journal of Teacher Education*
Reviewer, *Chemistry Education Research and Practice*
Reviewer, National Association for Research in Science Teaching (NARST) Conference
Reviewer, American Educational Research Association (AERA) Conference
Expert Reviewer, Science Stories 3rd Edition (Elementary Science Methods Textbook, Houghton Mifflin), 2007
Expert Reviewer, Really Useful Elementary Science Book (Elementary Science Methods Textbook, Routledge), 2008
Expert Reviewer, Electronic Modules, FACET innovations, 2010

Professional Organizations

American Association of Physics Teachers (AAPT)
American Educational Research Association (AERA)
National Association for Research in Science Teaching (NARST)
National Science Teachers Association (NSTA)
Computer Science Teachers Association (CSTA)
Association of Science and Technology Centers (ASTC)

Postdoctoral Scholars

Hilary Dwyer (2014-2015), Teacher and Technology Specialist, Ojai Valley School

Ph.D. Students Advised

Sean O'Brien (co-advisor, current)
Alexandria Killian (advisor, current)
David Yale (advisor, current)
Sungmin Moon (co-advisor, current)
Maaia, Levi (co-advisor, current)
Stacey Carpenter (advisor, current)
Todd Wold (advisor, current)
Anne Emerson Leak (Ph.D., 2015) posdoc, Rochester Institute of Technology
Melinda Kalainoff (Ph.D., 2013), Faculty, West Point Military Academy
Katherine Nilsen (Ph.D., 2013), Program Manager, UC-Santa Barbara Extension
Jason Levin (Ph.D., 2012), Assistant Professor, CSU-Monterey Bay
Eva Oxelson (Ph.D., 2011), Lecturer, UCSB

M.A. Students Advised

Gina Adam (Advisor, current)
Kristy Chun (M.S., 2013)
Tara Madwick (M.S., 2010)

Ph.D. Committee Member

Jasmine McBeath
Tracy Ewing
Hannah Grossman

Ashley Iveland
Vanessa Walker
Ella Thompson
Elizabeth Sciaky
Susannah McGowan
Edward Williams
Alayna Wearly
Lorna Gonzolas
Bryce Boe (2014, Computer Science)
Jomeline Balatayo
Victoria Harvey
Ethny Stewart
Ella Thompson (2014)
Marta Silva (2013, University of Southern Chili)
Cathy Gaspard (2013, CSU-Long Beach)
Katherine Emery (2013, SBCC, UCSB)
Christine Victorino (2012, Vice Provost, UC Riverside)
Shadi Roshandel (2012, Dominican University of California)
Paul Turnbull (2011, President, Mid-Pacific Institute)
Anissa Stewart (2011, Director, UCSB-Extension)
Lauren Swanson (2011, Faculty, Whittier College)
Anne Collins (2011, Lower School Science Teacher, North Shore Country Day School)
Debra Bereki (2010)
Cheri Scripter (2010)
Emily Kang (2009), Assistant Professor Adelphi University

Visiting Scholars

Regina Kuratle (2014), Switzerland
Brian Self (2014-2015), Mechanical Engineering, Cal-Poly San Luis Obispo