

Enrique (Henry) Suárez, Ph.D.

CONTACT University of Massachusetts, Amherst easuarez@umass.edu
 College of Education, Furcolo Hall, W230
 813 N. Pleasant St. Amherst, MA, 01003 (405) 642-8983
 (413) 545-1114

ACADEMIC APPOINTMENTS Assistant Professor, Science Education. 2019 – present
 University of Massachusetts, Amherst - College of Education
 Postdoctoral Research Associate, 2017 – 2019
 Institute for Science & Math Education
 University of Washington - College of Education

EDUCATION:

PhD in Science Education CU Boulder Advisor: Dr. Valerie Otero	2017
MS in Science Education Tufts University Advisor: Dr. David Hammer	2012
BS in Astrophysics University of Oklahoma	2006

DISSERTATION:

Title	Designing Linguistically Equitable Science Learning Environments for Elementary-Aged Emerging Bilingual Students
Committee	Dr. Valerie Otero (Chair) Dr. William Penuel, Dr. Kris Gutiérrez, Dr. Eve Manz, Dr. Noah Finkelstein

HONORS AND AWARDS:

NARST Equity & Ethics Committee , Jhumki Basu Scholar.	2016 - 2017
NARST , Sandra K. Abell Institute for Doctoral Students.	July 2015
University of Colorado Boulder , Chancellor's Award for Excellence in STEM Education.	2014 - 2015
University of Colorado Boulder , School of Education PhD Scholarship.	2012 - 2013
Tufts University , Tisch Active Citizenship Fellow.	June 2011
Carnegie Mellon University , Achievement Rewards for College Scientists Scholar Award.	2008 - 2009

GRANTS:

SparkFun: Educator Mini Grant PI: Enrique Suárez US\$250 <i>ElectroBuzz Out-Of-School Science Program for Elementary-Aged Emerging Bilingual Students</i>	2016
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Purchased Electroninks® materials for investigating circuits: pens with conductive ink and other electronic components. This grant made it possible for ElectroBuzz be free of cost for participating families.

CU Boulder School of Education Conference Travel Award	2016
US\$500	2013
	2012
CU Boulder Chancellor's Award for Excellence in STEM Education	2014 - 2015
0.5 Graduate Research Appointment	
United Government of Graduate Students at CU Boulder Travel Award	2014
US\$300	
NSF: National Radio Astronomy Observatory Science Program	2010
PI: Enrique Suárez; Co-PI: Dr. Jeffrey Peterson	
US\$35,000 and 300 observation hrs at Greenbank Telescope	
<i>Study of Velocity Distortions Using 21 cm Intensity Mapping. (GBT/10B-036).</i>	

PUBLICATIONS:

- Suárez, E. (accepted). *Estoy explorando science: Translanguaging in an out-of-school science program for emerging bilingual students.* Submitted to: Science Education.
- Tzou, C., Meixi, Suárez, E., Bell, P., LaBonte, D., Starks, E., Bang, M. (2019). Storywork in STEM-Art: making, materiality and robotics within everyday acts of indigenous presence and resurgence. *Cognition & Instruction*, 37(3), 306-326
- Suárez, E. (2019). *How do we know if the glass is half full? Reflections on equity, hope, and cycles of violence.* *Cultural Studies of Science Education*, 14(2), 411-424.
- Manz, E., & Suárez, E. (2018). Supporting teachers to negotiate uncertainty for science, students, and teaching. *Science Education*, 102(4), 771-795.
- Suárez, E. (2018). Todos los caminos conducen a Roma: Sobre las diferentes estrategias que lxs estudiantes usan para comunicar sus ideas y razonamiento. *American Association of Physics Teachers Mexico Section: Boletín*, 4(2), 8-12.

PUBLISHED PROCEEDINGS:

- Suárez, E., Tzou, C., Bang, M., Meixi, Bell, P., Roque, R., Pinkard, N., Barron, B., Kennedy Martin, C., Goldman, S., Luce, M., Vea, T., Conlin, L., Gutiérrez, K. (2018). *Designing for axiological innovations within family-centered learning environments.* (pp. 1187-1194). In J. Kay, R. Luckin, (Eds.), *Rethinking learning in the digital age: Making the Learning Sciences count: Proceedings of the 13th International Conference of the Learning Sciences.* London.
- Krist, C., & Suárez, E. (2018). *Doing science with fidelity to persons: Instantiations of caring participation in science practices.* (pp. 424-431). In J. Kay, R. Luckin (Eds.), *Rethinking learning in the digital age: Making the Learning Sciences count: Proceedings of the 13th International Conference of the Learning Sciences.* London.
- Suárez, E., & Otero, V. (2014). *Leveraging the cultural practices of science for making classroom discourse accessible to emerging bilingual students.* (pp. 800-807). In J. Polman, E. Kyza, D. K. O'Neill, I. Tabak, W. R. Penuel, A. S. Jurow, K. O'Connor, T. Lee, L. D'Amico (Eds.), *Learning and Becoming in Practice. Proceedings of the 11th International Conference of the Learning Sciences.* Boulder, CO.
- Suárez, E., & Otero, V. (2014). *Physics as a mechanism for including ELLs in classroom discourse.* 2013 Physics Education Research Conference Proceedings. Mellville, NY: AIP Press. Portland, OR.
- Suárez, E., & Otero, V. (2013). *3rd grade English Language Learners making sense of sound.* 2012 Physics Education Research Conference Proceedings. Mellville, NY: AIP Press. Philadelphia, PA.
- Peterson, J. B., & Suárez, E. (2012). *Intensity mapping with 21-cm and Lyman alpha lines.* Proceedings of 47th Recontres des Moriond: Cosmology Session. arXiv: 1206.0143

MANUSCRIPTS IN PREPARATION:

- Suárez, E., & Otero, V. (in preparation). *Third grade emerging bilingual students making sense of sound production*. To be submitted to: Research in Science Education. (Special Issue, Language and Science Education)
- Suárez, E. (in preparation). *Working towards consensus: Elementary-aged students presenting and evaluating mechanistic models of electric flow*. To be submitted to: Cognition & Instruction.
- Suárez, E. (in preparation). *Choosing the right tools: Supporting elementary-aged students to problematize electrical resistance*. To be submitted to: Journal of the Learning Sciences.
- Bell, P., Suárez, E., LaBonte, D. (in preparation). *The sociomateriality of family creativity in STEAM environments*. To be submitted to: Journal of the Learning Sciences.
- Suárez, E., Morrison, D., Louie, J., Ryoo, J. (in preparation). *Working together with evidence to plan for equitable opportunities for learning*. To be submitted to: Teacher and Teacher Education.

REFEREED CONFERENCE PRESENTATIONS:

- Lakhani, H., Suárez, E., Morrison, D. (March, 2019). *Using practical measures to support secondary science teachers implement NGSS*. In Dyer, E. (session organizer), Exploring the Use of Practical Measures to Support Improvement in Science Education. Paper submitted to the NARST 2019 Annual International Conference, Baltimore, MD.
- Salcido White, M., Lakhani, H., Dyer, E., Suárez, E. (March, 2019). *Exploring students' perceptions of the relevance of science learning with practical measures*. In Dyer, E. (session organizer), Exploring the Use of Practical Measures to Support Improvement in Science Education. Paper submitted to the NARST 2019 Annual International Conference, Baltimore, MD.
- Bell, P., Suárez, E., LaBonte, D., Tzou, C., Bang, M. (March, 2019). *The sociomateriality of family creativity in story-centered STEAM learning environments*. In Suárez, E. (session organizer), Reimagining STEM Learning Through Centering Families' Sense-Making Practices. Paper submitted to the NARST 2019 Annual International Conference, Baltimore, MD.
- Suárez, E., Bell, P. (March, 2019). *Supporting expansive science learning through different classes of investigative phenomena*. In Buell, J. (session organizer), Something like a Phenomenon: Identifying Phenomena to Support the Development of NGSS-aligned Curricula and Assessment. Paper submitted to the NARST 2019 Annual International Conference, Baltimore, MD.
- Suárez, E. (April, 2019). *Translanguaging in the service of co-constructing explanations: Elementary-aged emerging bilingual students problematizing electrical phenomena*. In Pierson, A. E., Brady, C., Clark, D. (session organizers), Multimodal STEM Learning with Emerging Bilingual Students. Paper submitted to the AERA 2019 Annual Meeting, Toronto.
- Lakhani, H., Suárez, E., Morrison, D., Welch, M. Taylor, A., Lippitt, W. (April, 2019). *The SEPC RPP: partnering with districts for co-designing meaningful framework-aligned professional learning*. In Kawasaki, J., Sandoval, W. (symposium organizers), Examining Successes and Challenges from Five Different Science Teacher Professional Development Projects Around the NGSS. Paper submitted to the AERA 2019 Annual Meeting, Toronto.
- Suárez, E. (April, 2019). *Investigation questions as epistemic tools that shape epistemic agency in physics discussions*. In Morrison, D., Moon, J., Michaels, S. (session organizers), The Growing Public Space of Learning and Teaching and the Role of Epistemic Tools. Paper submitted to the AERA 2019 Annual Meeting, Toronto.
- Suárez, E., Tzou, C., LaBonte, D., Braun, A. (April, 2019). *Designing equitable STEAM learning environments that invite and leverage learners' stories and experiences*. Submitted to the NSTA 2019 Annual National Meeting, St. Louis, MO.
- Suárez, E., Sánchez, A. (April, 2019). *Inviting all students into the NGSS: Fostering equitable learning communities through culturally relevant science teaching*. Submitted to the NSTA 2019 Annual National Meeting, St. Louis, MO.

- Bell, P., Morrison, D., Suárez, E. (April, 2019). *Supporting all students make sense of phenomena by building all of their intellectual resources*. Submitted to the NSTA 2019 Annual National Meeting, St. Louis, MO.
- Suárez, E. (March, 2019). *The translanguaging practices of bilingual families when engaging in storywork through robotics in an out-of-school STEM program*. In Tian, Z. (session organizer), *Translanguaging Within and Beyond Disciplines: Transforming STEM Literacies with and for Bilingual Learners*. Paper submitted to American Association for Applied Linguistics 2019 Annual Conference, Atlanta, GA.
- Welch, M., Suárez, E., Lakhani, H., & Taylor, A. (2018, April). *Leading NGSS implementation in districts*. Presented at the NSTA 2018 Annual National Meeting, Atlanta, GA.
- Welch, M., Lakhani, H., Suárez, E., & Taylor, A. (2018, April). *Equity-centered NGSS storylining: a practical guide to the planning of phenomena-centered science learning*. Presented at the NSTA 2018 Annual National Meeting, Atlanta, GA.
- Welch, M., Lakhani, H., Suárez, E., & Taylor, A. (2018, April). *Equity-based NGSS implementation through research practice partnerships*. Presented at the NSTA 2018 Annual National Meeting, Atlanta, GA.
- Suárez, E. (2018, March). *Responding to emerging bilingual students' translanguaging when reasoning and communicating about natural phenomena*. In Haverly, C. (session organizer), *Approaches for Studying Equitable and Responsive Science Teaching*. Paper presented at the NARST 2018 Annual International Conference, Atlanta, GA.
- Manz, E., & Suárez, E. (2017, May). *How teachers negotiate uncertainty for science, students, and teaching*. Poster presented at the AERA 2017 Annual Meeting, San Antonio, TX.
- Suárez, E. (2017, April). *Designing equitable science learning environments for elementary-aged emerging bilingual students*. Poster presented at the NARST 2017 Annual International Conference, San Antonio, TX.
- Suárez, E. (2016, April). *Negotiating students' epistemic agency in physics consensus discussions*. In Suárez, E., & Krist, C. (session organizers), *Investigating Epistemic Agency: Creating Space for Students and Teachers to Actively Construct Scientific Knowledge*. Paper presented at the NARST 2016 Annual International Conference, Baltimore, MD.
- Manz, E., & Suárez, E. (2016, April). *Leveraging uncertainty to support students' engagement in practice*. Paper presented at the NARST 2016 Annual International Conference, Baltimore, MD.
- Suárez, E. (2016, April). *Design principles for supporting emerging bilingual students construct mechanistic models*. Presented at the NARST 2016 Annual International Conference, Baltimore, MD.
- Sommer, S., Suárez, E., Langdon, L., & Grover, R. (2016, April). *Models for promoting inquiry and collaborative learning for veteran, novice, and preservice teachers*. Paper presented at the AERA 2016 Annual Meeting, Washington D.C.
- Manz, E., & Suárez, E. (2016, April). *Supporting elementary teachers to adapt curriculum materials for increased uncertainty*. Poster presented at the AERA 2016 Annual Meeting, Washington, D.C.
- Suárez, E., & Otero, V. (2015, July). *Negotiating epistemic agency and epistemic authority in consensus discussions*. Poster presented at the Physics Education Research Conference, College Park, MD.
- Suárez, E., & Otero, V. (2015, July). *Am I stealing your glory? Negotiating students' epistemic agency during consensus discussions*. Paper presented at the AAPT 2015 Summer Meeting, College Park, MD.
- Renga, I., Suárez, E., Langdon, L., Grover, R., Sommer, S., Marsh, C., (2015, April). *Investigating the epistemic activity and agency of pre-service teachers within a model of collaborative inquiry*. Paper presented at the AERA 2015 Annual Meeting, Chicago, IL.
- Suárez, E., & Otero, V. (2015, April). *Science: A mechanism for inviting emerging bilingual students into classroom discourse*. Paper presented at the NARST 2015 Annual International Conference, Chicago, IL.
- Suárez, E., & Otero, V. (2015, April). *Emerging bilingual students engaging in science practice through blending everyday and academic language*. Poster presented at the NARST 2015 Annual International Conference, Chicago, IL.
- Suárez, E., Ross, M.J., Guegan, P., Belleau, M., Hubert, K., & Otero, V. (2014, July). *A methodology for characterizing student engagement in consensus discussions*. Poster presented at the Physics Education Research Conference, Minneapolis, MN.

- Suárez E., Guegan, P., & Otero, V. (2014, July). *Analyzing high school physics consensus discussions: Coding schemes are not observations.* Paper presented at the AAPT 2014 Summer Meeting, Minneapolis, MN.
- Suárez E., & Otero, V. (2014, April). *Doing and talking science: Strategies for engaging ELLs in classroom discourse.* Presented at the NSTA 2014 Annual National Meeting, Boston, MA.
- Suárez E., & Otero, V. (2013, July). *Physics as a mechanism for including ELLs into classroom discourse.* Poster presented at the Physics Education Research Conference, Portland, OR.
- Suárez E., & Otero, V. (2013, July). *Hands-on physics as a mechanism for including ELLs into classroom discourse.* Paper presented at the AAPT 2013 Summer Meeting, Portland, OR.
- Suárez E., & Otero, V. (2012, July). *"Because it hibernates faster": 3rd grade English language learners making sense of sound.* Poster presented at the Physics Education Research Conference, Philadelphia, PA.

INVITED PRESENTATIONS:

- Suárez, E. (2018, June). *Valuing and leveraging students' semiotic repertoires.* Invited Plenary at Frontier and Foundations of Physics Education Research, Puget Sound.
- Suárez, E. (2018, April). *Valuing and leveraging students' semiotic repertoires.* Invited Presentation at California State University, Chico, CA; Host: Dr. Carolina Alvarado.
- Suárez, E. (2018, February). *Using video for tracking communication, interaction, and sense-making.* Invited Seminar at University of Illinois, Urbana-Champaign; Host: Dr. Christina (Stina) Krist.
- Suárez, E. (2016, April). *Design principles for supporting emerging bilingual students construct mechanistic models.* Invited Presentation at University of Maryland, College Park; Host: Dr. Andrew Elby and Dr. Ayush Gupta.
- Suárez, E. (2015, May). *Science: A mechanism for inviting emerging bilingual students into classroom discourse.* Invited Seminar at Columbia University: Teachers College, New York; Host: Dr. Christopher Emdin.
- Suárez, E. (2014, August). *How can i play if don't know the rules of the game?* Invited Workshop for faculty at Northwestern Oklahoma State University, Ada; Host: Dr. Steve Maier.
- Suárez, E. (2014, August). *Whose science? Inclusive learning environments.* Invited Workshop for science faculty at Northwestern Oklahoma State University, Ada; Host: Dr. Steve Maier.

POLICY DOCUMENTS:

- Bell, P., Suárez, E., Bang, M., Tzou, C., Morrison, D., Rodríguez, A., Buxton, C., Lee, O., Tesoriero, G., Heinz, M. (2018). *OpenSciEd design specifications for equitable science instruction for all students.* New York: Carnegie Corporation.
- Buxton, C., Lee, O. & Suárez, E. (2018). *Supporting the equitable participation and learning of emergent multilingual students.* Design specifications for OpenSciEd Initiative. New York: Carnegie Corporation.

RESEARCH EXPERIENCE:

University of Washington, Institute for Science & Math Education, College of Education. Seattle, WA.

Unite:Ed Alliance for justice-oriented research-practice partnerships 2018 - present
(Bill and Melinda Gates Foundation)

Unite:Ed is a community-embedded design lab that convenes education practitioners and leaders, community organizations and research faculty to co-design and test solutions to problems of practice in early learning, K-12, and transitions to higher education and the workforce through supporting the scale of justice-oriented and community-guided systems innovations and improvement strategies.

- Met with steering committee, which comprised participating faculty and community partners, to co-develop Unite:Ed's mission statement and justice-oriented guiding principles.

- Interviewed participating faculty and community partners to understand education the challenges and priorities they were interested in addressing.
- Co-designed the Collecting Learning and Action Series along with faculty and community partners
- Co-developed a landscape analysis to identify and describe extant research-practice partnerships in the UW College of Education.
- Managed administrative project tasks.
- Mentored graduate student RAs working on the project.

Backpacks for Science Learning (NSF AISL)

2017 - present

PI: Carrie Tzou; Co-PIs: Philip Bell, Megan Bang, Seattle Public Libraries, Pacific Science Center, Red Eagle Soaring, Highline School District Native Education Program.

This project fosters opportunities for families to explore science and engineering together as they engage with robotics, computer science and coding, and e-textiles through centering place-based storytelling. This partnership leverages the strengths of all partners to co-design and co-facilitate five-week long programs to bring engineering and robotics education to a broad range of communities.

- Co-designed and co-facilitated sessions from the robotics and e-textiles programs.
- Co-designed self-contained robotics and e-textile backpacks families could check out from the library to explore and learn from at home.
- Co-designed and co-facilitated PD workshops for librarians interested in bringing this program to their libraries.
- Co-led data collection efforts across sites and cycles of implementation of the program, including videotaping sessions and interviewing participating families.
- Co-led conceptual development and analysis of video data from sessions with families.
- Managed administrative project tasks.
- Mentored graduate student RAs working on the project

Partnership for Science and Engineering Practices

2017 - 2018

(WA Office of Superintendent of Public Instruction – MSP program)

PI: MaryMargaret Welch (Seattle Public Schools); Co-PI: Philip Bell, Renton Public Schools, Institute for Systems Biology.

PSEP was a 6-year partnership that brought together practitioners – teachers, instructional coaches, district-level staff – and educational researchers to identify existing problems of educational practice and then develop and refine new instructional approaches and resources to support improvement. Participants collaboratively adapt and refine curriculum that engages students in the STEM practices of explanation, argumentation, modeling and engineering design, as outlined in the NGSS.

- Co-designed and co-facilitated professional development sessions for middle and high school science teachers, as well as after school PLC meetings.
- Videotaped classroom enactments and co-led focus groups with students about their experiences learning through engaging in STEM practices.
- Observed and interviewed science teachers who had been identified by the district as leaders.
- Provided informal professional development to participating classroom teachers.
- Co-led conceptual development and analysis of practical measures data from teachers and students.
- Managed administrative project tasks.
- Mentored graduate student RAs working on the project

University of Colorado, Boulder, School of Education. Boulder, CO.

Research Assistant

2013 - 2017

Noyce Teacher Teams (NSF, Robert Noyce Teacher Scholarship)

This project created a collaborative-inquiry model that brought together preservice, new, and veteran teachers to conduct research in their classrooms as a mechanism to reflected on and developed epistemic practices to inquire

into pedagogy. The model was designed to position pre-service teachers, alongside their in-service peers, as capable agents of inquiry into classroom teaching and learning.

- Supported a group of elementary school teachers in developing a research plan for understanding teaching and learning science in their 2nd and 3rd grade classrooms.
- Provided informal professional development to participating classroom teachers.
- Collected and analyzed data, including videotapes of teacher meetings and surveys, focusing on the emergence of opportunities for reflecting on and inquiring into pedagogical practices.
- Co-developed a research plan, and data collection tools and strategies, to evaluate the progress of participating teachers and efficacy of the professional development program.
- Managed administrative project tasks.

Research Assistant

2013 - 2014

Physics and Everyday Thinking (PET) - High School (NSF, DRK-12)

PET-HS was an innovative, student-centered physics curriculum designed to engage students in scientific reasoning and model-building. PET was based on five design principles drawn from sociocultural and cognitive research that allow classrooms to become inclusive learning environments where students develop, share, critique, argue and revise evidence-based ideas

- Co-developed a research plan, and data collection tools and strategies, to evaluate the implementation of the PET high school curriculum.
- Collected and analyzed data, including videotapes of lessons and interviews with participating students, with the eventual goal of publishing results.
- Provided informal professional development to participating classroom teachers.
- Managed administrative project tasks.
- Mentored undergraduate student RAs working on the project

Research Assistant

Fall 2012

History of Physics Education in the United States

The primary focus is to understand the development of learning theories and pedagogical approaches that were most prevalent in Physics departments, Teachers Colleges, and science classrooms.

- Reviewed and catalogued articles from the late 19th Century to mid 20th Century, regarding the state of Physics and Science Education Research.

Seattle Pacific University, Department of Physics. Seattle, WA.

Research Scholar

2011

Energy Project Summer Research Institute (EPSRI) (NSF DRL)

This institute brought together science education researchers to observe, document, and reflect on a summer professional development course for elementary school teachers offered by the Energy Project, which sought to deepen teachers' energy-related pedagogy and content knowledge.

- Collected data, including videotaping and taking field notes, from professional development sessions, photographing work produced by participating elementary science teachers.
- Analyzed data identifying episodes within sessions that could lead to further in-depth research.
- Presented findings on teachers' epistemological beliefs in action at EPSRI conference.

Tufts University, Department of Education. Medford, MA.

Poincaré Institute for Math Education (NSF, MSP)

2010 - 2012

The Poincaré Institute sought to improve the teaching and learning of mathematics teachers from grades 5-9 by supporting them to deepen their understanding of key mathematical concepts and of how students learn. The Poincaré Institute partnered with districts, schools, and/or individual teachers in New England who were wanted to participate in in-person and online professional development. Courses were free of costs to partners and teachers received a new laptop to complete their work.

- Collected and analyzed data, including videotaping and classroom observations, from a subset of participating teachers.
- Co-designed summative assessments that were administered in all participating schools that measured student learning along the main topics of the Poincaré Institute.
- Co-developed a framework for analyzing students' summative assessments, comparing the results of Poincaré teachers to non-Poincaré teachers to determine potential effects of the program.
- Provided informal professional development to participating classroom teachers.
- Managed administrative project tasks.

Robert Noyce Teacher Scholarship Program (NSF, Robert Noyce Teacher Scholarship)

2010 - 2012

This project funded nine STEM majors who wanted to become math and science high school teachers through the Urban Math and Science Teacher Collaborative (K-12) and were committed to teaching in high-needs school districts for at least four years after graduation.

- Co-developed teacher education courses in physics and mathematics for secondary pre-service teachers, who would teach in urban and/or high need schools.
- Co-developed a research plan and data collection tools and strategies to evaluate the progress of participating fellows and efficacy of the program.
- Contacted universities, colleges, and national societies as part of the recruiting efforts to attract the most diverse and competent pool of applicants.
- Provided informal professional development to participating pre-service teachers.
- Managed administrative project tasks.

Carnegie Mellon University, Physics Department. Pittsburgh, PA.

"Baryon Acoustic Oscillations: Intensity Mapping of Lyman α Emitters"

2008 - 2010

This project complemented proposed optical and radio astronomy surveys for studying the expansion history of the Universe, through the measurement of the Baryon Acoustic Oscillation. The feasibility of a galaxy survey based on Lyman α emission (UV) was the primary focus.

- Produced a database that compiled information on extragalactic UV emitters that could be candidates for intensity mapping.
- Produced a database with information on competing galactic and extragalactic UV emitters.
- Wrote IDL code to calculate Lyman α luminosity functions for galaxies at various redshifts.
- Created visualizations of the Lyman α sky brightness to determine the optimal window of the electromagnetic spectrum to perform the intensity mapping survey.

Jodrell Bank Observatory. Manchester, England.

Research Assistant

2008

"Detecting Dark Energy: Abundance HI in ACO Galaxy Clusters for Selection Criteria"

2005

This project studied Abell (ACO) Galaxy Clusters and searched for the amount of Neutral Hydrogen (HI) to determine selection criteria for future surveys for the Square Kilometer Array observatory.

- Produced a database that compiled information from every galaxy of interest
- Wrote FORTRAN code to analyze the data for each cluster to and derive properties like total mass of hydrogen in a cluster, and potential mass of dark matter in the cluster.
- Produced visualizations of HI-rich galaxies in clusters to study HI ionization in ACO clusters.

University of Oklahoma, Department of Physics and Astronomy. Norman, OK.

Research Assistant

2006 - 2007

"Baryon Acoustic Oscillations: Observational Criteria for Detecting Galactic Balmer α Emission"

This project studied galactic properties, specifically Balmer α emission, to determine better selection criteria for future galaxy surveys and measurement of the Baryon Acoustic Oscillation.

- Produced a database that compiled information from every galaxy of interest

- Wrote IDL code to calculate the Balmer α emission and associated K-correction from each galaxy.
- Produced visualizations of the distribution of high-emitting galaxies to determine candidate regions to be included in future dark energy surveys.

Research Assistant

2007

“COMPADRE Digital Resources for Physics & Astronomy Education”

ComPADRE is a Digital Library for the educational resources used by educators, researchers, and students in physics and astronomy. This service of the American Association of Physics Teachers is designed to help teachers and learners find, and use, high quality resources through web-based collections and services tailored to their specific needs.

- Proposed various digital resources to principal investigator for addition to the collection.
- Accumulated information on approved websites, including description of the site, educational level, and citation information.
- Expanded and updated the Astronomy section of the catalogue.

TEACHING EXPERIENCE: Higher Education

University of Massachusetts, Amherst, College of Education. Amherst, MA

Instructor

Fall 2019

EDUC693F: Teaching Social Justice - Justice in Science Education

This course examines the relationships among the body of knowledge and the practices of science, technology, engineering and mathematics (STEM disciplines) and the structures that undergird social, political, and economic inequities and injustices. Through this course, students work towards a shared vision of transformative STEM education that builds on students' life-ways and life-worlds, rather than solely striving for “access.”

University of Colorado, Boulder, School of Education. Boulder, CO.

Instructor

Spring 2017

EDUC/PHYS 1580: Energy and Interactions

Fall 2016

Spring 2016

Energy and Interactions is an inquiry-based science course where students learn physics content, engage in co-constructing science knowledge, and learn best practices for science pedagogy. The course meet an education requirement or a physical science requirement for pre-service teachers.

Instructor

Summer 2016

Program for Excellence in Academics and Community (PEAC): Energy and Interactions

PEAC is a rigorous academic program for incoming freshmen from traditionally underrepresented groups and/or who are first-generation college students. Energy and Interactions is an inquiry-based science course where students learn physics content, engage in co-constructing science knowledge, and learn best practices for science pedagogy.

Instructor

Fall 2015

EDUC 5215: Elementary Science Methods and Theory

In this course, pre-service elementary teachers extended their understanding of science as a process of sense-making, emphasizing the importance of creating opportunities for students to engage in epistemic practices for finding out about the natural world.

Teaching Assistant

Fall 2014

EDUC 5215: Elementary Science Methods and Theory

Instructor: Dr. Eve Manz.

Instructor

Spring 2013

EDUC 2020: Inquiry Approaches to Teaching

This course was for undergraduate STEM majors who were interested in teaching science in K-12. The course provided students with an opportunity to explore teaching science or mathematics as a career, an introduction to the theory and

practice that is necessary to design and facilitate instruction, and practicum experiences in teaching science and engineering.

Tufts University, Department of Education. Medford, MA.

Teaching Assistant

2011 - 2012

Math 102 - From Numbers to Functions for Grades 5-9 Math Teachers

Instructors: Dr. Todd Quinto, Dr. Moon Duchin

This online course aimed to improve the teaching and learning of secondary mathematics by helping teachers deepen their understanding of functions and their representations, and of how students learn. Teachers worked online and in face-to-face collaborative groups.

Carnegie Mellon University, Physics Department. Pittsburgh, PA.

Teaching Assistant

Spring 2009

PHYS 33-112: Physics II for Science Students

Instructor: Dr. George Klein

This calculus-based course developed the concepts of electricity and magnetism, including the following topics: Coulomb's law, polarization, electric field, electric potential, DC circuits, magnetic field and force, magnetic induction, and the origins of electromagnetic waves.

Teaching Assistant

Spring 2009

PHYS 33-111: Physics I for Science Students

Instructors: Dr. Kunal Ghosh, Dr. Mathias Lösche

This calculus-based course combined the basic principles of mechanics with some quantum physics and relativity to explain nature on both a microscopic and macroscopic scale. The course built models to describe the universe based on a small number of fundamental physics principles.

Teaching Assistant

Fall 2009

PHYS 33-124 & 33-126: Introduction to Astronomy & Astronomy Lab

Fall 2008

Instructor: Dr. Diane Turnshek

This course presented a broad view of astronomy, straightforwardly descriptive and without any complex mathematics. The goal of the course was to encourage non-STEM students to become scientifically literate and to appreciate new developments in the world of science, especially in the rapidly developing field of astronomy.

Universidad Simón Bolívar, Physics Department. Caracas, Venezuela.

Teaching Assistant

Fall 2015

FIS1111 - Introductory Calculus-based Physics

Spring 2015

Winter 2015

This calculus-based course was designed for students to fundamental of Newtonian mechanics, as well as develop skills for solving and analyzing practical problems using appropriate physical models.

TEACHING EXPERIENCE: K-12 and Out-of-school contexts

“Sunrise” Public Library System. Denver metro area, CO.

Instructor and Lead Curriculum Designer

Fall 2016

“ElectroBuzz Science Program”

Summer 2016

Spring 2016

The program was offered three times throughout 2016 (Spring, Summer, Fall), at different library branches that serve predominantly immigrant families, and recruited elementary-aged bilingual learners (predominantly from grades 3-5). The program focused on problematizing electrical phenomena, creating opportunities for learners to predict, investigate, and explain how energy is transmitted and transformed within electrical circuits.

Boulder Valley School District. Boulder, CO.

Science Support 2014 - 2015
University Hill Bilingual Elementary School, Grade 4
Worked with teachers grade 4 co-developing and co-teaching science lessons where bilingual students engaged in epistemic practices to co-construct knowledge about the natural world. Additionally, developed and taught activities about electrical phenomena for a small group of bilingual students.

Somerville Public Schools. Somerville, MA.

Science Support 2011 - 2012
"Platino" Community K-8 School, Grades 1-3
Worked with teachers in grades 1-3 in a sheltered English immersion program, co-developing and co-teaching science and engineering lessons where emerging bilingual students engaged in epistemic practices to co-construct knowledge about the natural world and solve meaningful problems.

Instructor and Lead Curriculum Designer Summer 2011
Summer Program from English Language Learners (SPELL), Grades K-6
Designed lessons for intermediate and proficient English speakers, grades 1-5, around the topic of Light: selected readings appropriate for age and proficiency level, investigation activities, and formative assessments; coordinated visits with local science related organizations and institutions.

Carnegie Mellon University, Physics Department. Pittsburgh, PA.

Teaching Assistant Summer 2010
Physics SAMS Academy for under-served high school students Summer 2009
Instructor: Dr. George Klein
Survey algebra-based physics course that covered topics frequently covered in the high school physics curriculum, such as Newtonian mechanics and electrostatics.

Mentor Fall 2008
Department of Physics Outreach Program for Middle School Students
Supported a 7th grade student to investigate Rayleigh scattering, designing an experiment that would let him reproduce and measure this effect in order to understand the reasons behind blue and red skies; the student won second place in a local science fair for Middle School students.

PROFESSIONAL DEVELOPMENT FOR K-12 TEACHERS:

Seattle Public Schools, Renton School District, Mukilteo School District. WA. 2017 - 2018
Co-designed and co-facilitated 15 PD sessions with secondary science teachers around equitable, NGSS-aligned science instruction.
Collaborators: Monica Chandler, William Lippitt, Alisha Taylor, Anastasia Sánchez (middle school science teacher), MaryMargaret Welch.

Boulder Valley School District. Boulder, CO. Summer 2015
Supporting Emerging Bilingual Students in Science Discourse.
Collaborators: Samantha Messier, Judy Stone (K-5 teacher).

Supporting 2nd Grade Teachers to Adapt Curriculum Materials for Increased Uncertainty. 2014 - 2015
Collaborators: Eve Manz (lead instructor) and Samantha Messier.

Somerville Public Schools. Somerville, MA. 2014 - 2015
Supporting Emerging Bilingual Students in Science Discourse.
Collaborator: Hannah deSouza (K-5 teacher).

Sanborn Public Schools, Timberlane Public Schools. NH. 2010 - 2012
Poincaré Institute for Math Education: Supporting Middle Grades Teachers Develop Mathematics Subject Matter Knowledge for Teaching

PROFESSIONAL SERVICE:

Reviewer, Educational Researcher.	2019 – present
Reviewer, American Educational Research Journal.	
Reviewer, Bilingual Journal of Research.	2018 - present
Reviewer, Science Education.	2017 - present
Reviewer, International Conference of the Learning Sciences.	2017 - present
Reviewer, Journal of Research in Science Teaching.	2017 - present
Reviewer, Cultural Studies in Science Education.	2017 - present
Reviewer, National Association for Research in Science Teaching.	2016 - present
Reviewer, PLOS One.	2016 - present
Reviewer, Revista Infancia y Aprendizaje.	2016 - present
Reviewer, American Educational Research Association.	2015 - present
Reviewer, Physical Review Physics Education Research (PR-PER).	2015 - present
Reviewer, Physics Education Research Conference.	2012 - present
PhD Student Committee Representative for Dean of School of Education search. University of Colorado Boulder, School of Education.	2015 - 2016
Elementary Science Education Faculty search. University of Colorado Boulder, School of Education.	2015 - 2016
Secretary for the Physics Education Research Consortium of Graduate Students.	2013 - 2015
Co-chair of the Student Association of Graduate Educators. University of Colorado Boulder, School of Education.	2014 - 2015
President of the Board of Directors of education non-profit <i>Integral Steps</i> .	2016 - 2018

LANGUAGES SPOKEN:

Bilingual: Spanish, English.