LYNNE M. ZUMMO

lynne.zummo@utah.edu

PROFESSIONAL APPOINTMENTS

Assistant Professor of Learning Sciences   2020 - present
Department of Educational Psychology
Urban Institute for Teacher Education
College of Education
University of Utah, Salt Lake City, Utah

Curator of Learning Sciences   2020 - present
Natural History Museum of Utah (NHMU)
University of Utah, Salt Lake City, Utah

EDUCATION

PhD, Stanford University Graduate School of Education   2020
Curriculum Studies & Teacher Education (Science Education)

MA, Stanford University Graduate School of Education   2015
Curriculum Studies & Teacher Education (Science Education)

MS, Dartmouth College   2010
Earth Sciences

BA, Middlebury College   2006
Geology & Environmental Science

FELLOWSHIPS & GRANTS

Externally Funded

A Climate of Hope: Investigating Learning at an Innovative Exhibit towards New Knowledge,   2023-2027
Theory, and Practice of Climate Change Learning with Diverse Audiences, National Science
Foundation (NSF) Advancing Informal STEM Learning (AISL)
Award: 2314238 ($1,026,207)
Role: PI
co-PI: Lisa Thompson (Natural History Museum of Utah)

Developing and Implementing Case-Based Scenarios to Support Elementary Pre-service   2023-2025
Teachers' Enactment of Equitable Mathematics and Science Instruction, National Science
Foundation (NSF) Improving Undergraduate STEM Education (IUSE)
Award: 2142136 ($599,971)
Role: co-PI
PI Tracy Dobie; co-PIs Lauren Barth-Cohen, Connor Warner

Collaborative Research: Learning to Observe: Unpacking Teachers' Development of Expertise   2022-2025
in Scientific Observation, National Science Foundation (NSF) EHR Core Research
Award: 2201764 ($599,599)
Role: co-PI
PIs Lauren Barth-Cohen, Sarah Braden (Utah State); co-PI Holly Godsey

"Let's Talk About Election 2020": Mapping Quantitative Civic Literacies in Youth Video   2021-2023
     Composition in an Online Digital Network, Spencer Foundation ($49,995)
     Role: PI
     Co-PI: Emma C. Gargroetzi (University of Texas-Austin)

Internally Funded

Together We Can Make a Difference: Deeping Public Engagement with Science and Improving   2022-2025
     Communication across Differences around Tough Issues, Dean's Productivity Fellowship,
     University of Utah College of Education ($130,000)
     Role: PI
     Co-PI: Monika Lohani

Future Science Teachers Learning to Evaluate Scientific (Mis)Information, University Teaching   2022-2023
     Grant, University of Utah ($7,000)
     Role: PI

Developing Data Practices & Deepening Museum Learning through Digital Tools, LEARNT   2021-2023
     Grant, University of Utah College of Education ($12,000)
     Role: PI

Center for American Democracy Grant, Stanford University ($2000)   2020
Dissertation Support Grant, Stanford University ($6000)   2019
Technology for Equity in Learning Opportunities Grant, Stanford University ($7600)   2018
Haas Center Graduate Public Service Fellowship, Stanford University ($3000)   2016
Stanford Graduate Fellowship, Stanford University ($120,000)   2015

Not Awarded

From decades to deep time: leveraging museum collections for learning in informal STEM   2022-2025
     Environments, National Science Foundation (NSF) Advancing Informal STEM Learning (AISL)
     ($1,965,384)
     Role: PI
     Co-PIs: Tyler Faith, Lisbeth Louderback, Madlyn Larson

PUBLICATIONS

Peer-reviewed Journal Articles

1. Dobie, T.E., **Zummo, L.M.,** Biddle, A.P., Barth-Cohen, L.A., Warner, C.K., Sghiatti, D.G., & Daniels, M. (in press). Elementary teachers designing culturally grounded cases for preservice teachers: A process for reciprocal learning. *Mathematics Teacher Educator*.

2. Aguilar, A.R.*, Gargroetzi, E.C., **Zummo, L.M.,** Bene, E.P.* (2023). Exploring set theoretic practices of youth engagement in connective journalism: What we lose in school-mathematical descriptions. *Journal of Humanistic Mathematics, 13*(2), 176-198. https://doi.org/10.5642/jhummath.SKGI7186

3. **Zummo, L.M.,** Gargroetzi, E.C., Hadzic, L.M.* (2023). Theorizing science-civic practices: Youth adaptation and remixing of scientific numeracies within digital civic media. *Science Education*, *107*(6), 1593-1627. https://doi.org/10.1002/sce.21822

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4. **Zummo, L.M.** (2023). Climate change and the social world: Discourse analysis of students' intuitive understandings. *Science & Education,* 1-20. https://doi.org/10.1007/s11191-022-00416-1

5. **Zummo, L.M.** (2022). Disagreement as context for science-civic learning: An analysis of discursive resources brought to bear by high school science students. *Cultural Studies of Science Education, 17*(4), 1115-1139. https://doi.org/10.1007/s11422-022-10128-1

6. **Zummo, L.M.,** & Dozier, S. (2022). Using epistemic tools to support secondary science teachers' social construction of knowledge of anthropogenic climate change in a professional learning experience. *Journal of Geoscience Education, 70*(4), 530-545. DOI: 10.1080/10899995.2021.1986785

7. **Zummo, L.M.,** Hauser, M., Carlson, J. (2022). STEM Teacher Noticing via Video Annotation: Identifying Links between Complexity and Knowledge-Based Reasoning. *Journal of Science Teacher Education, 33* (7), 744-763. DOI: 10.1080/1046560X.2021.1989645

8. **Zummo, L.M**, Gargroetzi, E.C., & Garcia, A. (2021). How youth use scientific argumentation in civic participation on climate change: Polar bears, the Great Barrier Reef, and "your job as president." *International Journal of Science Education: Part B, 11*(4), 362-377. DOI: 10.1080/21548455.2021.2010830

9. **Zummo, L.,** Donovan, B., & Busch, K. C. (2021). Complex influences of mechanistic knowledge, worldview, and quantitative reasoning on climate change discourse: Evidence for ideologically motivated reasoning among youth. *Journal of Research in Science Teaching, 58*(1), 95-127. DOI: 10.1002/tea.21648

10. **Zummo, L.M.** & Brown, B.A. (2020). The human limitations of flipped science instruction: Exploring students' learning and perceptions of flipped teaching. *International Technology & Education Journal 4*(1), 9-22.

11. **Zummo, L.M.,** Gargroetzi, E.C., Garcia, A. (2020). Youth voice on climate change: Using factor analysis to understand the intersection of science, politics, and emotion. *Environmental Education Research (26)*8, 1207-1226. DOI: 10.1080/13504622.2020.1771288

12. Lemmi, C., Brown, B., Wild, A., **Zummo, L.,** & Sedlacek, Q. (2019) Language ideologies in science education. *Science Education, 103*, 854-874. https://doi.org/10.1002/sce.21508

13. **Zummo, L.M.,** Friedland, A.J. (2011). Soil carbon release along a gradient of physical disturbance in a harvested northern hardwood forest. *Forest Ecology and Management 261*, 1016-1026. https://doi.org/10.1016/j.foreco.2010.12.022

Peer-Reviewed Published Conference Proceedings

1. **Zummo, L.M.** & Massey, E.* (2022). Using Synthetic Knowledge and Interaction Analysis to Investigate Learning in a Collaborative Digital Climate Learning Experience. In C. Chinn, E. Tan, C. Chan, & Y. Kali (Eds.) International Collaboration toward Educational Innovation for All: Overarching Research, Development, and Practices. ICLS Proceedings. 16th International Conference of the Learning Sciences (ICLS) 2022 (pp. 393-400).

2. Dobie, T., **Zummo, L.M.,** Barth-Cohen, L., Dias, L.*, & Warner, C. (2022). Case-based Scenarios for Supporting Equitable Mathematics and Science Instruction: Articulating Design Conjectures and Emerging Tensions. In C. Chinn, E. Tan, C. Chan, & Y. Kali (Eds.) International Collaboration

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toward Educational Innovation for All: Overarching Research, Development, and Practices. ICLS Proceedings. 16th International Conference of the Learning Sciences (ICLS) 2022 (pp. 1457-1460).

3. **Zummo, L.M.** (2021). Locating the Scientific in the Political and the Political in the Scientific: Examining Ideological Practice in Science Class. In E. de Vries, Y. Hod, & J. Ahn (Eds.) Reflecting the Past and Embracing the Future. 15th International Conference of the Learning Sciences (ICLS) Proceedings (pp. 67-74).

4. Gargroetzi, E.C. & **Zummo, L.M.** (2021). "Let's Talk About Election 2020": Quantitative Civic Literacies of Solidarity and Critique in an Online Digital Network. In E. de Vries, Y. Hod, & J. Ahn (Eds.) Reflecting the Past and Embracing the Future. 15th International Conference of the Learning Sciences (ICLS) Proceedings (pp. 573-576).

5. Neurath, R.A., **Zummo, L.M.**, & Friedland, A. J. (2010). Long-Term Mineral Soil Carbon Response to Forest Harvesting in New England. *AGU Fall Meeting Abstracts* (Vol. 1, p. 0284). http://adsabs.harvard.edu/abs/2010AGUFM.B41A0284N

Peer-Reviewed Book Chapters

1. **Zummo, L.M.** (accepted). Supporting pre-service science teacher learning about sociopolitical and scientific dynamics of climate change through local phenomena. In A. Sezen-Barrie & S. Tolbert (Eds.), *The Handbook of Climate Change Education: Research, Policy, and Practice.*

2. Bene, E.P.*, Gargroetzi, E.C., **Zummo, L.M.**, & Aguilar, A.R.* (2023). "A Deep Reckoning": Re/Mixing Literacies and Imaginative Rupture in "Let's Talk About Election 2020". In A. Garcia, N. Mirra, & J.A. Banks (Eds.), *Speculative Pedagogies: Designing Equitable Educational Futures* (pp. 35-50).

Practitioner Publications

1. Ardoin, N.M. (project lead), **Zummo, L.M.** (writer), et al. (2017, 2018). ChangeScale. North American Association for Environmental Education & NatureBridge, Research Bulletins 5-11. Available online at https://www.changescale.org/resources/environmental-education-research-bulletins/.

INVITED TALKS

External

Thompson, L.C. & **Zummo, L.M.** (2024). Building A Climate of Hope: Developing climate exhibits for shared engagement and learning, American Institute for Conservation Annual Meeting, Salt Lake City, UT, USA. May 23, 2024.

Zummo, L.M. (2023). Towards a Better Climate Future: Museum Exhibits for Shared Engagement and Learning, Florida Museum of Natural History, University of Florida, Gainesville, FL, USA. October 13, 2023.

Zummo, L.M. (2021). Confronting the politics of a changing climate in the science classroom, Royal Geographic Society, London, England, UK. November 18, 2021.

Internal

Zummo, L.M. (2024). Towards a better climate future, Global Changes and Society (SUST 6000), University of Utah, Utah, USA. February 6, 2024.

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Zummo, L.M. (2023). Supporting science learning and engagement for a better climate future, PAC-12 Arts & Sciences Deans Meeting 2023, University of Utah, Utah, USA. March 24, 2023.

Zummo, L.M. (2021). Confronting the politics of a changing climate in the science classroom, Global Change & Sustainability Center (GCSC), University of Utah. November 16, 2021.

PEER-REVIEWED CONFERENCE PRESENTATIONS

1. Bene, E.*, Gargroetzi, E., **Zummo, L.**, and Aguilar, A.* (2024, accepted). Imaginative Rupture and Re/Mixing Literacies in "Let's Talk About Election 2020". Poster Presentation. American Educational Research Association (AERA), Philadelphia, PA. April 13, 2024.

2. **Zummo, L.**, Janney, B.*, and Schultz, C.* (2024, accepted). A Hopeful Future: Knowledge and ideological resources for learning at an innovative museum exhibit. Paper Presentation. National Association for Research in Science Teaching (NARST), Denver, CO, March 18, 2024.

3. **Zummo, L.,** Thompson, L., Clifford, C., and Davis, C. (2023). Developing climate exhibits for shared engagement and learning: Emergent design conjectures for museums. SIG-3 (Informal Science Learning) Invited Symposium Presentation: Showcasing Research in Out-of-School Science Learning by Junior Scholars. European Science Education Research Association (ESERA), Cappadocia, Turkey, September 1, 2023.

4. Barth-Cohen, L., **Zummo, L.,** Braden, S., Adams, A.*, and Godsey, H. (2023). Sense-Making About Geologic Features That Are Spatially Adjacent and Chronologically Distant. Paper Presentation. American Educational Research Association (AERA), Chicago, IL. April 16, 2023.

5. **Zummo, L.,** Thompson, L., Clifford, C., and Davis, C. (2023). Leveraging Side Doors and Humor to Connect Diverse Informal Learners to Climate Change. Paper Presentation. American Educational Research Association (AERA), Chicago, IL. April 16, 2023.

6. Dias, L.*, Barth-Cohen, L., **Zummo, L.,** Dobie, T., and Warner, C. (2023). Preservice Teacher Thinking About Equity-Oriented Teaching Practices in Math and Science Using Case Prompts. Paper Presentation. American Educational Research Association (AERA), Chicago, IL. April 13, 2023.

7. Gargroetzi, E., **Zummo, L.,** Aguilar, A.*, and Bene, E.* (2023). Framing Mathematics in Sociopolitical Public Discourse. Symposium. American Educational Research Association (AERA), Chicago, IL. April 13, 2023.

8. **Zummo, L.,** Barth-Cohen, L., Godsey, H., Burbank, M., and Cook, A. (2023). Using social and environmental justice issues as anchoring phenomena in an innovative science teaching methods course. Association for Science Teacher Educators (ASTE) Annual Conference, Salt Lake City, UT. January 14, 2023.

9. **Zummo, L.M.** & Larson, M. (2022). Digitized Collections as a Means to Deepen Informal Science Learning: An Argument and Early Findings, Society for the Preservation of Natural History Collections (SPNHC), Edinburgh, Scotland, UK, June 7, 2022.

10. **Zummo, L.M.** & Gargroetzi, E.C. (2022). Remixing the Past and Present: Scientific Civic Literacies to Articulate New Futures in Youth-Produced Media, American Educational Research Association (AERA), San Diego, CA, April 24, 2022.

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11. Bene, E.*, Gargroetzi, E.C., & **Zummo, L.M.** (2022). Re/mixing Literacies to Dream Possible Futures: Imaginative Rupture in "Let's Talk About Election 2020", American Educational Research Association (AERA), San Diego, CA, April 22, 2022.

12. **Zummo, L.M.** (2022). Decisions for Our Future: Learning through Collaborative Civic Decision-Making in a Digital Climate Simulation. National Association for Research in Science Teaching (NARST), Vancouver, Canada, March 29, 2022.

13. **Zummo, L.M.** & Gargroetzi, E.C. (2022). Theorizing science-civic practices: Youth adaptation and remixing of science practices within digital civic participation, National Association for Research in Science Teaching (NARST), Vancouver, Canada, March 30, 2022.

14. Gargroetzi, E.C., **Zummo, L.M.**, Aguilar, A.*, Bene, E.*, Garcia, A., Cantu, E.* "Let's Talk About Election 2020": Quantitative Reasoning and Youth Civic Composing in an Online Network, 43rd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA 43), Philadelphia, PA, October 14-17, 2021.

15. **Zummo, L.M.,** Hauser, M.D., Carlson, J. (2021). STEM Teacher Noticing via Video Annotation: Links between Complexity and Knowledge-Based Reasoning, American Educational Research Association (AERA), Virtual conference, April 12, 2021.

16. Aiello, L.T., **Zummo, L.M**., Moriarty, T.W., Carlson, J.C. (2021). Enacted professional learning in context: Case studies of PLE participants' return to school sites, American Educational Research Association (AERA) Annual Meeting, Virtual conference, April 11, 2021.

17. **Zummo, L.M.,** Gargroetzi, E.C. (2021). Youth civic participation: Using scientific argumentation to make one's voice heard on climate change, American Educational Research Association (AERA), Virtual conference, April 10, 2021.

18. **Zummo, L.M.** (2021). Ideological Practice in Science Learning: Navigating Complex Terrain of Climate and Politics in US Classrooms, National Association for Research in Science Teaching (NARST), Virtual conference, April 9, 2021.

19. **Zummo, L.M.,** Dozier, S. (2021). Using epistemic tools to support teacher PCK of controversial socio-scientific issues. Association for Science Teacher Education (ASTE) Annual Conference, Virtual conference, January 14, 2021.

20. **Zummo, L.M.** (2020). Locating Science in Politics: New Approaches to Climate Change Education. North American Association for Environmental Education (NAAEE) Research Symposium, Virtual conference, October 10, 2020.

21. **Zummo, L.M.** (2020). Politics, Youth, and Climate Change: A Mixed-Methods Analysis of Youth Discourse in Social Media. American Educational Research Association (AERA), San Francisco, CA. April 2020 (conference canceled due to COVID-19).

22. **Zummo, L.M.,** Donovan, B.M., Busch, K.C. (2020). Influences of Worldview and Knowledge on Climate Change Discourse: Evidence for Ideologically-Motivated Reasoning among Youth, National Association for Research in Science Teaching (NARST), Portland, OR. March 18, 2020 (conference canceled due to COVID-19).

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23. **Zummo, L.M.** (2019). "It won't affect me.": Using a novel argumentation approach to support high school science teachers in teaching about climate change, American Geophysical Union (AGU) Fall Meeting, San Francisco, California. December 13, 2020.

24. **Zummo, L.M.,** Gargroetzi, E.C. (2019). Youth voice in polarized America: The politics and science of climate change, European Science Education Research Association (ESERA), Bologna, Italy. August 30, 2019.

25. **Zummo, L.M.,** Gargroetzi, E.C. (2019). Youth voices on climate change: Examining politicized climate discourse in a digital online network, American Educational Research Association (AERA), Toronto, Canada. April 8, 2019.

26. **Zummo, L.M**., Carlson, J., Hauser, M. (2018). Teacher noticing via video annotation in a virtual coaching program, National Association for Research in Science Teaching (NARST), Atlanta, GA. March 11, 2018.

27. **Zummo, L.M.,** Phukan, I. (2017). Art as language: Program evaluation through children's drawings. North American Association for Environmental Education (NAAEE) Research Symposium, San Juan, Puerto Rico. October, 17, 2017 (conference canceled due to hurricane).

28. **Zummo, L.M.** (2017). Storylines in Science: The role of place. Science Educators for Equity, Diversity, and Social Justice (SEEDS), San Juan, Puerto Rico. October, 8, 2017 (conference canceled due to hurricane).

29. Phukan, I., Ardoin, N.M., **Zummo, L.M.** (2016). Measuring Learning on the Go: Piloting an Art-Based Embedded Assessment, North American Association for Environmental Education (NAAEE) Research Symposium, Madison, WI. October, 18, 2016.

30. Phukan, I., **Zummo, L.M. (2016)**. The Role of Social Dynamics in Immersive EE Experiences, North American Association for Environmental Education (NAAEE), Madison, WI. October, 18, 2016.

31. **Zummo, L.M**., Brown, B.A. (2016). Flipping the Classroom: A Quasi-Experimental Examination of the Effect of Flipped Instruction in STEM Classrooms, National Association for Research in Science Teaching (NARST), Baltimore, MD. April 14, 2016.

TEACHING EXPERIENCE

Courses Taught

Advanced Secondary Science Teaching Methods: Science Teaching through Environmental &   2022-present
    Social Justice Issues (ED PS 5564/6564). Educational Psychology. Graduate Course.
    University of Utah.

Secondary Science Teaching Methods (EDU 5170). Urban Institute for Teacher Education   2020-present
    Undergraduate/Graduate Course, required for Secondary Science Teaching Licensure.
    Community Engaged Learning (CEL) designated course. University of Utah.

Learning Sciences Seminar (ED PS 7440). Educational Psychology. Graduate Course: Learning   2021-2022
    Sciences. University of Utah.

Postdoctoral Scholar Mentoring
Role: Advisor & Supervisor

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Benjamin Janney, Postdoctoral Scholar funded by Dean's Productivity Fellowship   2023-present

Student Mentoring
Role: Advisor   2022-present
  Two M.S. students in Learning & Cognition

Role: Committee Member
  Six students pursuing M.S. and/or Ph.D. in Learning & Cognition   2021-present

Mentoring in Museum-Based Research at Natural History Museum of Utah (NHMU)
Role: Mentor & Supervisor
  Eight undergraduate student interns   2021-present

Role: Peer Research Mentor
  Three NHMU staff members   2023-present

Public Outreach at Natural History Museum of Utah (NHMU)
  Invited Guest Lecturer: NHMU Volunteers' Breakfast with a Curator   2024
  Invited Guest Lecturer: Copper Club Curatorial Breakfast Series   2023
  Program Lead for Learning Sciences: NHMU "Behind-the-Scenes" Event   2022
  Invited Guest Lecturer: Copper Club Field Trip to Park City   2022
  Invited Guest Lecturer: NHMU Green Olympics Speaker Series   2022
  Invited Guest Lecturer: NHMU Volunteers' Lunch Series   2021

Secondary Science Teaching Experience
  Science Instructional Coach   2016-2020
  Center to Support Excellence in Teaching, Stanford University

  Middle & High School Science Teacher   2010-2014
  Edmund Burke School, Washington, DC

SERVICE

Professional
  National Science Foundation (NSF), Reviewer   2019-present
      Division of Research on Learning in Formal and Informal Settings (DRL)
      Education and Human Resources (EHR) Directorate

  Ad Hoc Article Reviewer
      Review of Educational Research   2023-present
      Environmental Education Research   2021-present
      Science Education   2021-present
      PLOS One   2020-present
      Journal of Research in Science Teaching (JRST)   2020-present
      Sociological Perspectives   2020
      Studies in Educational Evaluation   2018

  Ad Hoc Conference Reviewer
      International Society of the Learning Sciences, Reviewer   2021-present
      American Educational Research Association, Reviewer   2021-present
      NARST Annual Meeting, Reviewer   2019-present

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University

Global Change & Sustainability Center, Faculty Affiliate	2022-present
STEM Education Research Group	2020-present
Faculty Search Committee – Urban Ecology (Transformative Excellence Program, Interdisciplinary Cluster Hire), University of Utah	2021-2022

College of Education

Faculty Search Committee – Critical Educational Research Methodologies (Education, Culture, & Society Department)	2023-present
Scholarship Committee	2022-present
NSF Noyce Scholars & Teach for Utah Partner	2021-present
Hugo Rossi Lecture Series Planning Committee	2020-present

Natural History Museum of Utah (NHMU)

Climate Change Communication & Education Task Force	2023-present
Learning and Training at NHMU Task Force	2023-present
Advancing Critical Thinking 2.0 (ACT 2.0) Project	2021-present
NHMU Learning Sciences Research Lab Coordinator	2021-present
NHMU Green Team	2021-2022
NHMU Gala Staff Volunteer Committee	2021

Educational Psychology Department

Faculty Search Committee – Learning Sciences & Quantitative Methodology (Educational Psychology Department)	2023-present
Learning Sciences Program Committee	2020-present

Community

Footprints Running, Advisor	2023-present

RELEVANT PROFESSIONAL EXPERIENCE

NARST Sandra K. Abell Institute, Participant   2019
> Selected for and participated in competitive summer institute to support promising emerging scholars in science education research

Stanford Center for Spatial and Textual Analysis, Curriculum Developer   2018-2019
> Created curriculum for a variety of subjects to support K-12 teachers in using *Land Talk* (www.landtalk.org), a web-based citizen science project documenting landscape change

European Science Education Research Association (ESERA) Summer School, Participant   2018
> Selected for and participated in an international competitive summer institute to support promising emerging scholars in science education research

Children's Discovery Museum of San José, Independent Evaluator   2017-2019
> Designed and validated a survey for long-term evaluation of a museum-based, field science program; analyzed quantitative and qualitative survey data to assess programmatic outcomes

PROFESSIONAL MEMBERSHIPS

American Educational Research Association (AERA)

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Association for Science Teacher Education (ASTE)
European Science Education Research Association (ESERA)
International Society of the Learning Sciences (ISLS)
National Association for Research in Science Teaching (NARST)
National Science Teaching Association (NSTA)
Science Educators for Equity, Diversity, & Social Justice (SEEDS)
Society for the Preservation of Natural History Collections (SPNHC)

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