Curriculum Vitae • 16 February 2025

Steven Semken

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Contents

1 Academic Preparation

1.1 Academic Training

- Certificate in Diné (Navajo) Educational Philosophy, Diné College, Navajo Nation, 1991.
- Massachusetts Institute of Technology, Ph.D., Materials Science (Ceramics), 1989, supervised by Dr. Bernhardt J. Wuensch, Department of Materials Science and Engineering.
  Dissertation title: "Epitaxial crystal growth and oxygen diffusion studies in MgO and CaO."
- University of California, Los Angeles, M.S., Geochemistry, 1984, supervised by Dr. Donald J. DePaolo, Department of Earth and Space Sciences.
  Thesis title: "A neodymium and strontium isotopic study of Late Cenozoic basaltic volcanism in the southwestern Basin and Range province."
- Massachusetts Institute of Technology, S.B., Earth and Planetary Sciences, 1980.

1.2 Professional Certifications

- Certified Interpretive Guide, National Association for Interpretation, 2016.
- Arizona State Community College Certification in Earth Sciences and Geology, 1989.

2 Academic Appointments and Affiliations

- Arizona State University, School of Earth and Space Exploration
  Professor of Geology and Education, since 2016.
- Arizona State University, Learning Engineering Institute, Affiliate Faculty, since 2024.
- Arizona State University, Mary Lou Fulton Teachers College, Affiliate Faculty, since 2021.
- Arizona State University, Global Drylands Center, Affiliate Faculty, since 2018.
- Arizona State University, Center for Education through Exploration
  Education Advisor, since 2015.
- Arizona State University, Julie Ann Wrigley Global Futures Laboratory
  Senior Global Futures Scientist, since 2013.
- Arizona State University, Barrett, the Honors College, Honors Faculty, since 2007.
- Arizona State University, School of Earth and Space Exploration
  Associate Professor of Geology and Education, 2009-2016.
- Arizona State University, Department of Geological Sciences, then School of Earth and Space Exploration, Assistant Professor of Geology and Education, 2003-2009.
- New Mexico Institute of Mining and Technology, Department of Earth and Environmental Science, Adjunct Professor of Geology, 2002-2003.
- United States Air Force Academy, Department of Chemistry
  Visiting Associate Professor of Geochemistry, 1998.
- Diné College, Department of Mathematics, Science, and Technology
  Geology and Environmental Science Instructor, 1988-2003; Department Chair, 2000-2003.

3 Leadership Positions

- Local Chair, Geological Society of America 131st Annual Meeting, Phoenix, AZ, 2018-2019.
- Deputy Director for Education and Outreach, EarthScope National Office (funded by National Science Foundation), 2011-2015.
- Humanities Research Fellow, Institute for Humanities Research, Arizona State University, 2007-2008.
- President (Elected), National Association of Geoscience Teachers, 2000-2001.
- First Vice-President (Elected), National Association of Geoscience Teachers, 1999-2000.
- Second Vice-President (Elected), National Association of Geoscience Teachers, 1998-1999.
- Councilor at Large (Elected), National Association of Geoscience Teachers, 1996-1998.
- President, Southwest Section, National Association of Geoscience Teachers, 1991-1995.
- President, Four Corners Geological Society, 1993-1994.

4 Research and Teaching Interests

4.1 Research Interests

Ethnogeology; Indigenous and other culturally framed geoscience knowledge systems; Place-based and culturally informed geoscience education; Sense of place in education; Geoscience interpretation; Geoheritage; Virtual field geology education; Regional geology, geologic history, and environmental geology of Southwestern North America and the North American Cordillera.

4.2 Teaching Interests

Regional geology of Southwestern North America; Historical geology; Field methods in geology; Teaching methods in geoscience; Geoscience and the humanities.

5 Honors and Awards

- The College of Liberal Arts and Sciences Professor of Impact Award, 2023.
- Outstanding Paper Award, *Journal of Geoscience Education*, National Association of Geoscience Teachers (NAGT), for *Immersive, interactive virtual field trips promote science learning* (co-authors C. Mead [lead], S. Buxner, G. Bruce, W. Taylor, and A. Anbar), 2020.
- Named to River Dell Regional High School Hall of Fame as Distinguished Graduate, Oradell, New Jersey, 2017.
- Honorary Traveling Speaker, EarthScope Program, 2016-2017.
- Provost's Teaching Fellow, 2015-2017, Arizona State University.
- Best Geological Guidebook Award, for *Route 66 Country, New Mexico Geological Society Guidebook 64* (with co-editors K. Ziegler [lead], M. Timmons, and S. Timmons), Geoscience Information Society, 2015.

- Zebulon Pearce Distinguished Teaching Award in the Natural Sciences, The College of Liberal Arts and Sciences, Arizona State University, 2014-2015 (Highest teaching award for natural-sciences faculty in The College; previously nominated for the award for 2008-2009).
- Elected Fellow of the Geological Society of America, 2014.
- Editor's Citation as Outstanding Reviewer for *Eos*, American Geophysical Union, 2013.
- Honorary Visiting Professor, Hetao University, Inner Mongolia Auton. Region, China, 2008.
- Institute for Humanities Research Fellow, Arizona State University, 2007.
- Award for Meritorious Contributions to American Indian People, Northeastern State University of Oklahoma, 1999.
- Award for Outstanding Educational Paper, Waste-management Education and Research Consortium (WERC) Conference on the Environment, 1996 and 1999.
- Distinguished Speaker, National Association of Geoscience Teachers, 1996-2000.
- Burlington Resources Foundation Faculty Teaching Award, Diné College, 1991 and 1992. Dean's Award for Outstanding Instruction, Diné College, 1990 and 1995.
- Goodwin Medal (Top Graduate Teaching Assistant of the Year), Massachusetts Institute of Technology, 1985.
- John Wulff Graduate Teaching Award, Dept. of Materials Science and Engineering, MIT, 1984.

6 Products

**Asterisk* signifies ASU student or post-doc author; ***Double asterisk* signifies Diné College student author. Author order is first by level of effort but last author position may signify head of the research group or project leader.

6.1 Guest Editorships

- Managing Editor for the two-issue special themed edition of the *Journal of Geoscience Education* titled "Teaching Geoscience in the Context of Culture and Place:" Volume 62, Numbers 1 and 2, February and May 2014.
- Managing Editor for the special themed edition of the *Journal of Geoscience Education* titled "Some Great Ideas for Geoscience Teachers:" Volume 48, Number 5, November 2000.

6.2 Refereed Publications **(69 total; *Google Scholar* h-index 26, total citations 3521)**

69. Kim, J.*, Cave, S., Arrowsmith, J. R., Clarke, A. B., Roggensack, K., & **Semken, S.** (in press). Controls on low shield-forming eruptive behavior: A case study of Sentinel-Arlington Volcanic Field (USA). *USGS Volume on Distributed Volcanism.*

68. **Semken, S.,** Mead, C., Foley, K., Ruberto, T., Bruce, G., & Anbar, A. D. (in press). Research on teaching geoscience with virtual field experiences. *Annual Reviews of Earth and Planetary Science.*

67. Foley, K.*, Petcovic, H. & **Semken, S.** (2024). How college geoscience instructors find and implement virtual field experiences in their courses. *Journal of Geoscience Education, 72,* 450-462, https://doi.org/10.1080/10899995.2024.2334179.

66. Londoño, S. C.*, **Semken, S.,** Brandt, E., Garzón, C., & Makuritofe, V. (2023). Understanding the geology of the Colombian Amazon through Indigenous eyes: Useful metaphors and approaches for teaching Earth sciences in the Colombian Amazon. In P. W. U. Chinn & S. Nelson-Barber (Eds.), *Indigenous STEM Education: Sociocultural Explorations of Science Education, 29* (pp. 223-238). London: Springer Nature, https://doi.org/10.1007/978-3-031-30451-4_12.
65. Ruberto, T.*, Mead, C., Anbar, A. D., & **Semken, S.** (2023). Comparison of in-person and virtual Grand Canyon undergraduate field-trip learning outcomes. *Journal of Geoscience Education, 71*(4), 445-461, https://doi.org/10.1080/10899995.2023.2186067.
64. Hubbard, K.*, Haberle, C., Elkins-Tanton, L., Christensen, P., & **Semken, S.** (2023). Thermal-infrared emission spectroscopy of graybody minerals (sulfide): Implications for extraterrestrial exploration for magmatic ore deposits. *Earth and Space Science, 10*(2), https://doi.org/10.1029/2022EA002641.
63. Corbett, A., Bierman, P., **Semken, S.,** & Whitaker, J. (2022). Can community laboratory facilities increase access and inclusivity in geoscience? *Earth and Space Science, 9*(5), https://doi.org/10.1029/2021EA002028.
62. **Semken, S.,** & Garcia, Á. A., Jr.* (2021). Synergizing standards-based and place-based science education. *Cultural Studies of Science Education, 16*(2), 447-460, https://doi.org/10.1007/s11422-021- 10020-4.
61. St. John, K., McNeal, K., Macdonald, H., Kastens, K., Bitting, K., Cervato, C., McDaris, J., Petcovic, H., Pyle, E., Riggs, E., Ryker, K., **Semken, S.,** & Teasdale, R. (2021). A community framework for geoscience education research: Summary and recommendations for future research priorities. *Journal of Geoscience Education, 69*(1), https://doi.org/10.1080/10899995.2020.1779569.
60. Robeck, E., Awad, A., **Semken, S.**, Manning, C., Daniels, M., & Blankenbicker, A. (2020). Earth science all around: Using immersive virtual field trips with place-based instruction in Earth and space science education. *The Earth Scientist, 36*(1), 15-21, https://www.nestanet.org/resources/Documents/Advocacy/TES/2015-2020/Spring%2020.pdf.
59. García, Á. A., Jr.*, **Semken, S.,** & Brandt, E. (2020). The construction of cultural consensus models to characterize ethnogeological knowledge. *Geoheritage, 12*, https://doi.org/10.1007/s12371-020- 00480-5.
58. Hoke, K., O'Connell, K., **Semken, S.,** & Arora, V. (2020). Promoting a sense of place virtually: A review of the ESA Weekly Water Cooler Chat focused on virtual sense of place. *Bulletin of the Ecological Society of America, 101*, https://dx.doi.org/10.1002/bes2.1734.
57. Atchison, C., Parker, W., Riggs, N., **Semken, S.,** & Whitmeyer, S. (2019). Accessibility and inclusion in the field: A field guide for central Arizona and Petrified Forest National Park. In P. A. Pearthree (Ed.), *Geologic excursions in southwestern North America: Geological Society of AmericaField Guide 55* (pp. 39-60). Boulder, CO: Geological Society of America, https://doi.org/10.1130/2019.0055(02).
56. St. John, K., Bitting, K., Cervato, C., Kastens, K., Macdonald, H., McDaris, J., McNeal, K., Petcovic, H., Pyle, E., Riggs, E., Ryker, K., **Semken, S.,** & Teasdale, R. (2019). An evolutionary leap in how we teach geosciences. *Eos, 100*, https://doi.org/10.1029/2019EO127285.
55. Mead, C., Buxner, S., Bruce, G., Taylor, W., **Semken, S.,** & Anbar, A. D. (2019). Immersive, interactive virtual field trips promote science learning. *Journal of Geoscience Education, 67*(2), 131-142, https://doi.org/10.1080/10899995.2019.1565285. **Received 2020 *JGE* Outstanding Paper Award from the National Association of Geoscience Teachers.**

54. Horodyskyj, L., Mead, C., Belinson, Z., Buxner, S., **Semken, S.**, & Anbar, A. D. (2018). *Habitable Worlds:* Delivering on the promises of online education. *Astrobiology, 18*(1), 86-99, https://doi.org/10.1089/ast.2016.1550.

53. Perera, V.*, Mead, C., Buxner, S., Lopatto, D., Horodyskyj, L., **Semken, S.**, & Anbar, A. D. (2017). Students in fully online programs report more positive attitudes toward science than students in traditional, in-person programs. *CBE-Life Sciences Education, 16*(4), ar60, https://doi.org/10.1187/cbe.16-11-0316.

52. **Semken, S.**, Ward, E. G., Moosavi, S., & Chinn, P. W. U. (2017). Place-based education in geoscience: Theory, research, practice, and assessment. *Journal of Geoscience Education, 65*(4), 542-562, https://doi.org/10.5408/17-276.1. **4th most-cited paper of all time in *JGE*.**

51. Londoño, S. C.*, Makuritofe, V., Brandt, E., **Semken, S.,** & Garzón, C. (2016). Ethnogeology in Amazonia: Surface-water systems in the Colombian Amazon, from perspectives of Uitoto traditional knowledge and mainstream hydrology. In G. R. Wessel & J. K. Greenberg (Eds.), *Geoscience for the public good and global development: Toward a sustainable future: Geological Society of America Special Paper 520* (pp. 221-232). Boulder, CO: Geological Society of America, https://doi.org/10.1130/2016.2520(20).

50. Ward, E. G., **Semken, S.**, & Libarkin, J. (2014). The design of place-based, culturally informed geoscience assessment. *Journal of Geoscience Education, 62*(1), 86-103, https://doi.org/10.5408/12-414.1.

49. Apple, J.[e], Lemus, J.[e], & **Semken, S.**[e] (2014). Teaching geoscience in the context of culture and place. *Journal of Geoscience Education, 62*(1), 1-4, https://doi.org/10.5408/1089-9995-62.1.1. ([e]*All authors contributed equally to this paper and are listed alphabetically*.)

48. Allison, C. M.*, Porter, R. C., Fouch, M. J., & **Semken, S.** (2013). Seismic evidence for lithospheric modification beneath the Mojave Neovolcanic Province, Southern California. *Geophysical Research Letters, 40*, 5119-5124, https://doi.org/10.1002/grl.50993.

47. Mathis, A., Lillie, R. J., & **Semken, S.** (2013). Sharing geology with the public along I-40 using interpretive and place-based educational techniques. In K. Zeigler, J. M. Timmons, S. Timmons, & **S. Semken** (Eds.), *Geology of the Route 66 region: Flagstaff to Grants: New Mexico Geological Society Guidebook 64* (pp. 20-22). Socorro, NM: New Mexico Geological Society. ISBN: 9781585460991.

46. Zeigler, K., Timmons, J. M., Timmons, S., & **Semken, S.** (Eds.). (2013). *Geology of the Route 66 region: Flagstaff to Grants: New Mexico Geological Society Guidebook 64.* Socorro, NM: New Mexico Geological Society. ISBN: 9781585460991. **Received 2015 Best Geological Guidebook Award from the Geoscience Information Society.**

45. Bohon, W.*, Robinson, S., Arrowsmith, R., & **Semken, S.** (2013). Building an effective social media strategy for science programs. *Eos, Transactions, American Geophysical Union, 94*(27), 237-238, https://doi.org/10.1002/2013EO270001.

44. Bueno Watts, N.*, Baker, D. R., & **Semken, S.** (2013). The impact of writing-intensive professional development on high school teachers' science content knowledge of energy in systems. *Global Journal of Human Social Science-G, 13*(3), 45-58. https://pdfs.semanticscholar.org/0d23/dd6093c32cb3c685de58c66eb52faa13d657.pdf.

43. **Semken, S.** (2012). Place-based teaching and learning. In N. M. Seel (Ed.), *Encyclopedia of the sciences of learning* (pp. 2641-2642). New York: Springer. ISBN: 9781441914279.

42. Luft, J., Wong, S.*, & **Semken, S.** (2011). Rethinking recruitment: The comprehensive and strategic recruitment of secondary science teachers. *Journal of Science Teacher Education, 22*, 459-474, https://doi.org/10.1007/s10972-011-9243-2.

41. Van der Hoeven Kraft, K.*, Srogi, L., Husman, J., **Semken, S.**, & Fuhrman, M. (2011). Engaging students to learn through the affective domain: A new framework for teaching in the geosciences. *Journal of Geoscience Education, 59*(2), 71-84, https://doi.org/10.5408/1.3543934a**. 8th most-cited paper of all time in *JGE*.**
40. Williams, D.*, & **Semken, S.** (2011). Ethnographic methods in analysis of place-based geoscience curriculum and pedagogy. In A. P. Feig & A. Stokes (Eds.), *Qualitative inquiry in geoscience education research: Geological Society of America Special Paper 474* (pp. 49-62). Boulder, CO: Geological Society of America, https://doi.org/10.1130/2011.2474(05).
39. **Semken, S.,** & Brandt, E. (2010). Implications of sense of place and place-based education for ecological integrity and cultural sustainability in contested places. In D. Tippins, M. Mueller, M. van Eijck, & J. Adams (Eds.), *Cultural studies and environmentalism: The confluence of ecojustice, place-based (science) education, and indigenous knowledge systems* (pp. 287-302). New York: Springer, https://doi.org/0.1007/978-90-481-3929-3_24.
38. **Semken, S.**, Williams, D.*, Ross, J., Kerr, B., & Monhardt, R. (2010). Design elements and learning outcomes of two place-based teacher professional development programs situated in the Southwest United States: Concordance with Universal Design for Learning. *Proceedings of the National Association for Research in Science Teaching*, Philadelphia, Pennsylvania.
37. Bueno Watts, N.*, Baker, D. R., **Semken, S.**, & Lang, M. (2010). Improving high school teachers' content knowledge of energy in systems through research-based professional development. *Proceedings of the National Association for Research in Science Teaching*, Philadelphia, Pennsylvania.
36. **Semken, S.,** Butler Freeman, C.*, Bueno Watts, N.*, Neakrase, J.*, Dial, R.*, & Baker, D. (2009). Factors that influence sense of place as a learning outcome of place-based geoscience teaching. *Electronic Journal of Science Education, 13*, 136-159, https://ejse.southwestern.edu/article/view/7803.
35. Gonzales, D., & **Semken, S.** (2009). A comparative study of field-inquiry in an undergraduate petrology course. In S. J. Whitmeyer, D. W. Mogk, & E. J. Pyle (Eds.), *Field geology education: Historical perspectives and modern approaches*: *GSA Special Paper 461* (pp. 205-221). Boulder, CO: Geological Society of America, https://doi.org/10.1130/2009.2461(18).
34. **Semken, S.,** Dodick, J., Ben-David, O., Pineda, M.*, Bueno Watts, N.*, & Karlstrom, K. (2009). Timeline and time-scale cognition experiments for a geological interpretative exhibit at Grand Canyon. *Proceedings of the National Association for Research in Science Teaching*, Garden Grove, California.
33. Brand, B. D.*, Clarke, A. B., & **Semken, S**. (2009). Eruptive dynamics and depositional processes of Narbona Pass maar volcano, Navajo volcanic field, Navajo Nation, New Mexico (USA). *Bulletin of Volcanology, 71*, 49-77, https://doi.org/10.1007/s00445-008-0209-y.
32. Karlstrom, K., **Semken, S.,** Crossey, L., Perry, D., Gyllenhaal, E. D., Dodick, J., Williams, M., Hellmich-Bryan, J., Crow, R., Bueno Watts, N.*, & Ault, C. (2008). Informal geoscience education on a grand scale: the Trail of Time exhibition at Grand Canyon. *Journal of Geoscience Education, 56*(4), 354-361, https://doi.org/10.5408/informal_geoscience_education_.
31. **Semken, S.,** & Butler Freeman, C.* (2008). Sense of place in the practice and assessment of place-based science teaching. *Science Education, 92*(6), 1042-1057, https://doi.org/10.1002/sce.20279.

30. Bueno Watts, N. F.*, **Semken, S.**, Pineda, M.*, & Alvarado, C.* (2008). Visitors' geological conceptions and meaning making at Petrified Forest National Park. *Proceedings of the National Association for Research in Science Teaching*, Baltimore, Maryland.
29. **Semken, S**., Fouch, M., Garnero, E., Zah, P., & Lippert, D. (2007). Meshing American Indian concerns with goals of EarthScope's USArray. *Eos, Transactions, American Geophysical Union, 88*, 309-310, https://doi.org/10.1029/2007EO310001.
28. **Semken, S.**, & Butler Freeman, C. L.* (2007). Cognitive and affective outcomes of a Southwest place-based approach to teaching introductory geoscience. *Proceedings of the National Association for Research in Science Teaching*, New Orleans, Louisiana.
27. Butler Freeman, C. L.*, **Semken, S.**, Lawson, A., Oehrtman, M., Schaufele, C., & Jensen, J.* (2007). How old is the Earth: an exploration of geologic time through place-based inquiry. *Proceedings of the National Association for Research in Science Teaching*, New Orleans, Louisiana.
26. Gonzales, D., & **Semken, S**. (2006). Integrating undergraduate education and scientific discovery through field research in igneous petrology. *Journal of Geoscience Education, 54*, 133-142, https://doi.org/10.5408/1089-9995-54.2.133.
25. Hahn, D.*, Brem, S. K., & **Semken, S**. (2005). Exploring the social, moral, and temporal qualities of pre-service teachers' narratives of evolution. *Journal of Geoscience Education, 53*, 456-461, https://doi.org/10.5408/1089-9995-53.4.456.
24. **Semken, S.** (2005). Sense of place and place-based introductory geoscience teaching for American Indian and Alaska Native undergraduates. *Journal of Geoscience Education, 53*(2), 149-157, https://doi.org/10.5408/1089-9995-53.2.149. **25th most-cited paper of all time in *JGE*.**
23. Wilson, D., Aster, R., West, M., Ni, J., Grand, S., Gao, W., Baldridge, W. S., **Semken, S**., & Patel, P. (2005). Lithospheric structure of the Río Grande Rift. *Nature, 433*, 851-855, https://doi.org/10.1038/nature03297.
22. Wilson, D., Aster, R., Ni, J., Grand, S., West, M., Gao, W., Baldridge, W. S., & **Semken, S.** (2005). Imaging the seismic structure of the crust and upper mantle beneath the Great Plains, Río Grande Rift, and Colorado Plateau using receiver functions. *Journal of Geophysical Research, 110*, B05306, https://doi.org/10.1029/2004JB003492.
21. Lucas, S. G., **Semken, S. C.,** Berglof, W. R., & Ulmer-Scholle, D. S. (Eds.). (2003). *Geology of the Zuni Plateau: New Mexico Geological Society Guidebook 54*. Socorro, NM: New Mexico Geological Society, https://nmgs.nmt.edu/publications/guidebooks/54/.
20. **Semken, S.** (2003). Black rocks protruding up: the Navajo volcanic field. In S. G. Lucas, **S. C. Semken**, W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: New Mexico Geological Society Guidebook 54* (pp. 133-138). Socorro, NM: New Mexico Geological Society, https://nmgs.nmt.edu/publications/guidebooks/downloads/54/54_p0133_p0138.pdf.
19. Blackhorse, A.**, **Semken, S.**, & Charley, P. (2003). A Navajo-English thesaurus of geological terms. In S. G. Lucas, **S. C. Semken,** W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: New Mexico Geological Society Guidebook 54* (pp. 103-108). Socorro, NM: New Mexico Geological Society, https://nmgs.nmt.edu/publications/guidebooks/downloads/54/54_p0103_p0107.pdf.
18. Gok, R., Ni, J., West, M., Sandvol, E., Wilson, D., Aster, R., Baldridge, W.S., Grand, S., Gao, W.,Tillman, F., & **Semken, S.** (2003). Shear-wave splitting and mantle flow beneath LA RISTRA. *Geophysical Research Letters, 30*(12), 1614, https://doi.org/10.1029/2002GL016616.

17. Wilson, D., Leon, J., Aster, R., Ni, J., Schlue, J., Grand, S., **Semken, S.,** Baldridge, S., & Gao, W. (2002). Broadband seismic background noise at temporary seismic stations observed on a regional scale in the southwestern United States. *Bulletin of the Seismological Society of America, 92*(8), 3335-3341, https://doi.org/10.1785/0120010234.
16. Riggs, E. M., & **Semken, S. C.** (2001). Culture and science: Earth science for Native Americans. *Geotimes, 46,* 14-17.
15. **Semken, S. C.** (2001). The Navajo volcanic field. In L. S. Crumpler & S. G. Lucas (Eds.), *Volcanoes of New Mexico: Bulletin 18* (pp. 79-83), Albuquerque, NM: New Mexico Museum of Natural History and Science, https://econtent.unm.edu/digital/collection/bulletins/id/847.
14. Reynolds, S. J., & **Semken, S. C.** (2000). Rocks before terms and tables—from the concrete to the abstract. *Journal of Geoscience Education, 48,* 572, https://doi.org/10.5408/1089-9995-48.5.572a.
13. **Semken, S. C.** (2000). Some great ideas for geoscience teachers [special issue]. *Journal of Geoscience Education, 48*(5), https://doi.org/10.5408/1089-9995-48.5.570a.
12. **Semken, S. C.** (1999). Oxygen. In C. P. Marshall & R. W. Fairbridge (Eds.), *Encyclopedia of geochemistry* (pp. 467-469): Dordrecht, Netherlands: Kluwer Academic Publishers.
11. Kelly, M., Ort, M., Tashiro, J., & **Semken, S.** (1999). *VR Excursions: Exploring Earth's Environment.* Upper Saddle River, NJ: Prentice-Hall.
10. Dubiel, R. F., Hasiotis, S. T., & **Semken, S. C.** (1997). Hands-on geology for Navajo Nation teachers. *Journal of Geoscience Education,* 45(2), 113-116, https://doi.org/10.5408/1089-9995-45.2.113.
9. **Semken, S. C.**, & Morgan, F. (1997). Navajo pedagogy and Earth systems. *Journal of Geoscience Education, 45*(2), 109-112, https://doi.org/10.5408/1089-9995-45.2.109.
8. **Semken, S. C.** (1997). NAGT/GSA symposium on geoscience education in Native American communities. *Journal of Geoscience Education, 45*(2), 104-105, https://doi.org/10.5408/1089-9995-45.2.104.
7. Tsosie, B.**, **Semken, S.**, & Harrison, B. (1997). The Shiprock uranium-mill tailings remedial action (UMTRA) site. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic geology and paleontology of the Four Corners region: New Mexico Geological Society Guidebook 48* (pp. 279-281). Socorro, NM: New Mexico Geological Society, https://nmgs.nmt.edu/publications/guidebooks/downloads/48/48_p0279_p0281.pdf.
6. **Semken, S. C.**, & McIntosh, W. C. (1997). $^{40}Ar/^{39}Ar$ age determinations for the Carrizo Mountains laccolith, Navajo Nation, Arizona. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic geology and paleontology of the Four Corners region: New Mexico Geological Society Guidebook 48* (pp. 75-80). Socorro, NM: New Mexico Geological Society, https://nmgs.nmt.edu/publications/guidebooks/downloads/48/48_p0075_p0080.pdf.
5. **Semken, S. C.**, & Oversby, V. M. (1994). Coal ash as a naturally-occurring radioactive material—regulation before research? *Proceedings, 29th Intersociety Energy Conversion Engineering Conference,* 48-50.
4. Wuensch, B. J., **Semken, S. C.**, Uchikoba, F., & Yoo, H. I. (1991). The mechanisms for self-diffusion in magnesium oxide. *Ceramic Transactions, 24,* 79-89.
3. Farmer, G. L., Perry, F. V., **Semken, S.**, Crowe, B., Curtis, D., & DePaolo, D. J. (1989). Isotopic evidence on the structure and origin of subcontinental lithospheric mantle in southern Nevada. *Journal of Geophysical Research, 94,* 7885-7898, https://doi.org/10.1029/JB094iB06p07885.

2. Ingel, R. P., Lewis, D., III, Bender, B. A., & **Semken, S. C.** (1988). Properties and microstructures of rapidly solidified zirconia-based ceramic alloys. In S. Somiya (Ed.), *Science and technology of zirconia III: Advances in Ceramics 24* (pp. 385-396). Cincinnati, OH: American Ceramic Society.

1. Sclater, J. G., Royden, L., Horváth, F., Burchfiel, B. C., **Semken, S.,** & Stegena, L. (1980). The formation of the intra-Carpathian basins as determined from subsidence data. *Earth and Planetary Sciences Letters, 51,* 139-162, https://doi.org/10.1016/0012-821X(80)90262-9.

6.3 White Papers

W2. **Semken, S.,** Bhattacharyya, J., Duggan-Haas, D., Pallant, A., & Wiggen, J. (2018). Research on instructional strategies to improve geoscience learning in different settings and with different technologies. In K. St. John (Ed.), *Community framework for geoscience education research.* National Association of Geoscience Teachers. https://doi.org/10.25885/ger_framework/9.

W1. Hall-Wallace, M., Benthien, M., Boyd, T., Marvinney, R., Meertens, C., **Semken, S.,** Taber, J., & Wald, L. (2002). *EarthScope education and outreach program plan.* Washington, DC: EarthScope.

6.4 Publications for Education and Outreach (some peer-reviewed)

E43. **Semken, S.** (2024). Milestones in deep time [Review of the book *Turning to Stone: Discovering the Subtle Wisdom of Rocks,* by M. Bjornerud]. *American Scientist,* https://www.americanscientist.org/article/milestones-in-deep-time.

E42. **Semken, S.** (2021). Tsé ligaii: The white sandstone of the Chuska Mountains. *Leading the Way: The Wisdom of the Navajo People, 19*(3), 20-21.

E41. **Semken, S.** (2017). Dikes on Navajo land. *Leading the Way: The Wisdom of the Navajo People, 15*(7), 31.

E40. Apple, J.[e], Lemus, J.[e], & **Semken, S**.[e] (2014). Teaching geoscience in the context of culture and place: Theme issue continued. *Journal of Geoscience Education, 62*(2), 157 (*[e]All authors contributed equally to this paper and are listed alphabetically.*), https://doi.org/10.5408/1089-9995-62.1.1.

E39. Zeigler, K., **Semken, S.,** & Moore, C. (2013). Meteor Crater: from misunderstanding to obsession to geologic icon. In K. Zeigler, J. M. Timmons, S. Timmons, & **S. Semken** (Eds.), *Geology of the Route 66 region: Flagstaff to Grants: New Mexico Geological Society Guidebook 64* (pp. 22-23). Socorro, NM: New Mexico Geological Society.

E38. Zeigler, K., & **Semken, S.** (2013). Old Route 66: Getting your kicks in the American Southwest. In K. Zeigler, J. M. Timmons, S. Timmons, & **S. Semken** (Eds.), *Geology of the Route 66 region: Flagstaff to Grants: New Mexico Geological Society Guidebook 64* (pp. 23-24). Socorro, NM: New Mexico Geological Society.

E37. Zeigler, K., Timmons, J. M., & **Semken, S.** (2013). Third-day road log: Trip 1, Trip 2, and Trip 3: Pre-trip: From El Rancho Hotel in Gallup, New Mexico to Northwest Regional Visitor's Center in Grants, New Mexico. In K. Zeigler, J. M. Timmons, S. Timmons, & S**. Semken** (Eds.), *Geology of the Route 66 region: Flagstaff to Grants: New Mexico Geological Society Guidebook 64* (pp. 50-74). Socorro, NM: New Mexico Geological Society.

E36. Parker, W., Martz, J., Zeigler, K., **Semken, S.,** & Timmons, J. M. (2013). Second-day road log: From a corner in Winslow, Arizona, through Petrified Forest National Park, to the El Rancho Hotel in Gallup, New Mexico. In K. Zeigler, J. M. Timmons, S. Timmons, & **S. Semken** (Eds.), *Geology of the Route 66 region: Flagstaff to Grants: New Mexico Geological Society Guidebook 64* (pp. 25- 49). Socorro, NM: New Mexico Geological Society.

E35. Zeigler, K., Riggs, N., Timmons, J. M., Ort, M., & **Semken, S.** (2013). First-day road log: From Flagstaff to SP and Colton Craters, Wupatki and Sunset Crater National Monuments, and Meteor Crater. In K. Zeigler, J. M. Timmons, S. Timmons, & **S. Semken** (Eds.), *Geology of the Route 66 region: Flagstaff to Grants: New Mexico Geological Society Guidebook 64* (pp. 9-24). Socorro, NM: New Mexico Geological Society.

E34. **Semken, S.** (2013). Antelope Canyon history. *Leading the Way: The Wisdom of the Navajo People, 11*(1), 24.

E33. **Semken, S.** (2012). EarthScope and place-based education. *inSights*, summer 2012.

E32. **Semken, S.** (2012). Seashells in the Shiprock area. *Leading the Way: The Wisdom of the Navajo People*, *10*(7), 22-23.

E31. **Semken, S.,** Schaufele, C., & Zumoff, N. (2012). Math and geoscience "placed" in context. *In the Trenches*, *2*(2), 12-13.

E30. Peterson, V. L., Garver, J. I., **Semken, S.**, & Williams, W. J. W. (2011). Enhancing participation oftwo-year college faculty in the Geological Society of America. *GSA (Geological Society of America)Today*, *21*(12), 36-38.

E29. **Semken, S.** (2011). A sense of the American Southwest: Place-based Earth system science for diverse students. *In the Trenches*, *1*(3), 1-4.

E28. **Semken, S.** (2011). Place, place knowledge, and sense of place as themes for cross-cultural science curriculum: A photoessay. *Indigenous Science Network Bulletin*, *14*(1). http://members.ozemail.com.au/%7Emmichie/bulletin_feb11.pdf.

E27. Crow, R., Karlstrom, K., Crossey, L., **Semken, S.**, Perry, D., Williams, M., & Bryan, J. (2011). It's about time: Innovations in geoscience education at the Grand Canyon. *Legacy*, *22*, 26-27.

E26. **Semken, S.** (2010). Ship Rock and the Navajo volcanic field. In L. G. Price (Ed.), *The geology of northern New Mexico's parks, monuments, and public lands* (pp. 85-91). Socorro, NM: New Mexico Bureau of Geology and Mineral Resources.

E25. **Semken, S.**, Dodick, J., Frus, R.*, Wells, M., Perry, D., Bryan, J., Williams, M., Crow, R., Crossey, L., & Karlstrom, K. (2009, November-December). Studies of informal geologic time learning at the "Trail of Time" in Grand Canyon National Park. *Informal Learning Review*, *1*(99), 1-5.

E24. **Semken, S.** (2009). Putting Earth science back in its place. *Arizona Geology*, http://www.azgs.az.gov/arizona_geology/april09/article_earthscience%20.html.

E23. **Semken, S.** (2008). A sense of the Southwest. *Newsletter*, *Bioregional Outdoor Education Project*, *9*(3), 1-12.

E22. Heckert, A. B., Kues, B. S., & **Semken, S. C.** (2003). From Bear Spring to Fort Wingate. In S. G. Lucas, **S. C. Semken,** W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: New Mexico Geological Society Guidebook 54* (pp. 37-40). Socorro, NM: New Mexico Geological Society.

E21. Lucas, S. G., Heckert, A. B., Berglof, W. R., Kues, B. S., Crumpler, L. S., Aubele, J. C., McLemore, V. T., Owen, D. E., & **Semken, S. C.** (2003). Second-day road log, from Gallup to Fort Wingate, Sixmile Canyon, Ciniza, Red Rock Park, Church Rock, White Mesa, Thoreau, and Grants. In S. G. Lucas, **S. C. Semken,** W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: New Mexico Geological Society Guidebook 54* (pp. 35-68). Socorro, NM: New Mexico Geological Society.

E20. Lucas, S. G., **Semken, S. C.,** Heckert, A. B., Berglof, W. R., Hoffman, G., Kues, B. S., Crumpler, L. S., & Aubele, J. C. (2003). First-day road log, from Gallup to Gamerco, Yah-Ta-Hey, Window Rock, Fort Defiance, Navajo, Todilto Park, Crystal, Narbona Pass, Sheep Springs, Tohatchi, and Gallup. In S. G. Lucas, S. C. Semken, W. R. Berglof, & D. S. Ulmer-Scholle (Eds.), *Geology of the Zuni Plateau: New Mexico Geological Society Guidebook 54* (pp. 1-34). Socorro, NM: New Mexico Geological Society.

E19. Riggs, E., & **Semken, S.** (2003). Earth science education for Native Americans. *Newsletter, Bioregional Outdoor Education Project, 4*(3), 1-10.

E18**. Semken, S.**, & Gonzales, D. (2002, October 15). Rainbows in the rocks. *Daily Times, Farmington, New Mexico,* pp. A1, A5.

E17. **Semken, S. C.** (2002). Citation: National Association of Geoscience Teachers 2001 Neil Miner Award. *Journal of Geoscience Education, 50*, 221-223.

E16. **Semken, S. C.** (2002). *Ch'óoshgai doo Tsézhiin 'íí 'áhí: the Chuska Mountains, Defiance Plateau, and Navajo Volcanic Field: Western Slope Intercollegiate Field Conference Guidebook 14.* Shiprock, NM: Diné College.

E15. **Semken, S. C.** (2001). Comments on a list of references on science teaching and Native cultures. *Tribal College Journal, 12,* 7.

E14. **Semken, S. C.**, Drummond, C., & Harder, V. (2001). The National Association of Geoscience Teachers: dedicated to geoscience education. *GSA Today, 11*(10), 53.

E13. **Semken, S. C.** (1999). Aboriginal cultures and Earth science. *GSA Today, 9*(8), 18.

E12. Ridgway, K., Dowse, M., Geary, E. E., Maxson, J., **Semken, S.,** Stephenson-Hawk, D., & Winkler, J. (1997). How can we increase diversity, recruitment, and retention of students in the Earth and space sciences? In M. F. W. Ireton, C. A. Manduca, & D. W. Mogk (Eds.). Shaping the future of undergraduate Earth science education: Innovation and change using an Earth system approach (pp. 39-43). Washington, DC: American Geophysical Union.

E11. Anderson, O. J., Lucas, S. G., **Semken, S. C.**, Chenoweth, W. L., & Black, B. A. (1997). Third-day road log, from Durango, Colorado, to Aztec, Farmington, and Shiprock, New Mexico. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic geology and paleontology of the Four Corners region: New Mexico Geological Society Guidebook 48* (pp. 35-56). Socorro, NM: New Mexico Geological Society.

E10. Lucas, S. G., Anderson, O. J., Leckie, R. M., Wright-Dunbar, R., & **Semken, S. C.** (1997). Second- day road log, from Cortez, Colorado, to Mesa Verde National Park, Mancos, and Durango. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic geology and paleontology of the Four Corners region: New Mexico Geological Society Guidebook 48* (pp. 19-33). Socorro, NM: New Mexico Geological Society.

E9. Anderson, O. J., Lucas, S. G., Chenoweth, W. L., & **Semken, S. C.** (1997). First-day road log, from Cortez, Colorado, to Montezuma Creek, Bluff, Aneth, and Four Corners. In O. J. Anderson, B. S. Kues, & S. G. Lucas (Eds.), *Mesozoic geology and paleontology of the Four Corners region: New Mexico Geological Society Guidebook 48* (pp. 1-18). Socorro, NM: New Mexico Geological Society.

E8. Brown, L. F., Hickmott, D. D., Currier, R. P., **Semken, S. C.**, Lameman, T.**, Martin, S.**, & Yazzie, S.** (1996). *Reducing adverse health effects and improving performance of stoves on the Navajo Reservation, a plan for action: Los Alamos National Laboratory Report LA-UR-96-4016.* Los Alamos, NM: Los Alamos National Laboratory.

E7. **Semken, S. C.** (1996). Introduction to the geology and hydrogeology of northwestern New Mexico. *Proceedings, New Mexico Water Conference, New Mexico Water Resources Research Institute,* 13-21.

E6. **Semken, S.** (1996, February 2). Creationist beliefs refuted. *Daily Times, Farmington, New Mexico,* p. B4.

E5. **Semken, S.** (1996, January 12). Scientists are curious human beings: Response to creationists. *Daily Times, Farmington, New Mexico,* p. B4.

E4. **Semken, S. C.** (1992). Looking after the land. *Tribal College Journal, 3,* 11-12.

E3. **Semken, S. C.,** Slate, C., & Crank, L., Jr.**. (1992). Geologic road log from Shiprock to Chinle, Navajo Nation. In **S. C. Semken** (Ed.), *Ti' Diné bitsé' dadíníil': Field guide to a geologic excursion in the northeastern Navajo Nation: Western Slope Intercollegiate Field Conference Guidebook 4* (pp. 5-32). Shiprock, NM: Navajo Community College.

E2. **Semken, S. C.** (Ed.). (1992). *Ti' Diné bitsé' dadíníil': Field guide to a geologic excursion in the northeastern Navajo Nation: Western Slope Intercollegiate Field Conference Guidebook 4.* Shiprock, NM: Navajo Community College.

E1. **Semken, S. C.** (1983). Geology of Cima Dome, Cima Volcanic Field, Afton Canyon, and Manix Fault areas, California. In D. Casebier (Ed.), *Guide to the Mojave Road* (pp. 137, 173-174, 177, 216-219). Los Angeles: Mojave Road Publications.

6.5 Digital Resources Produced or Co-Produced

- Earth Science All Around-360 Imagery and Place-Based Education: https://bit.ly/395s2C4.
- Grand Canyon Virtual Field Trip (Center for Education through Exploration): https://vft.asu.edu/migrated/argosInstructions/grandcanyon.html.
- Red Rocks Virtual Field Trip (Infiniscope): https://vft.asu.edu/migrated/argosInstructions/redrocks.html.
- Dinosaur Doom: K-Pg Event Virtual Field Trip (Center for Education Through Exploration): https://vft.asu.edu/migrated/argosInstructions/dinodoom.html.
- Tempe Butte Virtual Field Trip: https://imtinc360.com/TempeButteVFT/
- Science Education Resource Center (SERC) Contributions: https://serc.carleton.edu/person/1096.html.

6.6 Physical Resources Produced or Co-Produced

Co-designer and co-constructor of the *Trail of Time Geoscience Exhibition* at Grand Canyon National Park, funded by the National Science Foundation with support from the National Park Service: https://www.nps.gov/grca/planyourvisit/the-trail-of-time.htm.

7 Invited Professional and Outreach Presentations

Note: ¶ denotes a presentation as *National Association of Geoscience Teachers (NAGT) Distinguished Speaker*, § denotes a presentation as *EarthScope Honorary Traveling Speaker*, and # denotes an *online* presentation.

7.1 Invited Professional Presentations

2024

- Universidade de São Paulo, Instituto de Geociências, São Paulo, SP, Brazil.
- Yale University.
- Northern Arizona University.

2023

- Massachusetts Institute of Technology, Terrascope Program, Field Project on Navajo Nation.

2022

- *VI Simpósio Brasiliero de Patrimônio Geológico* (6th Brazilian Geological Heritage Symposium), São Paulo, Brazil, Invited Speaker[#]. https://6sbpg.igc.usp.br/participantes/palestrantes/#StevenSemken.
- University of Minnesota *Graduate Student Symposium*, Keynote Speaker[#].
- Geological Society of Minnesota[#].
- Chandler-Gilbert Community College[#].

2021

- University of Wyoming: for online multi-university seminar *Diversity and Inclusion in Geoscience*[#].
- AGU Sharing Science Webinar: *Honoring Living Landscapes with Stories*[#]. https://youtu.be/5-cI-vBTVZE.
- National Park Service, Montezuma Castle and Tuzigoot National Monuments, Geological Training Webinar[#].
- National Academies of Sciences, Engineering, and Medicine *Roundtable on Systemic Change in Undergraduate STEM Education*[#].
- New Mexico Institute of Mining and Technology[#].
- Paleontological Research Institution: *Science in the Virtual Pub*[#]. https://www.facebook.com/1045284350/videos/10222929023667830/.

2020

- NAGT On the Cutting Edge Webinar on *Developing a Sense of Place During Distance Learning*, Invited Speaker[#]. https://nagt.org/nagt/profdev/webinars/sense_of_place/index.html.
- University of Wisconsin-Madison[#].
- Algoma University[#].
- National Academy of Sciences, National Park Service, U. S. Geological Survey, and American Geosciences Institute, *America's Geoheritage II Workshop*, Distinguished Speaker[#]. https://vimeo.com/470639004.

- Grand Canyon National Park, National Park Service: *Virtual Grand Canyon GeoFest 2020*[#]. https://fb.watch/kmpt-INXis/.
- University of New Mexico[#].
- Ecological Society of America Virtual Water Cooler Chat: *Connecting to Place—Virtually*[#]. https://www.esa.org/events/the-esa-weekly-water-cooler/connecting-to-place-virtually/.

2019

- Association of Environmental and Engineering Geologists, Phoenix Chapter.
- Arizona State University Libraries, *Mapping Grand Canyon Conference.* https://lib.asu.edu/mapping-grand-canyon-conference/program/place-based-teaching.

2018

- University of Vermont.
- Puerto Rico Louis Stokes Alliance for Minority Participation, Universidad de Puerto Rico.

2017

- University of Colorado, Boulder.
- James Madison University[§].
- University of Missouri[§].
- University of Texas, Arlington[§].
- University of Arizona.
- Michigan State University[§].

2016

- *35th International Geological Congress,* Cape Town, South Africa, Invited Keynote Speaker.
- Grand Canyon National Park, Office of Interpretation, National Park Service.

2015

- *EarthScope National Meeting,* Stowe, VT, Invited Plenary Speaker.

2014

- Arizona Western College, Faculty Professional Development, Invited Keynote Speaker.

2013

- Purdue University.
- National Academy of Sciences, U. S. Geological Survey, National Park Service, American Geosciences Institute, and Colorado Geological Survey, *America's Geologic Heritage I Workshop,* Lakewood, CO, Distinguished Speaker. https://www.nationalacademies.org/event/03-18-2013/americas-geologic-heritage-a-workshop.

2012

- University of Nebraska-Lincoln, *Stout Lecture Series.*

2011

- University of Oklahoma, *Native Science Series.*

2009

- NAGT/NSF *On the Cutting Edge Workshop on the Affective Domain*, Mesa Community College, Invited Keynote Speaker.

2008

- Hetao University, Bayonnaer, Inner Mongolia, China.
- Ningxia University, Yinchuan, Ningxia Hui, China.
- Northwest University for Nationalities, Yinchuan, Ningxia Hui, China.
- University of Northern Colorado.

2006

- University of Oklahoma.
- New Mexico State University.
- New Mexico Institute of Mining and Technology.

2005

- Diné College, Navajo Nation, Arizona.

2004

- Mesa Community College.
- Southwestern Indian Polytechnic Institute.
- Fort Lewis College.
- Four Corners Geological Society.

2003

- New Mexico Bureau of Geology and Mineral Resources.
- University of North Dakota.

2002

- University of New Mexico.

2000

- Prescott College¶.
- San Juan College.
- Monument Valley Navajo Tribal Park.

1999

- Snow College¶.
- University of California, Riverside¶.
- Northeastern State University of Oklahoma¶.

1998

- Colorado College¶.
- Mount Holyoke College¶.
- Northern Arizona University.

1997

- Cerritos College[¶].
- Michigan Technological University[¶].
- Hamilton College[¶].
- University of Delaware[¶].
- University of British Columbia[¶].

7.2 Invited Outreach Presentations and Activities (Hikes, Field Trips)

Recurring

- Boyce Thompson Arboretum State Park, Superior, AZ (2-3x annually since 2009).
- Lost Dutchman State Park/Superstition Wilderness, Pinal County, AZ (1-2x annually since 2012).
- Earth and Space Open Houses, School of Earth and Space Exploration, ASU (2x annually).

2025

- Phoenix Airport Museum, Sky Harbor International Airport, Phoenix, AZ.
- Río Verde Community Association, Río Verde, AZ.
- Desert Botanical Garden, Phoenix, AZ.

2024

- Paradise Valley Community College, Phoenix, AZ[#].
- Superior Chamber of Commerce, Superior, AZ.
- Lifelong Learning at PebbleCreek, Goodyear, AZ.

2023

- Desert Botanical Garden, Phoenix, AZ.
- Superior Chamber of Commerce, Superior, AZ.

2022

- Solera at Johnson Ranch, San Tan Heights, AZ.
- The Post Oak School, Houston, TX[#].
- Classical Academy Charter School of Clifton, Clifton, NJ[#].
- Dead Horse Ranch State Park, Cottonwood, AZ.
- Superior Chamber of Commerce, Superior, AZ.

2021

- STEM Summer Scholars Academy, Passaic County Community College, Paterson, NJ[#].
- Many Farms Chapter Summer Student Program, Many Farms, Navajo Nation, AZ[#].
- Lifelong Learning at PebbleCreek, Goodyear, AZ.

2020

- STEM Summer Scholars Academy, Passaic County Community College, Paterson, NJ[#].
- Desert Botanical Garden, Phoenix, AZ.

- Lifelong Learning at PebbleCreek, Goodyear, AZ.

2019

- Beaver Creek Trails Coalition, Lake Montezuma, AZ.
- "Voice of Democracy Arizona" radio program, KFNX-AM, Phoenix, AZ.
- Herberger Institute of Design and the Arts Outreach Day, Arizona State University.
- Superior Chamber of Commerce, Superior, AZ.
- Grand Canyon National Park, AZ.

2018

- Beaver Creek Trails Coalition, Lake Montezuma, AZ.
- Superstition Area Land Trust, Apache Junction, AZ.
- Community STEAM Night, Pascua Yaqui Tribal Center, Guadalupe, AZ.
- Desert Botanical Garden, Phoenix, AZ.
- Herberger Institute of Design and the Arts Outreach Day, Arizona State University.

2017

- Community STEAM Night, Pascua Yaqui Tribal Center, Guadalupe, AZ.
- Desert Botanical Garden, Phoenix, AZ.
- Grand Canyon National Park Public Programs, AZ.

2016

- Legends of Superior Trails Ecotourism Festival, Superior, AZ.
- Superstition Area Land Trust, Apache Junction, AZ.

2015

- Desert Botanical Garden, Phoenix, AZ.
- Scientific Panelist, Phoenix Comic-Con, Phoenix, AZ.
- Legends of Superior Trail Ecotourism Festival, Superior, AZ.

2014

- Arizona State University, Great Arizona ShakeOut EarthScope Public Event, Tempe, AZ.
- Legends of Superior Trail Ecotourism Festival, Superior, AZ.
- Central Arizona Geology Club, Prescott, AZ.

2013

- Arizona State University, Great Arizona ShakeOut EarthScope Public Event, Tempe, AZ.
- Bullion Plaza Historical Museum, Miami, AZ.
- Legends of Superior Trail Ecotourism Festival, Superior, AZ.

2012

- Arizona State University, Great Arizona ShakeOut EarthScope Public Event, Tempe, AZ.
- Legends of Superior Trail Ecotourism Festival, Superior, AZ.

2011

- Sun City Anthem Hiking Club, Florence, AZ.

2010

- Arcadia Neighborhood Learning Center, Scottsdale, AZ.

2009

- Southwest Cultures Club, Fountain Hills, AZ.

2008

- International Yin Shan Rock Art Scientific Inspection, Inner Mongolia, China.
- Yinchuan Middle School #1, Yinchuan, Ningxia Hui, China.
- McDowell Sonoran Conservancy, Scottsdale.

2005

- ASU President's Community Enrichment Program, Heard Museum, Phoenix.
- Pueblo Grande Museum, Phoenix.

2004

- Society for Advancement of Chicanos and Native Americans in Science, Austin, TX.

2000

- American Indian Science and Engineering Society, Gallup, NM.

1997

- Society of Mining and Metallurgical Engineers, Albuquerque, NM.

8 Funding (total to date: $4.047 million)

Funded Grant	Sponsor	Duration	Funds
Developing Partnerships Among Tribes, Geoscientists, and the National Park Service to Advance Informal Geoscience Learning at Grand Canyon (Semken PI; UNM and UArizona collaborators)	NSF Advancing Informal Science Learning Program 2314229	08/01/23 to 01/31/25	$ 149,868 (Semken $32,200)
NASA SMD Exploration Connection (with PI A. Anbar)	NASA Goddard Space Flight Center NNX16AD79A	01/21/16 to 12/31/25	$4,000,000 (Semken $200,000)
Dutton's Atlas: How Cartography Helped the Canyon Become Grand (Co-I with PI M. Toro, ASU)	Arizona Humanities Council	01/01/22 to 12/31/22	$ 21,000 (Semken $5,000)

GP-IMPACT: Collaborative Workforce Training in Geoscience and Social Science for Natural-Hazards Preparedness and Mitigation (Semken PI)	NSF Improving Undergraduate Science Education Program 1600562	09/01/16 to 08/31/22	$ 481,235
Flipping Into Science: Teachers and Principals Working Together: A Team Approach to Implementing AZCCRS in Science (Co-I with PI D. Baker, MLFTC)	Arizona Board of Regents Improving Teacher Quality Program	07/01/15 to 06/30/16	$ 250,000 (Semken $50,000)
Collaborative Research: RUI: Deep Drilling of Lake Junin, Peru: Continuous Tropical Records of Glaciation, Climate Change, and Magnetic Field Variations Spanning the Late Quaternary (with PI D. Rodbell, Union Coll.)	NSF Global Change Program 1402076 Supplement	06/01/15 to 05/30/18	(Semken $35,079)
Exploration-Driven Online Science Education: Habitable Worlds 2.0 (Co-I with PI A. Anbar)	NSF Transforming Undergraduate Science Education Program 1225741	01/01/13 to 12/31/15	$ 599,078 (Semken $239,631)
ESNO Earth Science Education and Outreach Provider Summit (Semken PI)	NSF Earth Sciences Program 1216301	01/10/12 to 01/09/14	$ 33,050
Copper Triangle Pilot Project: Enhancing Opportunities for Geoscience Studies and Careers in a Culturally Diverse, Underserved Rural Mining Area (Semken PI)	NSF Opportunities for Enhancing Diversity in the Geosciences Program 1108044	08/15/11 to 07/31/15	$ 198,975
Bridging Data, New Technologies, and Communities to Enable and Communicate EarthScope Exploration and Discovery: EarthScope National Office at Arizona State University (Co-I with PI R. Arrowsmith)	NSF EarthScope 1101100	05/01/11 to 04/30/16	$2,450,744 (Semken $490,149)
Collaborative Research: Cultural Validation of Geoscience Assessment (Semken PI)	NSF Geoscience Education Program 1034926	10/01/10 to 09/30/14	$ 59,311

NASA Triad: A Triangulated Program to Promote NASA STEM Education Nationwide (Co-I with PI E. Robeck, AGI)	NASA Goddard Space Flight Center K-12 CAN	09/01/10 to 08/31/15	$ 597,829 (Semken $119,566)
Follow the Elements (with PI A. Anbar)	NASA Astrobiology Institute	01/01/09 to 12/31/14	$7,517,437 (Semken $300,697)
Science Teachers in Arizona: Recruitment and Retention (Co-I with PI M. Orchinik, SoLS)	NSF Robert Noyce Scholarship Program 0833311	09/01/08 to 08/31/14	$ 750,000 (Semken $187,500)
Communication in English and Science Inquiry Project for High Schools (with PI M. Lang, MCCCD)	Arizona Board of Regents Improving Teacher Quality Program	01/03/08 to 06/30/10	$ 238,184 (Semken $19,055)
Collaborative Research: Evaluating Student Learning in Geoscience Curricula that Employ Conceptests Using Electronic Student Response Systems (Semken PI)	NSF Course, Curriculum, and Lab Improvement Program 0716296	08/01/07 to 07/31/12	$ 64,889
Sustainability and Sense of Place in Cultural Landscapes (Co-I with PI E. Brandt, SHESC)	ASU Institute for Humanities Research Fellows Program	05/01/07 to 08/15/08	$ 36,828 (Semken $12,153)
Situating Earth Science and Mathematics in Superior: Outcomes and Applications of Place-Based Earth Science Teaching (Semken PI)	NSF Small Grants for Exploratory Research 0706653	11/15/06 to 01/31/09	$ 49,821
Collaborative Research: The Trail of Time: Integrated Geoscience Education at Grand Canyon National Park (Semken PI)	NSF Informal Science Education Program 0610345	08/01/06 to 05/31/11	$ 272,909
Technology Assistance with Implementation and Operation of Transportable Array Element of USArray and EarthScope (Co-I with PI M. Fouch)	NSF Earth Sciences Program EarthScope	04/01/05 to 06/30/06	$ 105,552 (Semken $52,776)

Native American Perspectives and Preferences Bearing on EarthScope Deployments in the Southwest (Semken PI)	NSF Earth Sciences Program EarthScope 0454502	03/01/05 to 12/31/07	$ 29,998
USArray Transportable Array Siting Outreach (Semken PI)	Incorporated Research Institutions for Seismology (IRIS) Education and Outreach Program	01/01/05 to 06/30/06	$ 30,179
CRESMET Project Pathways MSP: Opening Routes to Math and Science Success for All Students (with PI M. Carlson, SoMSS)	NSF Math/Science Partnerships Program 0412537	08/01/04 to 07/31/10	$12,500,000 (Semken $500,000)
Enhancing Large-Enrollment Geology Lecture Classes with Technology-Assisted, Real-Time Peer Interaction (Semken PI)	ASU College of Liberal Arts and Sciences Quality of Undergraduate Education Program	07/01/04 to 06/30/05	$ 10,340
Indigenous Geology: Development and Assessment of a Culturally-Resonant, Place-Based Model of Geology Education for American Indian Pre-Service Teachers (Semken PI)	Arizona Board of Regents Learner-Centered Education Program	01/01/04 to 03/31/06	$ 25,000
Kéyah Math: Place-Based, Culturally-Responsive, Technology-Intensive, Quantitative Modules for Introductory Undergraduate Geoscience (Semken PI)	NSF Opportunities for Enhancing Diversity in the Geosciences Program 0355224	09/01/03 to 04/30/08	$ 429,629

9 Teaching

9.1 Courses Taught at Arizona State University

- *Introduction to Geology I: Physical Geology (GLG 101):* Spring 2004, Fall 2005, Fall 2006. 220-student lecture course on Earth systems, processes, and materials taught using interactive lectures and active-learning exercises.
- *Introduction to Geology II: Historical Geology (GLG 102):* Fall 2008, Spring 2011, Spring 2014, Spring 2016. 75-student interactive-lecture course emphasizing the deep history of Earth and of life on Earth, and including a weekend field trip.

- *Exploration of Science Teaching (SED 111-SES 111):* Spring 2007, Fall 2007 and 2008, Spring 2009, Fall 2010. Prof. Julie Luft (Fulton Teachers College) and I co-created and co-taught this course that gives potential STEM education majors an introduction to evidence-based teaching methods and actual classroom teaching experiences, at the start of their academic careers.
- *Earth, Solar System, and Universe, with Laboratory (SES 121-SES 123):* Fall 2024 (taught second half of the course for Prof. Molly Simon, who was on leave). First in a sequence of introductory Earth-science and planetary-science lecture-laboratory courses for SESE majors.
- *History of Earth and the Solar System, with Laboratory (SES 122-SES 124):* Spring 2020 (co-taught with Prof. Stephen Reynolds), Spring 2021, 2022, and 2023. Second in a sequence of introductory Earth-science and planetary-science lecture-laboratory courses for SESE majors, including a weekend field trip. Made extensive use of in-class active-learning exercises. Taught fully online in 2021 during the pandemic. The laboratory class in 2022 and 2023 included a multi-week class module on designing and producing a geological virtual field experience.
- *Exploring SESE (SES 191):* Fall 2022. Weekly small-group seminar presenting topics and guidance of interest and relevance to new SESE majors, including some guest speakers.
- *Earth Science in Arizona and the Southwest (GLG 301-GLG 598-SOS 372):* Fall 2010, 2011, 2012, 2013, 2014; Spring 2015; Fall 2015, 2016, and 2018 through 2024. I created this place-based interactive-lecture and field course on geologic history, natural resources and hazards, modern landscapes, and sustainability in Arizona and Southwestern North America.
- *The Storied Southwest: Landscapes, Climate, Culture, and Change (GLG 394-ENG 394 Special Topics):* Spring 2021. Prof. Joni Adamson (English) and I co-created and co-taught this course that combines critical readings of Southwest literature with geological interpretation of the landscapes and features portrayed and discussion of human futures in arid lands. The course included guest presentations by some of the authors studied and two weekend field trips.
- *SESE Colloquium (SES 400-SES 500):* Spring 2006. Students in this course are tasked with attending weekly Colloquium presentations, writing brief summaries of each, and posing written questions for the speakers.
- *Computers in Geology (GLG 410):* Fall 2004. Introduction to geological computer skills including numerical analysis, visualization, presentation, and geographic information systems.
- *Field Geology I (GLG 451):* Spring 2008, 2009, 2010, and 2017. Intensive field-based course to introduce techniques of geological observation and mapping, including use of topographic maps, aerial photos, global positioning system, geographic information systems; and technical writing of field notes and geologic reports. Taught at diverse field localities in southern and central Arizona during three weekends and over spring break.
- *Field Geology II (GLG 452):* Summer 2007, 2008, 2009, and 2010. Assisted lead instructor Prof. Tom Sharp in teaching this three-week, intensive, capstone field course on advanced techniques of geological observation, mapping, and report writing. Taught completely in the field in the Mogollon Rim region of central Arizona.
- *Advanced Field Geology (GLG 455):* Spring 2007. Developed and taught this course to reinforce students' field expertise through focused study of the Superior area in the Basin and Range geomorphic province of southern Arizona. The course combined four weekend field trips to the study area with data analysis and discussion during weekly class meetings.

- *Cordilleran Regional Geology (GLG 456):* Spring 2006. Co-taught with Prof. Stephen Reynolds; seminar course in geological evolution of the Cordillera of the Southwest that included two weekend field trips in the Basin and Range and Colorado Plateau and a three-day geological raft trip on the San Juan River in Utah.
- *Teaching Earth and Space Sciences (SES 480):* Fall 2003 and 2005 (I expanded the course to 3 units), Spring 2011 (co-taught with Dr. Katrien van der Hoeven Kraft), Spring 2015 and 2019. Seminar course for STEM education majors and other interested students, providing a practical review and active exploration of research, best practices, and published and online resources to inform effective teaching of Earth and space sciences at the high-school and undergraduate levels.
- *Creating Virtual Field Trips for Teaching Earth and Space Sciences* (*SES 598 Special Topics):* Spring 2020. Created and taught this hands-on course for graduate students in design and production of virtual field experiences for teaching Earth and space sciences. Included presentations by guest experts and extensive collection of digital assets in the field.
- *Patterns in Nature (BLE 498, ASU-Diné College Teacher Education Program):* Fall 1997. Co-developed this course in current STEM topics for pre-service teachers with ASU faculty while still at Diné College, and taught it at Diné College as an ASU adjunct professor.

9.2 Courses Taught at the United States Air Force Academy (1998 sabbatical from Diné College)

- *General Chemistry I Lecture and Lab (Chem 141):* Spring and Fall 1998. Taught 25-student sections of first-semester general chemistry including topics of special relevance and interest to the U.S. Air Force. Made abundant use of in-class active-learning exercises.
- *General Chemistry II Lecture and Lab (Chem 121):* Spring 1998. Taught a 25-student section of second-semester general chemistry, again including topics of special relevance and interest to the U.S. Air Force, again with abundant use of in-class active-learning exercises.
- *Space Chemistry: The Inner Solar System (Chem 325 Special Topics):* Fall 1998. Developed and taught a special section of an advanced chemistry seminar, focusing it on geochemistry and geology of the terrestrial planets. Included a multi-day field trip to explore planetary-analogue sites in the Southern Rockies and Colorado Plateau.

9.3 Courses Taught at Diné College (1988-2003)

- *Indigenous Physical Geology Lecture and Laboratory (GLG 101).* Developed and regularly taught integrated lecture-lab course in Physical Geology that incorporated Diné geological and place knowledge and extensive student field studies in the Navajo Nation.
- *Historical Geology Lecture and Laboratory (GLG 102).* Regularly taught integrated lecture-lab course in historical geology including student field studies in the Navajo Nation.
- *Environmental Geology (GLG 203).* Introduction to environmental geology with emphasis on local examples of Earth systems and processes, and environmental issues on the Navajo Nation.
- *Field and Laboratory Geology for Navajo Nation Teachers (GLG 229).* Field and laboratory practicum in introductory geology designed for pre-service teachers.
- *General Chemistry I Lecture and Laboratory (CHM 151) and General Chemistry II Lecture and Laboratory (CHM 152).* Two-semester sequence of introductory general chemistry for diverse STEM majors at Diné College.

9.4 Curriculum and Program Development

- *B.A. in Secondary Earth and Space Sciences Education* (jointly with the Mary Lou Fulton Teachers College): directed 2006-2007 implementation and subsequent revisions.
- Developed and piloted courses *Exploration of Science Teaching (SES 111) and Teaching Earth and Space Sciences (SES 480)* with the Center for Research on Education in Science, Mathematics, Engineering, and Technology (CRESMET) at ASU.
- *ASU College of Liberal Arts and Sciences Information Infusion Initiative (CLAS I^3):* During 2003-2004, co-developed Information Literacy standards for CLAS curricula and disseminating Information Literacy resources to colleagues.

9.5 Other Teaching Activities

- Completed *ASU Master Class for Teaching Online,* 2020.
- *Osher Lifelong Learning Institute at Arizona State University:* developed and taught several short non-credit lifelong-learning courses and colloquia for community members:
  - *A Geological Narrative of Arizona and the Southwest* (4 or 5-session course), at Tempe Public Library, Tempe, AZ, in Spring 2015, 2016, 2017, 2018, and 2023; at Yavapai College, Clarkdale, AZ, in Summer 2024.
  - *Young Canyon, Old Rocks: Geologic History of Grand Canyon* (colloquium presentation), at Maravilla, Scottsdale, AZ, Summer 2017; and ASU Online, Spring 2021 and Summer 2024.
  - *Volcanoes of Arizona* (colloquium presentation), ASU Online, Fall 2020.
- *Physics of Earth and Planetary Surfaces and Interiors (PEPSI) Seminar Series:* Organized weekly SESE seminar series during the Spring 2007 semester.

9.6 Educator, Interpreter, and Researcher Professional-Development Workshops and Field Trips Organized and Led

2024

- Co-organized and co-led a *Field Trip on Critical Perspectives on Critical Minerals* at the *SACNAS 2024 National Diversity in STEM Conference*, Phoenix, November 2024.

2021

- Co-organized and co-led a *Workshop on Preparing for Student Creation of Virtual Contexts for Exploring Geoscience Environments* at the *Online 2021 Earth Educators' Rendezvous*, July 2021.

2020

- Co-organized and co-led a *Mini-Workshop on Applying the ICAP Theory of Cognitive Engagement to Active Learning* at the *Online 2020 Earth Educators' Rendezvous*, July 2020.
- Co-organized and co-led a *Roundtable Discussion on Place-Based Geoscience Teaching* at the *Online 2020 Earth Educators' Rendezvous*, July 2020.
- Co-facilitated an online *Teacher Professional Development Workshop in Classroom- Created Virtual Contexts* for Somerset County, Maryland, Schools, organized by the American Geosciences Institute, June-August 2020.

2019

- Co-organized and co-led the *International Association for Geoscience Diversity Accessible Geologic Field Trip to Petrified Forest National Park, Geological Society of America 131st Annual Meeting*, Phoenix, AZ, September 2019.

2018

- Co-organized and co-led the *Geological Society of America GeoTeachers* Professional Development Field Workshop in Northern Arizona, July 2018.

2017

- Co-organized and co-led a *Workshop on Place, Cultural Context, and Geoscience Teaching* at the *2017 Earth Educators' Rendezvous*, Albuquerque, NM, July 2017.
- Co-facilitated a *Workshop on Geoscience Education Research Grand Challenges and Strategies* at the *2017 Earth Educators' Rendezvous*, Albuquerque, NM, July 2017.

2016

- Organized and led a *Mini-Workshop on Place-Based Teaching in Support of Sustainability* at the *2016 Earth Educators' Rendezvous*, Madison, WI, July 2016.
- Co-organized and co-led a *Field Workshop on Earth Science and Mathematics from Native and Western Perspectives* under the auspices of the Center for Science and Mathematics Education, University of Utah, San Juan County, UT, June 2016.

2015

- Co-organized and co-led a *Planetary Geology Field Expedition* for U.S. in-service secondary-school Earth and Space Science teachers, under the auspices of the NASA- American Geosciences Institute-Arizona State University Triad Program, Flagstaff, AZ, August 2015.
- Co-organized and led a *Midwest Native Science Educators Workshop* for in-service secondary-school and middle-school science teachers of Native American students, under the auspices of the EarthScope National Office Education and Outreach Program, Leech Lake Ojibwe Reservation, Cass Lake, MN, August 2015.
- Co-organized and co-led a *Field Workshop on Earth Science from Native and Western Perspectives* under the auspices of the Center for Science and Mathematics Education, University of Utah, San Juan County, UT, June 2015.
- Co-organized and led a *Southwest Native Science Educators Workshop* for in-service secondary-school and middle-school science teachers of Indigenous students, under the auspices of the EarthScope National Office Education and Outreach Program, Arizona State University, Tempe, AZ, March 2015.

2014

- Co-organized and co-led a *Teacher Leadership Academy in Earth and Space Sciences* for U.S. in-service secondary-school Earth and Space Science teachers, under the auspices of the NASA-American Geosciences Institute-Arizona State University Triad Program, NASA Wallops Space Flight Center, VA, August 2014.
- Co-organized and led the *Alaska-Yukon Earth Science Workshop for Interpretive Professionals* under the auspices of the EarthScope National Office Education and Outreach Program, Anchorage, AK, April 2014.

- Co-hosted and co-facilitated the *NAGT/NSF InTeGrate Workshop on Broadening Access to the Earth and Environmental Sciences: Increasing the Diversity of Undergraduate Students Learning About the Earth,* Arizona State University, Tempe, AZ, February 2014.

2013

- Co-organized and led the *Northeastern Earth Science Workshop for Interpretive Professionals* under the auspices of the EarthScope National Office Education and Outreach Program, Acadia National Park, ME, September 2013.
- Co-organized and co-led a *Teacher Leadership Academy in Earth and Space Sciences* for U.S. in-service secondary-school Earth and Space Science teachers, under the auspices of the NASA-American Geosciences Institute-Arizona State University Triad Program, NASA Jet Propulsion Laboratory, CA, August 2013.
- Co-organized and co-led a *Teacher Field Workshop on Earth and Biological Sciences: Exploring Western and Navajo Perspectives* under the auspices of the Center for Science and Mathematics Education, University of Utah, San Juan County, UT, June 2013.
- Co-organized and led the *Southeastern Earth Science Workshop for Interpretive Professionals* under the auspices of the EarthScope National Office Education and Outreach Program, Charleston, SC, January 2013.

2012

- Organized and presented a Professional Development Workshop on *Active Learning Strategies for Geoscience Teaching* for college faculty at the Geological Society of America Rocky Mountain Section Meeting, Albuquerque, NM, May 2012.
- Co-organized and led the *Central Appalachian Earth Science Workshop for Interpretive Professionals* under the auspices of the EarthScope National Office Education and Outreach Program, James Madison University, Harrisonburg, VA, March 2012.
- Hosted and co-facilitated the NAGT/NSF *On The Cutting Edge Workshop on Teaching About Time,* Arizona State University, Tempe, AZ, February 2012.

2011

- Co-organized and co-led a *Teacher Leadership Academy in Earth and Space Sciences* for U.S. in-service secondary-school Earth and Space Science teachers, under the auspices of the NASA-American Geosciences Institute-ASU Triad Program, NASA Johnson Space Flight Center, TX, August 2011.
- Co-organized and led a *Teacher Leadership Academy in Earth and Space Sciences* and post-Academy Field Trip for U.S. in-service secondary-school Earth and Space Science teachers, under the auspices of the NASA-American Geosciences Institute-ASU Triad Program, Arizona State University, Tempe, AZ, June 2011.
- Presented a webinar on *The Energy-Water Nexus: A theme for interdisciplinary Earth Science inquiry* for the NAGT/NSF *On the Cutting Edge Climate and Energy Webinar Series,* April 2011.

2010

- Co-organized and co-facilitated the *NAGT/NSF On the Cutting Edge Workshop on Preparation for Academic Careers, S*tanford University, July 2010.

2009

- Co-organized and co-led the *Colorado Plateau-Río Grande Rift Earth Science Workshop for Interpretative Professionals* under the auspices of the EarthScope National Office Education and Outreach Program, Albuquerque, NM, October 2009.
- Co-organized and co-led the *EarthScope Geoscience Professional Development Workshop for Native American K-12 teachers* under the auspices of the Incorporated Research Institutions for Seismology (IRIS) Siting Outreach Program, Flagstaff, AZ, September 2009.

2002

- Co-organized and co-facilitated the *NAGT/NSF On the Cutting Edge Workshop for Early-Career Geoscience Faculty,* College of William & Mary, July 2002.

2001

- Co-organized and co-facilitated the *NAGT/NSF On the Cutting Edge Workshop for Early-Career Geoscience Faculty,* College of William & Mary, July 2001.

9.7 Other Contributions to the Scholarship of Teaching and Learning

2017

- Invited Discussant for a topical session on *Culture, Context and Science Assessments: Obstacles or Opportunities for Glocalization?* at the *Annual Meeting of the National Association for Research in Science Teaching (NARST)* in San Antonio, TX, April 2017.

2015

- Invited Discussant for a topical session on *Culture, Language, Practices, and Place in STEM Education: Indigenous and Place-Based Approaches from the Pacific and Americas* at the *Annual Meeting of the National Association for Research in Science Teaching (NARST)* in Chicago, April 2015.

2011

- Invited Discussant for a topical session on *Science Learning Within Cultures: What does it mean to 'do science' for different world cultures?*, at the *Annual Meeting, American Educational Research Association (AERA)* in San Francisco, April 2013.

10 Mentoring

10.1 Graduate Students Solely Supervised

- Thomas Ruberto, Ph.D., 2023, Decentralization of virtual field trip production: A proposed framework for producing virtual field trips for place-based education and how the production process impacts sense of place and content knowledge gains, School of Earth and Space Exploration. *Tom is an Assistant Professor of Geology at Chandler-Gilbert Community College, AZ.*
- Thomas Ruberto, M.S., 2018, Implications of learning outcomes of in-person and virtual field-based geoscience instruction at Grand Canyon National Park, School of Earth and Space Exploration.
- Ángel Antonio García, Jr. (Taíno), Ph.D., 2018, A study of ethnogeological knowledge and other traditional scientific knowledge in Puerto Rico and Dominican Republic, School of Earth and Space Exploration. *Ángel is a tenure-track Assistant Professor in the Department of Geology and Environmental Science at James Madison University, VA. He received the GSA Karst Division Young Scientist Award in 2020.*
- Rebecca Mathews Frus, M.S., 2011, A study on how the public uses the landscape to understand principles of geologic time while experiencing the Trail of Time interpretative exhibition in Grand Canyon National Park, School of Earth and Space Exploration. *Rebecca earned a Ph.D. at the University of New Mexico in 2016 and is a geoscientist with the U.S. Forest Service in Oregon.*
- Brian Gleim, M.N.S., 2010, Informal high-school astronomy resources for Arizona, School of Earth and Space Exploration. *Brian is a Professor of Astronomy at Glendale Community College, AZ.*
- Tracy Perkins, M.S. 2008, Place attachment in geology students and the general public, School of Earth and Space Exploration. *Tracy is a Geology Instructor at Phoenix College, AZ, and founder-owner of Strawberry Hedgehog, a purveyor of vegan health and beauty products.*
- Megan O'Shea, M.S. 2008, Hydropolitics: Examining the role of science in Arizona's Groundwater Management Act of 1980, School of Earth and Space Exploration and Center for Science, Policy, and Outcomes. *Megan is a Speech Pathologist at Raymond School, WI.*
- Nievita Bueno Watts, M.S., 2007, Visitor preconceptions and meaning-making at Petrified Forest National Park, School of Earth and Space Exploration. *Nievita earned a Ph.D. in the ASU Mary Lou Fulton Teachers College and is Director of the Indian Natural Resource Science and Engineering Program at Cal Poly Humboldt, CA.*
- Leslie Ann Field, M.N.S., 2004, A model 400-level Field Hydrogeology course, Department of Geological Sciences. *Leslie was last a Licensed Professional Geologist in Hawai'i, but sadly, is now deceased.*

10.2 Graduate Students Co-Supervised

- Daniel Moses (Confederated Colville Tribes), *Ph.D. in progress*, Miocene paleobotany and Indigenous traditional knowledge, School of Life Sciences-Environmental Life Sciences Program.
- Don Balanzat, M.N.S., 2022, Virtual-reality simulation of mass spectrometric analysis for teaching purposes, School of Earth and Space Exploration. *Don is employed by Blue Origin.*

- Carolina Londoño Michel, Ph.D., 2016, Ethnogeology at the core of basic and applied research: Surface water systems and mode of action of a natural antibacterial clay of the Colombian Amazon, School of Earth and Space Exploration. *Carolina is a Postdoctoral Researcher at Michigan State University.*
- Heather Anne Pacheco-Guffrey, Ph.D., 2014, Choice and participation of career by STEM professionals with sensory and orthopedic disabilities and the role of assistive technologies, Mary Lou Fulton Teachers College. *Heather is a tenured Associate Professor of Elementary and Early Childhood Education at Bridgewater State University, MA.*
- Chris Mead, Ph.D., 2014, Biogeochemistry science and education: Using non-traditional stable isotopes as environmental tracers and Identifying and measuring undergraduate misconceptions biogeochemistry, School of Earth and Space Exploration. *Chris is an Assistant Research Professor in the School of Earth and Space Exploration at ASU.*
- Patrick Schwab, Ph.D., 2013, Evaluation of online teacher and student materials for the NRC Science Framework crosscutting science and engineering concepts, Mary Lou Fulton Teachers College. *Patrick is Professor and Chair of the Department of Education at Utah Tech University, UT.*
- Katrien van der Hoeven Kraft, Ph.D., 2013, Determining persistence of community college students in introductory geology classes, Mary Lou Fulton Teachers College. *Katrien (Kaatje) is a Professor of Geology at Whatcom Community College, WA.*
- Brittany Brand, Ph.D., 2008, Mafic phreatomagmatic volcanism and density current dynamics, School of Earth and Space Exploration. *Brittany is a Professor of Geosciences at Boise State University, ID.*

10.3 Graduate Students Served as Second Advisor and Committee Member

Note: In the School of Earth and Space Exploration, Ph.D. candidates must defend two distinct research projects for their qualifying exams. The Second Project Advisor has a role intermediate between that of a Dissertation Supervisor and a regular Committee Member.

- Adeolu Aderoju, *Ph.D. in progress,* Documenting SmKS slowness, back azimuth, and travel time anomalies using seismic array methodologies for outermost core imaging, and Nigerian geoscience students' perception of university program quality and their own employment needs: Comparing knowledge-based and skills-based instruction, School of Earth and Space Exploration.
- Morgan Shusterman, Ph.D., 2022, Lunar space weathering by charged particles: Reconsidering the roles of solar wind and solar energetic particle events and AccessColor: Producing palettes for diverse color acuities, School of Earth and Space Exploration.
- George Che, Ph.D., 2018, Advancements in kinetic inductance detector, spectrometer, and amplifier technologies for millimeter-wave astronomy, School of Earth and Space Exploration.
- Chelsea Allison, Ph.D., 2017, Highly explosive mafic volcanism: The role of volatiles, School of Earth and Space Exploration.
- Jude Viranga Dingatantrige Perera, Ph.D., 2017, Driven by affect to explore asteroids, the Moon, and science education, School of Earth and Space Exploration.
- Mary Hannah Schultz, Ph.D., 2017, The Late Cenozoic climatic and tectonic evolution of the Mount Everest region, central Himalaya, School of Earth and Space Exploration.
- Andrew Darling, Ph.D., 2016, The roles of erosion rate and rock strength in the evolution of canyons along the Colorado River, School of Earth and Space Exploration.

- David Haddad, Ph.D., 2014, Effects of fault segmentation, mechanical interaction, and structural complexity on earthquake-generated deformation, School of Earth and Space Exploration.

10.4 Graduate Students Served as Committee Member

- Franklyn Telles (Apache), *Ph.D. in progress,* Climatic implications of dust on the Colorado Plateau and Dust as a theme for place-based STEM curricula. School of Sustainability and Earth Sciences, Northern Arizona University.
- Elisheva Sherman, *Ph.D. in progress,* Subsurface imaging to assess magma migration in distributed volcanic fields. School of Earth and Space Exploration.
- Alana Williams, *Ph.D. in progress,* Testing the shorter and variable recurrence interval hypothesis along the Cholame segment of the San Andreas Fault, and Exploring the use of (U-Th)/He to date young volcanic eruptions, School of Earth and Space Exploration.
- Catherine Cullicott, *Ph.D. in progress,* Pedagogical content knowledge and the ICAP hypothesis in geoscience education, Mary Lou Fulton Teachers College.
- Matthew Derrick, *Ed.D. in progress,* Mary Lou Fulton Teachers College.
- Jisoo Kim, Ph.D., 2024, Eruption dynamics associated with post-caldera volcanism and extensional tectonic settings: Case studies at Vulcano (Italy), Sentinel-Arlington Volcanic Field (USA), and Valles Caldera (USA), School of Earth and Space Exploration.
- Estefania Salgado Jauregui, Ph.D., 2023, Geoconservation and cooperative learning in East Portland, Jamaica: An Earth systems approach, connecting ocean, land, and people, Jackson School of Geosciences, University of Texas at Austin.
- Rupa Ragavan, M.S., 2023, Linking pyroclastic surge dynamics to deposits through scaled laboratory experiments, School of Earth and Space Exploration.
- Joseph Hurst, M.S., 2023, Structural characteristics of Laramide stress field in the Bradshaw Mountains Region, Yavapai County, Arizona, and Enhancing remote education and differentiated instruction through high-resolution model creation with Structure-from-Motion photogrammetry: A guide for educators, School of Earth and Space Exploration.
- Michelle Aigner, M.S., 2023, Detrital-zircon record of the relative contributions of Ancestral Rockies uplifts and distally derived sediment in Pennsylvanian and Permian rocks of central New Mexico, School of Earth and Space Exploration.
- Kevin Hubbard, Ph.D., 2023, The detection and management of space resources, School of Earth and Space Exploration.
- Zebediah Teichert, Ph.D., 2022, Secondary-ion mass-spectrometry analysis of lithium content and isotopic compositions in kerogen, School of Earth and Space Exploration.
- Kristen Foley, M.S., 2022, Instructor selection and use of virtual field experiences in college geoscience courses, Department of Geological and Environmental Sciences, Western Michigan University.
- Zachary Keller, M.S., 2021, Runoff connectivity, controls, and evolution during the North American Monsoon, School of Earth and Space Exploration.
- Danielle Accetta, M.S., 2021, Source-area analysis of a Miocene arkosic conglomerate in the Goldfield Mountains, and Evaluating the reform of an introductory undergraduate course sequence, School of Earth and Space Exploration.
- Holly Brown, M.S., 2021, Geology of the Hassayampa River Canyon Area, Wickenburg, Arizona, School of Earth and Space Exploration.

- Megan Miller, Ph.D., 2018, Remote sensing and modeling of stressed aquifers and the associated hazards, School of Earth and Space Exploration.
- Svetlana Shkolyar, Ph.D., 2016, Informing Mars sample selection strategies: Identifying fossil biosignatures and assessing their preservation potential, School of Earth and Space Exploration.
- Allison Severson, M.S., 2015, Shear-zone hosted gold and silver deposits in the Sierra Cacachilas, Baja California Sur, Mexico, School of Earth and Space Exploration.
- Deborah Williams, Ph.D., 2012, Speaking place, saving place: Western Apache cultural diversity and public discourse, School of Human Evolution and Social Change.
- Jeni McDermott, Ph.D., 2012, Exploring evidence for Quaternary north-south directed extension at the southern margin of the Tibetan Plateau, School of Earth and Space Exploration.
- Gretchen Hawkins, M.S., 2012, Assessing the effects of climate change in a semi-arid basin utilizing a fully distributed hydrologic model: A case study of Beaver Creek, Arizona, School of Earth and Space Exploration.
- Brad Vance, M.S., 2012, Structural evolution of the McDowell Mountains, Maricopa County, Arizona, School of Earth and Space Exploration.
- Alka Tripathy, Ph.D., 2011, Exploring the history of India-Eurasia collision and subsequent deformation in the Indus Basin, NW Indian Himalaya, School of Earth and Space Exploration.
- Melanie Busch, Ph.D., 2011, Late Quaternary normal faulting and hanging wall basin evolution of the southwestern rift-margin from gravity and geology, B.C.S., MX; and Exploring the influence of text- figure format on introductory geology learning, School of Earth and Space Exploration.
- Joshua Coyan, Ph.D., 2011, Eye-tracking investigations exploring how students learn geology from photographs; and The structural setting of hydrothermal gold deposits in the San Antonio area, B.C.S., MX, School of Earth and Space Exploration.
- Sarah Robinson, M.S., 2011, Integrating LiDAR topography into the study of earthquakes and faulting, School of Earth and Space Exploration.
- Ashley Tillman, M.A., 2011, Students' understanding of weathering and erosion, Mary Lou Fulton Teachers College.
- Sissy Sze-Mun Wong, Ph.D., 2010, Exploring the beliefs of persisting secondary science teachers in general induction programs: A longitudinal study, Mary Lou Fulton Institute and Graduate School of Education.
- Jennifer Neakrase, Ph.D., 2010, A characterization of the knowledge and practices of beginning secondary physics teachers, Division of Curriculum and Instruction, Mary Lou Fulton Institute and Graduate School of Education.
- Tracy Lund, M.S., 2010, Major-ion and trace-element cycling in an arid, spring-fed stream, School of Earth and Space Exploration.
- Gerardo Lopez, M.S., 2010, Changes in inquiry practices for beginning chemistry teachers, Mary Lou Fulton Institute and Graduate School of Education.
- Shawn Wright, Ph.D., 2009, Terrestrial fieldwork and laboratory thermal infrared spectroscopy of basaltic impactites from the Earth and Mars, School of Earth and Space Exploration.
- Elizabeth Lewis, Ph.D., 2009, Secondary science teachers' views toward and classroom translation of sustained professional development, Division of Curriculum and Instruction, Mary Lou Fulton College of Education.

- Valeria Routt, M.S., 2009, Microbialites in Cuatro Cienegas, Mexico, School of Earth and Space Exploration.
- Kevin Goldman, M.S., 2009, Diabase alteration and relation to low-temperature mineral deposits, Salt River Canyon area, Arizona, School of Earth and Space Exploration.
- Sharon Schleigh, Ed.D., 2008, The interaction of assessment format and sex in assessing the knowledge structure coherence of middle school students' understanding of the concept of force, Division of Curriculum and Instruction, Mary Lou Fulton College of Education.
- Nathan Wilkens, Ph.D., 2008, Paleoecology of Early Jurassic Navajo Sandstone interdune deposits, School of Earth and Space Exploration.
- Sian Proctor, Ph.D., 2006, Student visual-spatial abilities in map use, Division of Curriculum and Instruction, Mary Lou Fulton College of Education.
- Rebecca Escobar Dial, M.S., 2006, The origin and modification of the Medusae Fossae Formation (MFF), Mars, Department of Geological Sciences.
- Deirdre Hahn, Ph.D., 2005, Psychological, moral, and intellectual dimensions of pre-service teachers' attitudes toward teaching evolution, Division of Psychology in Education, Mary Lou Fulton College of Education.
- Joshua Coyan, M.S., 2005, Subsurface geology of a groundwater remediation site, eastern Phoenix basin, Arizona, Department of Geological Sciences.
- Anthony Salem, M.S., 2005, Structural geology and stratigraphy of Paleozoic rocks of the Big Maria syncline, southeastern California, Department of Geological Sciences.
- Kathleen McFadden, M.S., 2004, End-Permian karst stratigraphy and geochemistry at the Kaibab-Moenkopi contact and its relationship to the Permian-Triassic boundary for northern Arizona, Department of Geological Sciences.
- Bernadette Tsosie, M.S., 1997, Hydrogeologic characterization of the floodplain that lies below the Uranium-Mill Tailings Remedial Action Site at Shiprock, New Mexico, Department of Earth and Environmental Science, New Mexico Institute of Mining and Technology.
- Edward Henry, M.S., 1994, Groundwater modeling at the Shiprock Uranium-Mill Tailings Remedial Action Site, Department of Civil Engineering, University of New Mexico.

10.5 Honors Undergraduate Students Supervised or Co-Supervised

- Skylar Perry, Honors B.S., 2024, Using principles of interpretation to improve undergraduate geoscience education, Barrett, the Honors College, and School of Earth and Space Exploration.
- Cameron Reed, Honors B.S., 2021, Decolonizing cross-cultural geoscience education, Barrett, the Honors College, and School of Earth and Space Exploration.
- James Ruberto, Honors B.S., 2020, Developing a dual-medium virtual environment for geoscience-education research and teaching, Barrett, the Honors College, and the Fulton School of Engineering.
- Trey Gossard, Honors B.S, 2016, Influences of research experiences for undergraduates on educational and career goals, Barrett, the Honors College, and School of Earth and Space Exploration.
- Kara Gasperone, Honors B.A., 2009, Family outdoor experiences and student's selection of an introductory science course, Barrett, the Honors College, and School of Social and Family Dynamics.

10.6 Honors Undergraduate Students Served as Committee Member

- Mikayla Finger and Rick Spitzer, Honors B.S., 2017, Analysis of Pennsylvanian-Permian conglomerate from the Oak Creek Canyon to Mogollon Rim region, Barrett, the Honors College, and School of Earth and Space Exploration.
- Calley Galarowicz, Honors B.S., 2013, The Blue Mound Chert: Interpreting a topographic anomaly in southern Wisconsin, Barrett, the Honors College, and School of Earth and Space Exploration.

11 Professional Service

11.1 Professional Affiliations

- American Association for the Advancement of Science.
- American Geophysical Union.
- American Indian Science and Engineering Society.
- Arizona Geological Society.
- Arizona Hydrological Society.
- Arizona-Nevada Academy of Science.
- Association of American Geographers.
- Four Corners Geological Society (Past-President).
- Geological Society of America (Fellow and Lifetime Member).
- National Association for Interpretation.
- National Association for Research in Science Teaching.
- National Association of Geoscience Teachers (Past-President 2000-2001).
- National Council for Geographic Education.
- National Earth Science Teachers Association.
- National Science Teachers Association.
- New Mexico Geological Society (Lifetime Member).
- Sigma Xi, The Scientific Research Honor Society.
- Society for Advancement of Chicanos and Native Americans in Science.

11.2 Service to Professional Community

- Since 2023 — Member, Steering Committee, Dust Alliance for North America (DANA).
- Since 2021 — Member, Building Equity and Capacity with Geoscience (BECG) Integrative Group, NSF Subduction Zones in 4 Dimensions (SZ4D) Project.
- 2004-2021 — Associate Editor, *Geosphere*, published by Geological Society of America (GSA).
- 2021 — Co-Convener, Pardee Keynote Symposium on “Geoheritage: Celebrating our Past, Protecting our Future,” at Geological Society of America 133rd Annual Meeting, Portland, OR, October 2021.

- 2018-2020 Member, Geological Society of America Diversity Committee.
- 2012-2019 Member, Science Standing Committee for the 2015 and 2019 *National Assessment of Educational Progress* (NAEP).
- 2019 Co-Organizer, Pardee Keynote Symposium on "Grand Ideas, Grand Events: Geoscience Research, Geoscience Education, and Human Connections to Grand Canyon," at Geological Society of America 131st Annual Meeting, Phoenix, AZ, September 2019.

  Co-Organizer, Grand Canyon Centennial Geology and Geoscience Education Public Symposium, Grand Canyon National Park, April 2019.
- 2018-2019 Co-Organizer and Local Host, Geoscience Alliance Fourth National Conference, Phoenix and Tempe, AZ, February 2019.
- 2017-2019 Local Chair, Organizing Committee, Geological Society of America 131st Annual Meeting, Phoenix, AZ, September 2019.
- 2002-2018 Associate Editor, *Journal of Geoscience Education*, published by National Association of Geoscience Teachers (NAGT).
- 2018 Co-Convener, Poster Session on "Geoscience and Environmental Science Education in the Cordillera and Rockies," Geological Society of America Joint Cordilleran- Rocky Mountain Sectional Meeting, Flagstaff, AZ, May 2018.

  Organizer and Leader, Pre-Meeting Geological Field Trip to Trail of Time Exhibition, Grand Canyon National Park, Geological Society of America Joint Cordilleran-Rocky Mountain Sectional Meeting, Flagstaff, AZ, May 2018.
- 2017-2018 Invited Group Leader for the "Grand Challenges in Geoscience Education Research" Workshop and White Paper, led by K. St. John and sponsored by the National Science Foundation (NSF), during the 2017 Earth Educators' Rendezvous and 1 year following.
- 2016-2017 Member of the Planning Committee for the 2017 Earth Educators' Rendezvous, University of New Mexico, Albuquerque, NM, July 2017.
- 2016 Co-Convener, Poster Session on "Education through Exploration: Research and Practice through Digital Platforms," American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, December 2016.
- 2015 Lead Co-Convener, Poster Session on "Education and Outreach through Large Facilities," American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, December 2015.
- 2011-2015 Member, *ex officio,* EarthScope Education and Outreach Steering Committee.
- 2011-2015 Member, *ex officio,* Incorporated Research Institutions for Seismology (IRIS), Education and Public Outreach Steering Committee.

  Member, *ex officio,* UNAVCO Education and Community Engagement Advisory Committee.

- 2014 — Lead Co-Convener, Poster Session on "Broader Impacts of the EarthScope Program: Recent and Active Geoscience Education & Outreach Activities," American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, December 2014.

  Co-Convener, Topical Session on "Teaching Geoscience in the Context of Culture and Place for Diversity and Sustainability," Geological Society of America Cordilleran and Rocky Mountain Sections Joint Meeting, Bozeman, MT, May 2014.
- 2000-2014 — Treasurer, National Association of Geoscience Teachers (NAGT) Southwest Section.
- 2013 — Lead Co-Convener, Poster Session on "Broader Impacts of EarthScope: Geoscience Education and Outreach Activities," American Geophysical Union Fall Meeting, San Francisco, CA, December 2013.
- 2012 — Nominated (one of two candidates) and stood for national election for Member-At-Large, Section on Education, American Association for the Advancement of Science (AAAS), 2012-2013. (Was not elected.)

  Lead Co-Convener, Poster Session on "EarthScope in Geoscience Education and Outreach," American Geophysical Union Fall Meeting, San Francisco, CA, December 2012.

  Lead Co-Convener, Topical Session on "EarthScope in Geoscience Education and Outreach: Past Successes and Future Opportunities," Geological Society of America Annual Meeting, Charlotte, NC, November 2012.

  Co-Convener, Topical Session on "Geoscience Education: Current Practice and Research," Geological Society of America Rocky Mountain Section Meeting, Albuquerque, NM, May 2012.

  Advisory Board Member and Presenter, Native American Geoscience Alliance Conference, Salish Kootenai College, Montana, March 2012.

  Organizer and Lead Convener, EarthScope Earth Science Education Provider Summit, ASU, Tempe AZ, February 2012.
- 2011 — Co-Convener, Topical Session on "Time, Events, and Places: Understanding Temporal and Spatial Learning in Geoscience Education," Geological Society of America Annual Meeting, Minneapolis, MN, October 2011.
- 2010 — Chair, American Geophysical Union Waldo Smith Medal Selection Committee.

  Advisory Board Member and Presenter, Native American Geoscience Alliance Conference, Fond du Lac Nation, MN, September 2010.
- 2006-2010 — Member, Geological Society of America Education Standing Committee.
- 2009 — Co-Convener, Topical Session on "Place-based Education in Earth Science," Geological Society of America Annual Meeting, Portland, OR, October 2009.
- 2009 — Panel Member, Incorporated Research Institutions for Seismology (IRIS), Education and Outreach Program Review.
- 2005-2008 — Member, EarthScope Education and Outreach Steering Committee.
- 2002-2005 — Member, Incorporated Research Institutions for Seismology (IRIS), Education and Public Outreach Steering Committee.

- 2004 — Invited Member, National Science Foundation Geoscience Education Second Working Group (GEWG-II); see https://nsf.gov/geo/adgeo/geoedu/GEWGII_Report_sept_2005.pdf
- 2000-2001 — Elected President, National Association of Geoscience Teachers.
- 1996-2001 — Member, Haskell Indian Nations University Environmental Research Studies Advisory Board.
- 1996-2000 — Member, American Geophysical Union Committee on Education and Human Resources.
- 1995-1996 — Member, Geological Society of America Committee on Women and Minorities.
- 1995-1996 — Chair, Western Partnership for Environmental Technology Education (Western PETE).
- 1993-1994 — President, Four Corners Geological Society.

11.3 Service to Regional and Local Communities

- 2021 — Expert Reviewer in Earth and Space Sciences for Arizona State Science Standards, Arizona Department of Education.
- 2010-2012 — Member, Resolution Copper Mining Company, Education Advisory Committee.
- 2009-2011 — Member, Development and Review Panel for Earth Science Exam, Arizona Educator Proficiency Assessments, Arizona Department of Education.

  Member, New Mexico EPSCoR Climate Change Project, External Advisory Committee.
- 2006-2008 — Member, Salt River Project/WESTCARB Carbon Sequestration Project, Advisory Board.

  Member, Superior, Arizona Town Council Community Education Committee.
- 2002-2008 — Member, Four Corners School of Outdoor Education, NSF Bioregional Outdoor Education Program Advisory Board.
- 2001-2003 — Member, Navajo Nation Environmental Protection Agency, Advisory Committee on Water Quality.

  Member, Navajo Nation Uranium Education Program Advisory Panel.

11.4 Service to Arizona State University (ASU), College of Liberal Arts and Sciences (CLAS), School of Earth and Space Exploration (SESE)

- Since 2024 — Member, University Promotion and Tenure Committee, ASU.
- 2024 — Member, Search Committee for Dean of Natural Sciences, ASU CLAS.
- Since 2022 — Chair, Instructional Evaluation Committee, ASU SESE.
- Since 2019 — Co-Facilitator and Presenter, ASU INSPIRE College Readiness Program for American Indian High School Students.
- Since 2016 — First-Year Student Mentor, Camp SESE, ASU SESE.
- Since 2014 — Representative, Arizona Geology Articulation Task Force and Arizona Course Equivalency Tracking System, ASU SESE.

- Since 2007 Faculty Advisor, Rho (ASU) Chapter of the Kappa Sigma International Fraternity.
- Since 2003 Member, ASU American Indian Consortium.

  Graduate Mentor, ASU Mary Lou Fulton Teachers College.
- 2018-2024 Natural Sciences Chair, University General Studies Council, ASU.
- 2020-2022 Chair, Online Learning and Education Group, ASU SESE.
- 2021 Member, Provost's Task Force on University General Education Requirements, ASU.
- 2018-2021 Member and Chair (2020-2021), Promotion and Tenure Committee, ASU SESE.
- 2006-2021 Faculty Advisor, Student Geology Club, ASU SESE.
- 2019 Member, ASU Faculty Fund for Teaching Initiatives Committee.
- 2017-2019 Member, Awards Committee, ASU SESE.
- 2014-2016 Member, Curriculum Committee, ASU SESE.

  Chair (2015-2016) and Natural Sciences Representative, ASU Curriculum and Academic Programs Committee.
- 2011-2014 Member, CLAS Committee on Quality of Instruction.
- 2005-2014 Alternate ASU SESE Representative, Arizona Geology Articulation Task Force.
- 2010-2013 Senator, CLAS Faculty Senate.
- 2010-2012 Member, Annual Evaluation Committee, ASU SESE.
- 2009-2011 CLAS Faculty Representative, ASU Provost’s Education Envoy Working Group.
- 2004-2006 Member, Curriculum Committee, ASU SESE
- 2003-2005 Member, CLAS Information Technology Committee.