Steven Semken, Ph.D.

Curriculum Vitae • 1 September 2026

President's Professor of Geology and Education, School of Earth and Space Exploration,

Arizona State University

P. O. Box 876004, Tempe, Arizona, 85287-6004 USA

Email semken@asu.edu Website semken.asu.edu

0 Short Biography

I am an ethnogeologist and geoscience-education researcher working at the intersection of geology, geography, and teaching and learning. My research focuses on: (1) the function of sense of place in geoscience teaching and learning, (2) design, implementation, and assessment of place-based and culturally bridging geoscience teaching practices, (3) synergy of geological heritage with geoscience education, (4) virtual field geoscience education, and (5) the geological evolution of southwestern North America. My students and I work with local and Indigenous colleagues in North America and Latin America. My research informs my teaching, and vice versa; I use place-based, culturally bridging pedagogy to foster student interest and catalyze active learning, and have received multiple teaching awards as a result. I regularly offer public talks and field trips across Arizona.

1 Academic Preparation

1.1 Education

Massachusetts Institute of Technology

Ph.D., Materials Science (Ceramics), 1989. Doctoral advisor: Prof. Bernhardt J. Wuensch.

S. B., Earth and Planetary Sciences, 1980.

University of California, Los Angeles

M. S., Geochemistry, 1984. Advisor: Prof. Donald J. DePaolo.

Diné College, Navajo Nation

Certificate, Diné Educational Philosophy, 1991.

1.2 Professional Certifications

Certified Interpretive Guide, National Association for Interpretation, 2016.

Certification in Earth Sciences and Geology, Arizona Community College Coordinating Council, 1989.

2 Academic Positions

President's Professor, School of Earth and Space Exploration (SESE), Arizona State University, since 2025.

Affiliate Faculty, Learning Engineering Institute, Arizona State University, since 2024.

Affiliate Faculty, Humanities for the Environment Global Network, Arizona State University, since 2024.

Affiliate Faculty, Mary Lou Fulton College for Teaching and Learning Innovation, ASU, since 2021.

Affiliate Faculty, Global Drylands Center, Arizona State University, since 2018.

Senior Global Futures Scientist, Julie Ann Wrigley Global Futures Laboratory, ASU, since 2013.

Honors Faculty, Barrett, The Honors College, Arizona State University, since 2007.

Professor, SESE, Arizona State University, 2016-2025.

Associate Professor, SESE, Arizona State University, 2009-2016.

Assistant Professor, Department of Geological Sciences (later SESE), Arizona State University, 2003-2009.

Adjunct Professor, Department of Earth and Environmental Science, New Mexico Institute of Mining and Technology, 2002-2003.

Professor and Chair, Department of Mathematics, Science, and Technology, Diné College, 2000-2003.

Visiting Associate Professor, Department of Chemistry, U. S. Air Force Academy, 1998 (sabbatical).

Professor, Department of Mathematics, Science, and Technology, Diné College, 1988-2000.

3 Leadership Positions

Local Chair, Geological Society of America 131st Annual Meeting, Phoenix, AZ, 2018-2019.
Deputy Director for Education and Outreach, NSF EarthScope National Office, 2011-2015.
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 Honors and Awards

Fellow of the American Association for the Advancement of Science, elected 2025.
Appointment as President's Professor for excellence in teaching, Arizona State University, 2025.
Professor of Impact Award, The College of Liberal Arts and Sciences, Arizona State University, 2023.
Outstanding Paper Award, *Journal of Geoscience Education,* National Association of Geoscience Teachers, shared with co-authors C. Mead [lead], S. Buxner, G. Bruce, W. Taylor, and A. Anbar, 2020.
Hall of Fame Distinguished Graduate, River Dell Regional High School, Oradell, New Jersey, 2017.
Honorary Traveling Speaker, National Science Foundation EarthScope Program, 2016-2017.
Teaching Fellow, Office of the Provost, Arizona State University, 2015-2017.
Best Geological Guidebook Award, Geoscience Information Society, shared with co-editors K. Ziegler [lead], M. Timmons, and S. Timmons, 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; was previously nominated for the 2008-2009 award).
Fellow of the Geological Society of America, elected 2014.
Editor's Citation as Outstanding Reviewer for *Eos*, American Geophysical Union, 2013.
First Place Interpretive Media Award for *Trail of Time Geoscience Exhibition at Grand Canyon,* National Association for Interpretation, shared with co-developers at University of New Mexico, University of Massachusetts, Selinda and Associates, and Grand Canyon National Park, 2011.
Honorary Visiting Professor, Hetao University, Inner Mongolia Autonomous Region, China, 2008.
Humanities Research Fellow, Institute for Humanities Research, Arizona State University, 2007.
Award for Meritorious Contributions to American Indian People, Northeastern State University of Oklahoma, 1999.
Outstanding Educational Paper Award, Waste-management Education and Research Consortium (WERC) Conference on the Environment, U. S. Department of Energy, 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 (Graduate Teaching Assistant of the Year), Massachusetts Institute of Technology, 1985.
John Wulff Graduate Teaching Award, Dept. of Materials Science and Engineering, MIT, 1984.
Eagle Scout, 1974.

5 Products

5.1 Guest Editorships

Guest Editor for the themed edition of the *Journal of Geoscience Education* titled "Parks, Programs, Daily Life: Geoscience Learning Beyond the Classroom" in press, 2026

Managing Guest Editor for the 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 Guest Editor for the themed edition of the *Journal of Geoscience Education* titled "Some Great Ideas for Geoscience Teachers:" Volume 48, Number 5, November 2000.

5.2 Peer-Reviewed Publications

Asterisk* signifies **student or post-doc co-author. Last author position often signifies the head of research group or the project leader.

Published while on the faculty at Arizona State University (since 2003).

71. Garcia, Á. A., Jr., & **Semken, S.** (in review). Synergizing place-based geoscience education, interpretation, and ways of knowing in geoconservation and geoheritage. In *Universidade de São Paulo Volume on Geoheritage.*

70. *Telles, F. T., **Semken, S.,** McKay, N., & Nelson, M. (in review). Empowering Indigenous-serving educators through place-based geoscience. *Journal of Geoscience Education.*

69. *Kim, J., Cave, S., Arrowsmith, J. R., Clarke, A. B., Roggensack, K., **Semken, S.,** & Brugman, K. (2026). The eruptive behavior of distributed volcanism forming low shield edifices: A case study of Sentinel-Arlington volcanic field, U.S.A. Chapter F in M. P. Poland, M. H. Ort, W.K. Stovall, R. G. Vaughan, C. B. Connor, & M. E. Rumpf (Eds.), *Distributed volcanism: Characteristics, processes, and hazards: U.S. Geological Survey Professional Paper 1890*. Reston, VA: U.S. Geological Survey, https://doi.org/10.3133/pp1890F.

68. **Semken, S.,** Mead, C., Foley, K., Ruberto, T., Bruce, G., & Anbar, A. D. (2025). Research on teaching geoscience with virtual field experiences. *Annual Review of Earth and Planetary Sciences, 53,* 425-442, https://doi.org/10.1146/annurev-earth-060923-115406.

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, 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 America Field 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 Outstanding *JGE* Paper Award from the National Association of Geoscience Teachers; 10th most-cited paper of all time in *JGE.*

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. 3rd most-cited paper of all time in the *Journal of Geoscience Education.*

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., Lemus, J., & **Semken, S.** (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. **(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**.** 11th most-cited paper of all time in the *Journal of Geoscience Education.*

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. 5th most-cited paper of all time in *Journal of Geosci. Ed.*

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.

Published while on the faculty at Diné College (1988-2003).

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.

Published as graduate student (1980-1988).

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.

Published as undergraduate student (1976-1980).

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.

5.3 White Papers

w4. **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.

w3. EarthScope Education and Outreach Steering Committee (2007). *EarthScope education and outreach program plan 2006-2011.* Washington, DC: EarthScope.

w2. 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.

w1. 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.

5.4 Publications for Education and Outreach (some are Peer-Reviewed)

Asterisk* signifies **student or post-doc co-author.

e43. Clary, R. M., & **Semken, S.** (2026). Beyond the classroom: Leveraging opportunities to impact all learners. *Journal of Geoscience Education.* https://doi.org/10.1080/10899995.2026.2684207.

e42. **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.

e41. **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.

e40. **Semken, S.** (2017). Dikes on Navajo land. *Leading the Way: The Wisdom of the Navajo People, 15*(7), 31.

e39. Apple, J., Lemus, J., & **Semken, S**. (2014). Teaching geoscience in the context of culture and place: Theme issue continued. *Journal of Geoscience Education, 62*(2), 157, https://doi.org/10.5408/1089-9995-62.1.1. **(All authors contributed equally to this paper and are listed alphabetically.)**

e38. 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.

e37. 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.

e36. 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.

e35. 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.

e34. 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: NM Geol. Society.

e33. **Semken, S.** (2013). Antelope Canyon history. *Leading the Way: The Wisdom of the Navajo People, 11*(1), 24.

e32. **Semken, S.** (2012). EarthScope and place-based education. *inSights,* summer 2012.

e31. **Semken, S.** (2012). Seashells in the Shiprock area. *Leading the Way: The Wisdom of the Navajo People, 10*(7), 22-23.

e30. **Semken, S.,** Schaufele, C., & Zumoff, N. (2012). Math and geoscience "placed" in context. *In the Trenches, 2*(2)*,* 12-13.

e29. Peterson, V. L., Garver, J. I., **Semken, S.,** & Williams, W. J. W. (2011). Enhancing participation of two-year college faculty in the Geological Society of America. *GSA (Geological Society of America) Today, 21*(12), 36-38.

e28. **Semken, S.** (2011). A sense of the American Southwest: Place-based Earth system science for diverse students. *In the Trenches, 1*(3), 1-4.

e27. **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.

e26. 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.

e25. **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.

e24. **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.

e23. **Semken, S.** (2009). Putting Earth science back in its place. *Arizona Geology,* http://www.azgs.az.gov/arizona_geology/april09/article_earthscience%20.html.

e22. **Semken, S.** (2008). A sense of the Southwest. *Newsletter, Bioregional Outdoor Education Project, 9*(3), 1-12.

e21. 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.

e20. 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.

e19. 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.

e18. Riggs, E., & **Semken, S.** (2003). Earth science education for Native Americans. *Newsletter, Bioregional Outdoor Education Project, 4*(3), 1-10.

e17. Semken**, S.**, & Gonzales, D. (2002, October 15). Rainbows in the rocks. *Daily Times, Farmington, New Mexico,* pp. A1, A5.

e16. **Semken, S. C.** (2002). Citation: National Association of Geoscience Teachers 2001 Neil Miner Award. *Journal of Geoscience Education, 50,* 221-223.

e15. **Semken, S. C.** (2002). *Ch'óoshgai doo Tsézhiin 'íí 'áhí: the Chuska Mountains, Defiance Plateau, and Navajo Volcanic Field: Western Slope Field Conference Guidebook 14.* Shiprock, NM: Diné College.

e14. **Semken, S. C.** (2001). Comments on a list of references on science teaching and Native cultures. *Tribal College Journal, 12,* 7.

e13. **Semken, S. C.**, Drummond, C., & Harder, V. (2001). The National Association of Geoscience Teachers: dedicated to geoscience education. *GSA Today, 11*(10), 53.

e12. **Semken, S. C.** (1999). Aboriginal cultures and Earth science. *GSA Today, 9*(8), 18.

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: NM 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 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 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.

5.5 Digital Resources Produced, Co-Produced, or Contributed To

Untold Earth, PBS *Nature* documentary on Petrified Forest National Park (2025): https://youtu.be/zCplWv60M6A?si=IW7KZlabAQRbfPqT

Under Arizona, Arizona PBS documentary (2008): https://www.pbs.org/show/under-arizona/.

Earth Science All Around-360 Imagery and Place-Based Education: https://bit.ly/395s2C4.

Grand Canyon Virtual Field Trip (ASU Center for Education through Exploration): https://vft.asu.edu/migrated/argosInstructions/grandcanyon.html.

Red Rocks Virtual Field Trip (ASU Infiniscope): https://vft.asu.edu/migrated/argosInstructions/redrocks.html.

Dinosaur Doom: K-Pg Event Virtual Field Trip (ASU Center for Education Through Exploration): https://vft.asu.edu/migrated/argosInstructions/dinodoom.html.

Tempe Butte Virtual Field Trip (ASU): https://imtinc360.com/TempeButteVFT/

Contributions to *Science Education Resource Center* (SERC): https://serc.carleton.edu/person/1096.html.

5.6 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 a grant from the National Science Foundation with support from the National Park Service: https://www.nps.gov/grca/planyourvisit/the-trail-of-time.htm. Received 2011 First Place Interpretive Media Award from the National Association for Interpretation.

6 Invited Professional and Outreach Presentations

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

6.1 Invited Professional Presentations

AGU Sharing Science Webinar: *Honoring Living Landscapes with Stories*# (2021). https://youtu.be/5-cI-vBTVZE.

Algoma University# (2020).

Arizona State University Libraries, *Mapping Grand Canyon Conference* (2019). https://lib.asu.edu/mapping-grand-canyon-conference/program/place-based-teaching.

Arizona Western College, Faculty Professional Development, Invited Keynote Speaker (2014).

Association of Environmental and Engineering Geologists, Phoenix Chapter (2019).

Cerritos College¶ (1997).

Chandler-Gilbert Community College# (2022).

Colorado College¶ (1998).

Diné College, Navajo Nation, Arizona (2005).

Diretoria de Ensino (Board of Education), Região de Apiaí, Apiaí, SP, Brazil (2024).

Ecological Society of America Virtual Water Cooler Chat: *Connecting to Place—Virtually*# (2020). https://www.esa.org/events/the-esa-weekly-water-cooler/connecting-to-place-virtually/.

Fort Lewis College (2004).

Geological Society of Minnesota# (2022).

Grand Canyon National Park, National Park Service: *Virtual Grand Canyon GeoFest 2020*[#] (2020). https://fb.watch/kmpt-INXis/.

Grand Canyon National Park, Office of Interpretation, National Park Service (2016).

Hamilton College[¶] (1997).

Hetao University, Bayonnaer, Inner Mongolia, China (2008).

35th International Geological Congress, Cape Town, South Africa, Invited Keynote Speaker (2016).

James Madison University[§] (2017).

Massachusetts Institute of Technology, Terrascope Program, Field Project on Navajo Nation (2023).

Mesa Community College (2004).

Michigan State University[§] (2017).

Michigan Technological University[¶] (1997).

Monument Valley Navajo Tribal Park (2000).

Mount Holyoke College[¶] (1998).

NAGT On the Cutting Edge Webinar on *Developing a Sense of Place During Distance Learning*, Invited Speaker[#] (2020). https://nagt.org/nagt/profdev/webinars/sense_of_place/index.html.

National Academies of Sciences, Engineering, and Medicine *Roundtable on Systemic Change in Undergraduate STEM Education*[#] (2021).

National Academy of Sciences, National Park Service, U. S. Geological Survey, and American Geosciences Institute, *America's Geoheritage II Workshop,* Distinguished Speaker[#] (2020). https://vimeo.com/470639004.

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 (2013). https://www.nationalacademies.org/event/03-18-2013/americas-geologic-heritage-a-workshop.

National Association of Geoscience Teachers/National Science Foundation *On the Cutting Edge Workshop on the Affective Domain,* Mesa Community College, Invited Keynote Speaker (2009).

National Park Service, Montezuma Castle and Tuzigoot National Monuments, Geological Training Webinar[#] (2021).

New Mexico Bureau of Geology and Mineral Resources (2003).

New Mexico Institute of Mining and Technology (2006, 2021[#]).

New Mexico State University (2006).

Ningxia University, Yinchuan, Ningxia Hui, China (2008).

Northeastern State University of Oklahoma[¶] (1999).

Northern Arizona University (1998, 2024).

Northwest University for Nationalities, Yinchuan, Ningxia Hui, China (2008).

Paleontological Research Institution: *Science in the Virtual Pub*[#] (2021). https://www.facebook.com/1045284350/videos/10222292902366783O/.

Prescott College[¶] (2000).

Purdue University (2013).

San Juan College (2000).

Snow College[¶] (1999).

Southwestern Indian Polytechnic Institute (2004).

VI Simpósio Brasiliero de Patrimônio Geológico (6th Brazilian Geoheritage Symposium), São Paulo, SP, Brazil, Invited Speaker[#] (2022). https://6sbpg.igc.usp.br/participantes/palestrantes/#StevenSemken.

Universidad de Puerto Rico, Mayaguez, Louis Stokes Alliance for Minority Participation (2018).

Universidade de São Paulo, Instituto de Geociências, São Paulo, SP, Brazil (2024).

University of Arizona (2017).

University of British Columbia[¶] (1997).

University of California, Riverside[¶] (1999).

University of Colorado, Boulder (2017).

University of Delaware[¶] (1997).

University of Kansas (2025).

University of Minnesota *Graduate Student Symposium,* Keynote Speaker[#] (2022).

University of Missouri[§] (2017).

University of Nebraska-Lincoln, *Stout Lecture Series* (2012).

University of New Mexico (2002).

University of New Mexico[#] (2020).

University of North Dakota (2003).

University of Northern Colorado (2008).

University of Oklahoma (2006).

University of Oklahoma, *Native Science Series* (2011).

University of Texas, Arlington[§] (2017).

University of Vermont (2018).

University of Wisconsin-Madison[#] (2020).

University of Wyoming, for online multi-university seminar *Diversity and Inclusion in Geoscience*[#] (2021).

Yale University (2024).

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

American Indian Science and Engineering Society, Gallup, NM (2000).

Arcadia Neighborhood Learning Center, Scottsdale, AZ (2015).

Arizona State University, Great Arizona ShakeOut EarthScope Public Event, Tempe, AZ (2014, 2013, 2012).

ASU President's Community Enrichment Program, Heard Museum, Phoenix, AZ (2005).

Beaver Creek Trails Coalition, Lake Montezuma, AZ (2019, 2018).

Boyce Thompson Arboretum State Park, Superior, AZ (Recurring; 2-3 times annually since 2009).

Bullion Plaza Historical Museum, Miami, AZ (2013).

Central Arizona Geology Club, Prescott, AZ (2014).

Classical Academy Charter School of Clifton, Clifton, NJ[#] (2022).

Dead Horse Ranch State Park, Cottonwood, AZ (2022).

Desert Botanical Garden, Phoenix, AZ (2026, 2025, 2023, 2020, 2018, 2017, 2015).

Earth and Space Exploration Day and Open Door, School of Earth and Space Exploration, ASU (Recurring; 1-2 times annually since 2003).

Foothills Speaker Series, Desert Foothills Land Trust, Scottsdale, AZ (2026).

Grand Canyon National Park, Public Interpretdive Programs, AZ (2019, 2017).

Herberger Institute of Design and the Arts Outreach Day, Arizona State University (2019, 2018).

International Yin Shan Rock Art Scientific Inspection, Inner Mongolia, China (2008).

Legends of Superior Trails Ecotourism Festival, Superior, AZ (2016, 2015, 2014, 2013, 2012).

Lifelong Learning at PebbleCreek, Goodyear, AZ (2024, 2021, 2020).

Lost Dutchman State Park, Pinal County, AZ (Recurring; 1-2 times annually since 2012).

Many Farms Chapter Summer Student Program, Many Farms, Navajo Nation, AZ[#] (2021).

McDowell Sonoran Conservancy, Scottsdale, AZ (2008).

Natural Bridges National Monument[#], UT (2026).

Paradise Valley Community College, Phoenix, AZ[#] (2024).

Pascua Yaqui Tribal Center, Community STEAM Night, Guadalupe, AZ (2018, 2017).

Phoenix Airport Museum, Sky Harbor International Airport, Phoenix, AZ (2025).

Pueblo Grande Museum, Phoenix, AZ (2005).

Río Verde Community Association, Río Verde, AZ (2025).

Scientific Panelist, Phoenix Comic-Con, Phoenix, AZ (2015).

Society for Advancement of Chicanos and Native Americans in Science, Austin, TX (2004).

Society of Mining and Metallurgical Engineers, Albuquerque, NM (1997).

Solera at Johnson Ranch, San Tan Heights, AZ (2022).

Southwest Cultures Club, Fountain Hills, AZ (2009).

STEM Summer Scholars Academy, Passaic County Community College, Paterson, NJ[#] (2021, 2020).

Sun City Anthem Hiking Club, Florence, AZ (2011).

Superior Chamber of Commerce, Superior, AZ (2024, 2023, 2022, 2019).

Superstition Area Land Trust, Apache Junction, AZ (2018, 2016).

The Post Oak School, Houston, TX[#] (2022).

Voice of Democracy Arizona radio program, KFNX-AM, Phoenix, AZ (2019).

Yinchuan Middle School #1, Yinchuan, Ningxia Hui, China (2008).

7 Funding (total to date: $5.93 million; Semken share: $3.74 million)

Sponsor	Funded Grant	Period	Funds
National Science Foundation	*Developing Partnerships Among Tribes, Geoscientists, and the National Park Service to Advance Informal Geoscience Learning at Grand Canyon* (**Semken PI**; UNM and UArizona collaborators). Grant number 2314229.	2023-2025	$ 149,868 (Semken $32,200)
NASA Goddard SFC	*NASA SMD Exploration Connection* (Collaborator with PI A. Anbar, ASU).	2016-2025	$4,000,000 (Semken $200,000)
Arizona Humanities Council	*Dutton's Atlas: How Cartography Helped the Canyon Become Grand* (**Semken Co-PI** with PI M. Toro, ASU).	2022	$ 21,000 (Semken $5,000)
National Science Foundation	*GP-IMPACT: Collaborative Workforce Training in Geoscience and Social Science for Natural-Hazards Preparedness and Mitigation* (**Semken PI**). Grant number 1600562.	2016-2022	$ 481,235
Arizona Board of Regents	*Flipping Into Science: Teachers and Principals Working Together: A Team Approach to Imple-menting AZCCRS in Science* (**Semken Co-PI** with PI D. Baker, ASU).	2015-2016	$ 250,000 (Semken $50,000)
National Science Foundation	*Collaborative Research: RUI: Deep Drilling of Lake Junin, Peru: Continuous Tropical Records of Glaciation, Climate Change, and Magnetic Field Variations Spanning the Late Quaternary* (**External Evaluator** with PI D. Rodbell, Union College). Grant number 1402076.	2015-2018	$ 35,079
National Science Foundation	*Exploration-Driven Online Science Education: Habitable Worlds 2.0* (**Semken Co-PI** with PI A. Anbar, ASU). Grant number 1225741.	2013-2015	$ 599,078 (Semken $239,631)
National Science Foundation	*EarthScope National Office Earth Science Education and Outreach Provider Summit* (**Semken PI**). Grant number 1216301.	2012-2014	$ 33,050
National Science Foundation	*Copper Triangle Pilot Project: Enhancing Opportunities for Geoscience Studies and Careers in a Culturally Diverse, Underserved Rural Mining Area* (**Semken PI**). Grant number 1108044.	2011-2015	$ 198,975
National Science Foundation	*Bridging Data, New Technologies, and Communities to Enable and Communicate EarthScope Exploration and Discovery: EarthScope National Office at Arizona State University* (**Semken Co-PI** with PI J R. Arrowsmith, ASU). Grant number 1101100.	2011-2016	$2,450,744 (Semken $490,149)
National Science Foundation	*Collaborative Research: Cultural Validation of Geoscience Assessment* (**Semken ASU PI**). Grant number 1034926.	2010-2014	$ 59,311
NASA Goddard SFC	*NASA Triad: A Triangulated Program to Promote NASA STEM Education Nationwide* (**Semken Co-PI** with PI E. Robeck, American Geosciences Institute).	2010-2015	$ 597,829 (Semken $119,566)
NASA Astro-biology	*Follow the Elements* (Collaborator with PI A. Anbar, ASU).	2009-2014	$7,517,437 (Semken $300,697)

Sponsor	Funded Grant	Period	Funds
National Science Foundation	*Science Teachers in Arizona: Recruitment and Retention* (**Semken Co-PI** with PI M. Orchinik, ASU). Grant number 0833311.	2008-2014	$ 750,000 (Semken $187,500)
Arizona Board of Regents	*Communication in English and Science Inquiry Project for High Schools* (Collaborator with PI M. Lang, Maricopa Community Colleges).	2008-2010	$ 238,184 (Semken $19,055)
National Science Foundation	*Collaborative Research: Evaluating Student Learning in Geoscience Curricula that Employ Conceptests Using Electronic Student Response Systems* (**Semken ASU PI**). Grant number 0716296.	2007-2012	$ 64,889
ASU Inst. for Humanities Research	*Research Fellowship: Sustainability and Sense of Place in Cultural Landscapes* (**Semken Co-PI** with PI E. Brandt, ASU).	2007-2008	$ 36,828 (Semken $12,153)
National Science Foundation	*Situating Earth Science and Mathematics in Superior: Outcomes and Applications of Place-Based Earth Science Teaching* (**Semken PI**). Grant number 0706653.	2006-2009	$ 49,821
National Science Foundation	*Collaborative Research: The Trail of Time: Integrated Geoscience Education at Grand Canyon National Park* (**Semken ASU PI**). Grant number 0610345.	2006-2011	$ 272,909
National Science Foundation	*Technology Assistance with Implementation and Operation of Transportable Array Element of USArray and EarthScope* (**Semken Co-PI** with PI M. Fouch, ASU).	2005-2006	$ 105,552 (Semken $52,776)
National Science Foundation	*Native American Perspectives and Preferences Bearing on EarthScope Deployments in the Southwest* (**Semken PI**). Grant number 0454502.	2005-2007	$ 29,998
Incorporated Research Inst. for Seismology	*USArray Transportable Array Siting Outreach* (**Semken PI**).	2005-2006	$ 30,179
National Science Foundation	*CRESMET Project Pathways Math-Science Partnership: Opening Routes to Math and Science Success for All Students* (Collaborator with PI M. Carlson, ASU). Grant number 0412537.	2004-2010	$12,500,000 (Semken $500,000)
ASU College of Liberal Arts & Sciences	*Quality of Undergraduate Education: Enhancing Large-Enrollment Geology Lecture Classes with Technology-Assisted, Real-Time Peer Interaction* (**Semken PI**).	2004-2005	$ 10,340
Arizona Board of Regents	*Indigenous Geology: Development and Assessment of a Culturally-Resonant, Place-Based Model of Geology Education for American Indian Pre-Service Teachers* (**Semken PI**).	2004-2006	$ 25,000
National Science Foundation	*Kéyah Math: Place-Based, Culturally-Responsive, Technology-Intensive, Quantitative Modules for Introductory Undergraduate Geoscience* (**Semken PI**). Grant number 0355224.	2003-2008	$ 429,629

8 Teaching

8.1 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. (Co-created and co-taught with Prof. Julie Luft, Fulton Teachers College.) Course 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, 2018, 2019, 2020 (online during covid), 2021, 2022, 2023, 2024, 2025, and 2026. 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. (Co-created and co-taught with President's Prof. Joni Adamson, Dept. of English.) Course 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.

8.2 Courses Taught at the United States Air Force Academy (1998 sabbatical)

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.

8.3 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.

8.4 Curriculum and Program Development

B.A. in Secondary Earth and Space Sciences Education (Developed jointly with the Mary Lou Fulton College for Teaching and Learning Innovation.) 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.

8.5 Other Teaching Activities

Completed **ASU Master Class for Teaching Online**, 2020.

Osher Lifelong Learning Institute (OLLI): developed and taught multiple short non-credit lifelong-learning courses for community members:

A Geological Narrative of Arizona and the Southwest (4- or 5-session course), for ASU OLLI; at Tempe Public Library, Tempe, AZ, in Spring 2015, 2016, 2017, 2018, and 2023; and for Yavapai College OLLI; at Verde Valley Campus, Clarkdale, AZ, in Summer 2024.

Deep History of Arizona Rocks and Landscapes (1-session presentation), for ASU OLLI; online, in Summer 2025; and for Rio Salado College Outreach, online, in Fall 2025.

Volcanoes of Arizona (1-session presentation or 2-session course), for ASU OLLI; online, in Fall 2020 and Spring 2025.

Young Canyon, Old Rocks: Geologic History of Grand Canyon (1-session presentation), for ASU OLLI; at Maravilla, Scottsdale, AZ, in Summer 2017; and online, in Spring 2021 and Summer 2024.

Geography and Geology of Arizona and the Southwest (1-session presentation), for ASU OLLI; at Tempe Public Library, Tempe, AZ, in Spring 2026.

Physics of Earth and Planetary Surfaces and Interiors (PEPSI) Seminar Series: Organized weekly SESE seminar series during the Spring 2007 semester.

8.6 Professional-Development Workshops and Field Trips for Educators, Interpreters, and Researchers, Organized or Co-Organized, and Led or Co-Led

2025

Earth Science Summer Camp for K-6 students at the Havasupai Elementary School, Supai, Havasupai Tribe, Arizona, June 2025.

2024

Field Trip on Critical Perspectives on Critical Minerals at the Society for Advancement of Chicanos and Native Americans in Science (SACNAS) 2024 National Conference, Phoenix, November 2024.

2021

Workshop on Preparing for Student Creation of Virtual Contexts for Exploring Geoscience Environments at the Online 2021 Earth Educators' Rendezvous, July 2021.

2020

Mini-Workshop on Applying the ICAP Theory of Cognitive Engagement to Active Learning at the Online 2020 Earth Educators' Rendezvous, July 2020.

Roundtable Discussion on Place-Based Geoscience Teaching at the Online 2020 Earth Educators' Rendezvous, July 2020.

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

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

Geological Society of America GeoTeachers Professional Development Field Workshop in Northern Arizona, July 2018.

2017

Workshop on Place, Cultural Context, and Geoscience Teaching at the 2017 Earth Educators' Rendezvous, Albuquerque, NM, July 2017.

Workshop on Geoscience Education Research Grand Challenges and Strategies at the 2017 Earth Educators' Rendezvous, Albuquerque, NM, July 2017.

2016

Mini-Workshop on Place-Based Teaching in Support of Sustainability at the 2016 Earth Educators' Rendezvous, Madison, WI, July 2016. Sole organizer and leader.

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

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.

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.

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.

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

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.

Alaska-Yukon Earth Science Workshop for Interpretive Professionals under the auspices of the EarthScope National Office Education and Outreach Program, Anchorage, AK, April 2014.

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

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.

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.

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.

Southeastern Earth Science Workshop for Interpretive Professionals under the auspices of the EarthScope National Office Education and Outreach Program, Charleston, SC, January 2013.

2012

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.

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.

National Association of Geoscience Teachers/National Science Foundation **On The Cutting Edge Workshop on Teaching About Time***,* Arizona State University, Tempe, AZ, February 2012. Hosted and co-facilitated, including leading a field trip to Grand Canyon.

2011

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.

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.

Webinar on the **The Energy-Water Nexus: A theme for interdisciplinary Earth Science inquiry** for the National Association of Geoscience Teachers/National Science Foundation *On the Cutting Edge Climate and Energy Webinar Series,* April 2011. Developed and presented webinar.

2010

National Association of Geoscience Teachers/National Science Foundation **On the Cutting Edge Workshop on Preparation for Academic Careers**, Stanford University, July 2010.

2009

Colorado Plateau-Río Grande Rift Earth Science Workshop for Interpretative Professionals, EarthScope National Office Education and Outreach Program, Albuquerque, NM, October 2009.

EarthScope Geoscience Professional Development Workshop for Native American K-12 teachers, Incorporated Research Institutions for Seismology (IRIS) Outreach Program, Flagstaff, AZ, September 2009.

2002

National Association of Geoscience Teachers/National Science Foundation **On the Cutting Edge Workshop for Early-Career Geoscience Faculty***,* College of William & Mary, July 2002.

2001

National Association of Geoscience Teachers/National Science Foundation **On the Cutting Edge Workshop for Early-Career Geoscience Faculty***,* College of William & Mary, July 2001.

8.7 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** at the Annual Meeting of the National Association for Research in Science Teaching (NARST) in Chicago, April 2015.

2013

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.

9 Mentoring

9.1 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 an Associate 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 and the NAGT Diversity, Equity, and Inclusion Award in 2026.*

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. *Becky 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 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 College for Teaching and Learning Innovation 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.*

9.2 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.*

Sandra 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 an Assistant Professor of Geosciences at the University of Rhode Island.*

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 College for Teaching and Learning Innovation. *Heather is an Associate Professor of 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 College for Teaching and Learning Innovation. *Patrick is Professor and Chair of the Department of Education at Utah Tech University.*

Katrien van der Hoeven Kraft, Ph.D., 2013, Determining persistence of community college students in introductory geology classes, Mary Lou Fulton College for Teaching and Learning Innovation. *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.*

9.3 Graduate Students Served as Second-Project Supervisor 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 Supervisor has a role intermediate between that of a Dissertation Supervisor and a regular Committee Member.

Adeolu Aderoju, Ph.D., 2025, 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.

9.4 Graduate Students Served as Committee Member

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 College for Teaching and Learning Innovation.

Matthew Derrick, *Ed.D. in progress,* Mary Lou Fulton College for Teaching and Learning Innovation.

Jonna Urban, M.S.., 2026, Closing the water balance of Middle Sycamore watersheds in northern Arizona using multi-instrument hydrologic observations. School of Earth and Space Exploration.

Franklyn Telles (Chiricahua Apache), Ph.D., 2026, 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.

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.

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-Lang, 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 College for Teaching and Learning Innovation.

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 College for Teaching and Learning Innovation.

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 College for Teaching and Learning Innovation.

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 Mary Lou Fulton College for Teaching and Learning Innovation.

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, Mary Lou Fulton College for Teaching and Learning Innovation.

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, Mary Lou Fulton College for Teaching and Learning Innovation.

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 for Teaching and Learning Innovation.

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, Mary Lou Fulton College for Teaching and Learning Innovation.

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 (Diné), 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.

9.5 Honors Undergraduate Students Supervised or Co-Supervised

Nora Sherman, Honors B.S., 2025, Lessons from Appalachia: The history and impacts of coal mining and their relevance to Arizona's copper industry, Barrett, the Honors College, and School of Earth and Space Exploration.

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 Chavez 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.

9.6 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.

10 Professional Service

10.1 Professional Affiliations

American Association for the Advancement of Science (AAAS).
American Geophysical Union (AGU).
American Indian Science and Engineering Society (AISES).
Arizona Geological Society.
Arizona Hydrological Society.
Arizona-Nevada Academy of Science.
Association for Women Geoscientists.
Association of American Geographers.
Four Corners Geological Society (Past-President).
Geological Society of America (GSA; Fellow and Lifetime Member).
National Association for Interpretation.
National Association of Geoscience Teachers (NAGT; Past-President 2000-2001).
National Council for Geographic Education.
National Earth Science Teachers Association.
National Science Teachers Association.

New Mexico Geological Society (Lifetime Member).
ProGEO: International Association for the Conservation of Geological Heritage.
Sigma Xi, The Scientific Research Honor Society.
Society for Advancement of Chicanos and Native Americans in Science (SACNAS).

10.2 Service to Professional Community

Geological Society of America (GSA) Annual Program Committee, Member, since 2026.

Dust Alliance for North America (DANA) Steering Committee, Member, since 2023.

Co-Convener, Pardee Keynote Symposium on "Geoheritage Without Borders: International Perspectives on the Conservation and Celebration of Geodiversity," at GSA Connects Annual Meeting, San Antonio, TX, October 2025.

NSF Subduction Zones in 4 Dimensions (SZ4D) Project, Building Equity and Capacity with Geoscience (BECG) Integrative Group, Member, 2021-2025.

Associate Editor, *Geosphere*, published by GSA, 2004-2021.

Co-Convener, Pardee Keynote Symposium on "Geoheritage: Celebrating our Past, Protecting our Future," at GSA Connects Annual Meeting, Portland, OR, October 2021.

National Assessment of Educational Progress (NAEP) Science Standing Committee, Member, 2012-2019.

Co-Organizer, Pardee Keynote Symposium on "Grand Ideas, Grand Events: Geoscience Research, Geoscience Education, and Human Connections to Grand Canyon," at GSA 131st Annual Meeting, Phoenix, AZ, September 2019.

Co-Organizer, **Grand Canyon Centennial Geology and Geoscience Education Public Symposium**, Grand Canyon National Park, April 2019.

Co-Organizer and Local Host, Geoscience Alliance Fourth National Conference, 2018-2019. (Meeting in Phoenix and Tempe, AZ, February 2019).

Local Chair, GSA 131st Annual Meeting, 2017-2019 (Meeting in Phoenix, AZ, September 2019).

Associate Editor, *Journal of Geoscience Education*, published by National Association of Geoscience Teachers (NAGT), 2002-2018.

Co-Convener, Poster Session on "Geoscience and Environmental Science Education in the Cordillera and Rockies," GSA Joint Cordilleran-Rocky Mountain Sectional Meeting, Flagstaff, AZ, May 2018.

Co-Organizer and Co-Leader, Pre-Meeting Geological Field Trip to Trail of Time Exhibition, Grand Canyon National Park, GSA Joint Cordilleran-Rocky Mountain Sectional Meeting, Flagstaff, AZ, May 2018.

Invited Group Leader for the "Grand Challenges in Geoscience Education Research" Workshop and White Paper, led by Kristen St. John and sponsored by the National Science Foundation (NSF), 2017-2018.

2017 Earth Educators' Rendezvous Planning Committee, Member, 2016-2017. (Rendezvous in Albuquerque, NM, July 2017).

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.

Lead Co-Convener, Poster Session on "Education and Outreach through Large Facilities," AGU Fall Meeting, San Francisco, CA, December 2015.

NSF EarthScope Education and Outreach Steering Committee, Member *ex officio*, 2011-2015.

Incorporated Research Institutions for Seismology (IRIS), Education and Public Outreach Steering Committee, Member *ex officio*, 2011-2015.

UNAVCO Education and Community Engagement Advisory Committee, Member *ex officio*, 2011-2015.

Lead Co-Convener, Poster Session on "Broader Impacts of the EarthScope Program: Recent and Active Geoscience Education & Outreach Activities,"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," GSA Cordilleran and Rocky Mountain Sections Joint Meeting, Bozeman, MT, May 2014.

NAGT Southwest Section, Treasurer, 2000-2014.

Lead Co-Convener, Poster Session on "Broader Impacts of EarthScope: Geoscience Education and Outreach Activities," AGU Fall Meeting, San Francisco, CA, December 2013.

Nominated and stood for national election for **Member-At-Large, Section on Education, American Association for the Advancement of Science** (AAAS), 2012-2013. (Not elected.)

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

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

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

Advisory Board Member and Presenter, Geoscience Alliance Second National Conference, Salish Kootenai Tribal College, Montana, March 2012.

Organizer and Lead Convener, EarthScope Earth Science Education Provider Summit, ASU, Tempe AZ, February 2012.

Co-Convener, Topical Session on "Time, Events, and Places: Understanding Temporal and Spatial Learning in Geoscience Education," GSA Annual Meeting, Minneapolis, MN, October 2011.

AGU Waldo Smith Medal Selection Committee, Chair, 2011.

Advisory Board Member and Presenter, Geoscience Alliance First National Conference, Fond du Lac Nation, MN, September 2010.

Geological Society of America Education Standing Committee, Member, 2006-2010.

Co-Convener, Topical Session on "Place-based Education in Earth Science," GSA Annual Meeting, Portland, OR, October 2009.

IRIS Education and Outreach Program Review, Panel Member, 2009.

EarthScope Education and Outreach Steering Committee, Member, 2005-2008.

IRIS Education and Public Outreach Steering Committee, Member, 2002-2005.

National Science Foundation Geoscience Education Second Working Group (GEWG-II), Invited Member, 2004: https://nsf.gov/geo/adgeo/geoedu/GEWGII_Report_sept_2005.pdf

NAGT President (Elected), 2000-2001.

Haskell Indian Nations University Environmental Research Studies Advisory Board, Member, 1996-2001.

AGU Committee on Education and Human Resources, Member, 1996-2000.

GSA Committee on Women and Minorities, Member, 1995-1996.

Western Partnership for Environmental Technology Education (Western PETE), Chair, 1995-1996.

Four Corners Geological Society, President, 1993-1994.

10.3 Service to Regional and Local Communities

Expert Reviewer in Earth and Space Sciences for Arizona State Science Standards, Arizona Department of Education, 2021.

Resolution Copper Mining Company, Education Advisory Committee, Member, 2010-2012.

Development and Review Panel for Earth Science Exam, Arizona Educator Proficiency Assessments, Arizona Department of Education, Member, 2009-2011.

New Mexico EPSCoR Climate Change Project, External Advisory Committee Member, 2009-2011.

Salt River Project/WESTCARB Carbon Sequestration Project, Advisory Board Member, 2006-2008.

Superior, Arizona Town Council Community Education Committee Member, 2006-2008.

Four Corners School of Outdoor Education, NSF Bioregional Outdoor Education Program Advisory Board Member, 2002-2008.

Navajo Nation Environmental Protection Agency, Advisory Committee on Water Quality, Member, 2001-2003.

Navajo Nation Uranium Education Program Advisory Panel Member, 2001-2003.

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

University Promotion and Tenure Committee, Member, 2024-2026.

CLAS Search Committee for Dean of Natural Sciences, Member, 2024.

SESE Instructional Evaluation Committee, Chair, 2022-2028.

Provost's Task Force on University General Education Requirements, Natural Sciences Member, 2021.

SESE Online Learning and Education Group, Chair, 2020-2022.

SESE Promotion and Tenure Committee, Member and Chair, 2018-2021.

ASU INSPIRE College Readiness Program for American Indian High School Students, Co-Facilitator and Presenter, 2019-2028.

ASU Faculty Fund for Teaching Initiatives Committee, Member, 2019.

University General Studies Council, Natural Sciences Chair, 2018-2024.

SESE Awards Committee, Member, 2017-2019.

First-Year Student Faculty Mentor, Camp SESE, 2016-2028.

SESE Curriculum Committee, Member, 2014-2016.

University Curriculum and Academic Programs Committee, Member and Chair, 2014-2016.

CLAS Committee on Quality of Instruction, Member, 2011-2014.

CLAS Faculty Senate, Member, 2010-2013.

SESE Annual Faculty Evaluation Committee, Member, 2010-2012.

Provost's Education Envoy Working Group, CLAS Faculty Representative, 2009-2011.

SESE Student Geology Club, Faculty Advisor, 2006-2021.

Arizona Geology Articulation Task Force and Arizona Course Equivalency Tracking System, ASU Representative, 2005-2028.

ASU American Indian Consortium, Faculty Member, 2003-2028.

ASU Mary Lou Fulton College for Teaching and Learning Innovation, Doctoral Mentor, 2003-2028.

CLAS Information Technology Committee, Member, 2003-2005.