

**GAYLE A. BUCK**  
**Indiana University**  
**Department of Curriculum & Instruction**  
**W.W. Wright Hall**  
**201 N. Rose Avenue**  
**Bloomington, IN 47405-1005**  
**(812) 856-8171**  
**gabuck@iu.edu**

**EDUCATION:**

Ph.D. (1998) Curriculum and Instruction: Concentration in Middle Level Education/Science Education

Kent State University

Master of Arts (1993) Educational Studies: Science/Environmental Education

The Ohio State University

Bachelor of Science in Education (1989) Elementary Education

Youngstown State University

**PROFESSIONAL APPOINTMENTS:**

July 2018-present Associate Dean for Research and Development  
Indiana University  
School of Education

August 2017-June 2018 Acting Associate Dean for Research  
Indiana University  
School of Education

July 2015-July 2017 Co-Acting Associate Dean for Research  
Indiana University  
School of Education

July 2014-current Tenured Professor at Indiana University Bloomington  
Science Education Program  
School of Education  
Department of Curriculum & Instruction

2006-2014 Tenured Associate Professor at Indiana University Bloomington  
Science and Environmental Education Program  
School of Education  
Department of Curriculum & Instruction

2004 –2006 Tenured Associate Professor of Science Education at University of  
Nebraska-Lincoln,  
College of Education & Human Sciences  
Department of Teaching, Learning, & Teacher Education

1998 - 2004 Tenure-Track Assistant Professor of Science Education at  
University of Nebraska Lincoln,  
Teachers College

Center for Curriculum & Instruction

- 1997 - 1998 Teaching Fellow at Kent State University
- 1995 - 1997 Seventh and Eighth-Grade Science Teacher, Beaver Local School District; Beaver Local Middle School.
- 1989 – 1995 Fourth and Fifth-Grade Teacher, Columbus Public School District; Georgian Heights Math/Science/Environmental Alternative School
- 1990 - 1992 Instructor for the Columbus Zoological Gardens

**PUBLICATIONS:**

**Books, Book Chapters & Book Contributions:**

Akerson, V.A., & Buck, G.A. (2023). U.S. Next Generation Science Standards: Possibilities, not prescriptions for STEM. In A. Sulaiman, L. Martin, & Y. Song (Eds). *Reforming science teacher education programs in the STEM era: International practices*. Springer. Accepted.

Buck, G.A., Chinn, P., & Upadhyay, B. (2022). Science education in urban and rural contexts: Expanding on conceptual tools for urban-centric research. In N. Lederman & J. Lederman (Eds). *Handbook of Research on Science Education*. Routledge. In press.

Buck, G.A., & Williamson, F. (2022). Mixed methods research on science teacher education. In J.A. Luft & Jones, M.G. *Handbook of research on science teacher education*. Springer. In press.

Park Rogers, M., Akerson, V., & Buck, G. (2022). Science education curricula. In D. Flinders et.al. (Ed). *Encyclopedia of education*. New York: Routledge. In press.

Erumit, B.A., Akerson, V., & Buck, G. (2022). Teaching science in another culture: International teaching assistants in science education departments. In M. Atwater (Ed.) *International handbook of research on multicultural science education*. New York: Springer.

Rahman, S., & Buck, G.A. (2021). Navigating the pandemic as an international teaching assistant in science education. In V. L. Akerson & L. S. Carter (Eds.), *Science education during the COVID-19 pandemic* (pp. 117-142). ISTES. Open Access: [www.istes.org/books/66b68668bf786c7bb1aff8fc6998c15f.pdf](http://www.istes.org/books/66b68668bf786c7bb1aff8fc6998c15f.pdf)

Akerson, V., & Buck, G.A. (Eds.). (2020). *Critical questions in STEM Education*. New York: Springer. <https://link.springer.com/book/10.1007%2F978-3-030-57646-2>.

Burgess, A., & Buck, G.A. (2020). Inquiring into environmental STEM: Striving for an engaging inquiry-based E-STEM experience for pre-service teachers. In V. Akerson & G.A. Buck (Eds.). *Critical questions in STEM education* (pp. 61-84). New York: Springer. <https://link.springer.com/book/10.1007/978-3-030-57646-2>.

White, F.A., & Buck, G.A. (2020). Understanding equity in postsecondary STEM: A transformative self-study. In N. Abdelrahman, B. Irby, J. Ballenger, & B. Polnick (Eds.). *Girls and women of color in STEM: Their journeys in higher education*. Charlotte, NC: Information Age Publishing. <https://www.infoagepub.com/products/Girls-and-Women-of-Color-In-STEM-Journeys-in-Higher-Education>.

Buck, G.A., Cross Francis, D., & Wilkins-Yel, K. (2020). Research on gender equity in STEM education. In Johnson, C., Mohr-Schroeder, M., Moore, T., & English, L. (Eds). *Handbook of research on STEM education*. New York: Routledge.  
<https://www.routledge.com/Handbook-of-Research-on-STEM-Education/Johnson-Mohr-Schroeder-Moore-English/p/book/9780367075620>.

Cook, K., & Buck, G. (2017). Our neighborhood: A place for heightening emotional energy in science education. In A. Bellocchi, K. Cass, & C. Quigley, (Eds). *Exploring emotions, aesthetics and wellbeing in science education* (pp. 141-163). New York: Springer.

Buck, G., & Akerson, V. (Eds.). (2016). *Allowing our professional knowledge of pre-service science teacher education to be enhanced by self-study research: Turning a critical eye on our practice*. New York: Springer.

Buck, G., Akerson, V., & Gilles, B. (2016). Garnering the understandings emerging from self-studies in science teacher education. In G. Buck & V. Akerson (Eds). *Allowing our professional knowledge of pre-service science teacher education to be enhanced by self-study research: Turning a critical eye on our practice*. New York: Springer.

Akerson, V., & Buck, G. (2016). Turning a critical eye on our practice. In G. Buck & V. Akerson (Eds). *Allowing our professional knowledge of pre-service science teacher education to be enhanced by self-study research: Turning a critical eye on our practice*. New York: Springer.

Buck, G., & Akerson, V. (2016). Supporting new members as they transition into our science education community of practice. In G. Buck & V. Akerson (Eds). *Allowing our professional knowledge of pre-service science teacher education to be enhanced by self-study research: Turning a critical eye on our practice*. New York: Springer.

Trauth Nare, A., Buck, G., & Beeman-Cadwallader, N. (2016). Promoting student agency in scientific inquiry: A self-study of relational pedagogical practices in science teacher education. In G. Buck & V. Akerson (Eds). *Allowing our professional knowledge of pre-service science teacher education to be enhanced by self-study research: Turning a critical eye on our practice*. New York: Springer.

Gilles, B., & Buck, G. (2016). Exploring our theoretical and practical understandings of enthusiasm in science teaching: A self-study of elementary teacher preparation. In G. Buck & V. Akerson (Eds). *Allowing our professional knowledge of pre-service science teacher education to be enhanced by self-study research: Turning a critical eye on our practice*. New York: Springer.

Buck, G.A., Beeman-Cadwallader, N., & Trauth-Nare, A. (2016). Examining the levels of reasoning used by urban elementary Black girls engaging in technology-enhanced inquiry. In M. Urban & D. Falvo (Eds.). *Improving K-12 STEM education outcomes through technological integration* (86-107). Hershey, PA: IGI Global Publishing.

Buck, G. (2014). Book Review: *I died for beauty: Dorothy Wrinch and the culture of science*, by Marjorie Senechal. *Science Education*, 98(4), 740-742.

Buck, G., Koren, P., Yin, X., & Bar, V. (2014). Reframing non-science majors' fundamental understandings about scientific inquiry and scientists. In D. Sunal & E. Wright (Eds.). *Research based undergraduate science teaching*. Charlotte, NC: Information Age Publishing.

Buck, G., & Quigley, C. (2013). Allowing our research on urban, low SES, African-American girls and science education to actively and continually rewrite itself. In Bianchini, J., Akerson, V. L., Calabrese-Barton, A., Lee, O., & Rodriguez, A. *Moving the equity agenda forward: Equity research, practice, and policy in science education*. Springer.

Wall, L., Buck, G., & Akerson, V. (2013). Race, culture, gender and nature of science in elementary settings. In Bianchini, J., Akerson, V. L., Calabrese-Barton, A., Lee, O., & Rodriguez, A. *Moving the equity agenda forward: Equity research, practice, and policy in science education*. Springer.

Buck, G. (2013). Forward. In Finson, K., & Pederson, J. (Eds.). *Visual data in science education*. Information Age Publications.

Buck, G., Hehn, J., & Leslie-Pelecky, D. (Eds). (2001). *The role of physics departments in preparing K-12 teachers*. College Park: American Institute of Physics.

Weaver (Buck), G. (1999). 'Archimedes'. In D. Simmonis (Ed.). *Lives and legacies: An encyclopedia of people who changed the world*. Phoenix, AZ: The Oryx Press.

Weaver (Buck), G. (1999). 'Morgan, Garrett'. In D. Simmonis (Ed.). *Lives and legacies: An encyclopedia of people who changed the world*. Phoenix, AZ: The Oryx Press.

Weaver (Buck), G. (1999). 'Copernicus, N.'. In D. Simmonis (Ed.). *Lives and legacies: An encyclopedia of people who changed the world*. Phoenix, AZ: The Oryx Press.

Weaver (Buck), G. (1999). 'Simmelweis, I'. In D. Simmonis (Ed.). *Lives and legacies: An encyclopedia of people who changed the world*. Phoenix, AZ: The Oryx Press.

### **Refereed Journal Articles/Empirical Studies:**

Yang, J., Buck, G.A., & Nageotte, N. (In review). The self-study process of a scientist as she delineated the meaning of scientific inquiry and developed a new professional identity as a science teacher educator. *Journal of Research in Education and Science*.

Nageotte, N., & Buck, G.A. (2022). Barriers and motivations to conservation behaviors in zoo visitors. *Environmental Education Research*. DOI: [10.1080/13504622.2022.2059066](https://doi.org/10.1080/13504622.2022.2059066)

Erumit, B., Akerson, V., & Buck, G. (2021). Multiculturalism in higher education: Experiences of international teaching assistants and their students in science and math classrooms. *Cultural Studies in Science Education*, 16(1), 251-278. DOI: [10.1007/s11422-020-09996-2](https://doi.org/10.1007/s11422-020-09996-2).

Nageotte, N., & Buck, G. (2020) Transitioning to teaching science in higher education: Exploring informal dialogical approaches to teaching in a formal educational setting, *Studying Teacher Education*, 16(1), 105-122. DOI: [10.1080/17425964.2019.1690443](https://doi.org/10.1080/17425964.2019.1690443)

Gilles, B., & Buck, G. (2020). Preservice teachers' use of discourse to shape the construction of scientific arguments. *Journal of Science Teacher Education*, 31(3), 291-310.

Nageotte, N., & Buck, G. (2020). "I gotta touch that?" Attitudes and self-efficacy of pre-service teachers regarding scary or disgusting science. *Journal of Outdoor and Environmental Education*, 23, 173-190.

Donohue, K., Buck, G., & Akerson, V. (2020). Where's the science? Exploring a new science teacher educator's theoretical and practical understandings of scientific inquiry. *International Journal of Research in Education and Science*, 6(1), 1-13.

Gilles, B., & Buck, G. (2019). Considering pedagogical practices in higher education: How science instructors influence scientific argumentation construction. *International Journal of Research in Education and Science*, 5(2), 744-757.

Yin, X., & Buck, G. (2019). Using a collaborative action research approach to negotiate an understanding of formative assessment in an era of standardized accountability testing. *Teaching and Teacher Education*, 80, 27-38. DOI: 10.1016/j.tate.2018.12.018.

Nageotte, N., & Buck, G. (2018). Visitor understanding of zoo chat messages: Are they picking up what we're putting down? *IZE Journal*, 54, 75-78.

Wang, J. & Buck, G. (2018). Exploring the use of contextualized debate to enhance elementary teacher candidates' argumentation performance. *New Waves Journal*, 21, 30-47.

Wang, J. & Buck, G. (2016). Understanding a high school physics teacher's pedagogical content knowledge of argumentation. *Journal of Science Teacher Education*, 27(5), 577-604.

Buck, G., Cook, K., & Carter, I. W. (2016). Attempting to make place-based pedagogy on environmental sustainability integral to teaching and learning in middle school: An instrumental case study. *Electronic Journal of Science Education*.

Yin, X., & Buck, G. (2015). There is another choice: An exploration of integrating formative assessment into a Chinese high school chemistry classroom through collaborative action research. *Cultural Studies in Science Education*,

Gatzke, J., Buck, G., & Akerson, V. (2015). Maybe I just want to play outside: Building bridges to find one's science teacher and environmental educator identity. *International Journal of Environmental and Science Education*, 10(3),

Wang J. & Buck G. (2015) The Relationship between Chinese students' subject matter knowledge and argumentation pedagogy. *International Journal of Science Education*, 37(2), 340-366.

Buck, G., Mills, M., Wang, J., & Yin, X. (2014). Evaluating and exploring a professional conference for undergraduate women in physics: Can one weekend make a difference? *Journal of Women and Minorities in Science and Engineering*, 20(4), 359-377.

Buck, G., Akerson, V., Quigley, C., & Weiland, I. (2014). Exploring the potential of using explicit reflective instruction through contextualized and decontextualized approaches to teach first-grade African American girls the practices of science. *Electronic Journal of Science Education*, 18(6), 1-21.

Cook, K., & Buck, G.A. (2014). Pre-service elementary teachers' experience in a community of practice through a place-based socio-scientific inquiry. *International Journal of Environmental and Science Education*, 9(2), 111-132.

Buck, G., Cook, K., Quigley, C., Prince, P., & Lucas, Y. (2014). Seeking to improve young African American girls' attitudes toward science: A participatory action research study. *The Elementary School Journal*, 114(3), 431-453.

Beeman-Cadwallader, N., Buck, G.A., & Trauth-Nare, A. (2014). Tipping the balance from "expert" to "facilitator:" Examining myths about being a teacher educator. *Studying Teacher Education*, 10(1), 70-85.

Varda, B., Koren, P., Rubin, E. & Buck, G.A. (2013). Changing the image of scientists among college students in Israel. *American Journal of Educational Research*, 1(9), 396-405.

Cook, K., & Buck, G. (2013). Understanding the nature of science through socio-scientific inquiry. *Electronic Journal of Science Education*, 17(1), 1-24.

Cook, K., Buck, G., & Park Rogers, M. (2012). Preparing biology teachers to teach evolution in a project-based approach. *Science Educator*, 21(2), 18-30.

Buck, G.A., Beeman-Cadwallader, N.M., & Trauth-Nare, A.E. (2012). Keeping the girls visible in K-12 science education: A feminist case study on problem-based learning. *Journal of Women and Minorities in Science and Engineering*, 18(2), 153-178.

Quigley, C., & Buck, G. (2012). The potential of photo-talks to reveal the development of scientific discourses. *Creative Education*, 3(2), 208-216.

Akerson, V.L., Buck, G.A., Donnelly, L.A., Nargund, V., & Weiland, I.S. (2011). The importance of teaching and learning nature of science in early childhood years. *The Journal of Science Education and Technology*, 20, 537-549.

Trauth-Nare, A.E. & Buck, G.A. (2011). Using reflective practice to incorporate formative assessment in a middle school science classroom: A participatory action research study. *Educational Action Research*, 19(3), 379-398.

Quigley, C.F., Oliveira, A. W., Curry, A.M., & Buck, G.A. (2011). Issues and techniques in translating scientific terms from English to Khmer for a university-level text in Cambodia. *Language, Culture and Curriculum*, 24(2), 159-177.

Park Rogers, M., Cross, D., Gresalfi, M., Trauth-Nare, A., & Buck, G. (2011). First year implementation of a project-based learning approach: The need for addressing teachers' orientations in the era of reform. *International Journal of Science and Mathematics Education*, 9: 893-917.

Oliveira, A., Cook, K., & Buck, G. (2011). Framing evolution discussion intellectually. *Journal of Research in Science Teaching*, 48(2), 257-280.

Buck, G., Trauth-Nare, A., & Kaftan, J. (2010). Making formative assessment discernible to preservice teachers: A pragmatic self-study. *Journal of Research in Science Teaching*, 47(4), 402-421.

Buck, G., Cook, K., Quigley, C., Eastwood, J., and Lucas, Y. (2009). Profiles of urban, low SES, African-American girls' attitudes toward science: A sequential explanatory mixed-methods study. *Journal of Mixed Methods Research*, 3(4), 386-410.

Buck, G., Mast, C., Macintyre Latta, M. and Kaftan, J. (2009). Fostering a theoretical and practical understanding of teaching as a relational process: A feminist participatory study of mentoring a doctoral student. *Educational Action Research Journal*, 17, (4), 505-521.

Buck, G., & Trauth-Nare, A. (2009). Preparing teachers to make the formative assessment process integral to science education. *Journal of Science Teacher Education*, 20, 475-494.

Macintyre Latta, M., & Buck, G. (2008). Enfleshing Embodiment: Falling into Trust with the Body's Role in Teaching and Learning. *Educational Philosophy and Theory*, 40, 315-329.

Buck, G., Plano Clark, V., Leslie-Pelecky, D., Cerda, P., & Lu, Y. (2008). Examining the cognitive processes used by adolescent girls and women scientists in identifying science role models: A feminist approach. *Science Education*, 92(4), 688-707.

Macintyre Latta, M., & Buck, G. (2007). Risks and opportunities embodied within self-study. *Studying Teacher Education*, 3(2), 213-229.

Macintyre Latta, M., Buck, G., & Beckenhauer, A. (2007). Formative assessment requires artistic vision. *International Journal of Education and the Arts*, 8(4).

Buck, G., Macintyre Latta, M., Leslie-Pelecky, D. (2007). Learning how to make inquiry into electricity and magnetism discernible to middle level teachers. *Journal of Science Teacher Education*, 18, 377-397.

Macintyre Latta, M., Buck, G., Leslie-Pelecky, D., and Carpenter, L. (2007). Terms of inquiry. *Teachers and Teaching: Theory and Practice*, 13(1), pp. 21-41.

Buck, G., Leslie-Pelecky, D., Lu, Y., Plano Clark, V, & Creswell, J. (2006). The self-definition of women experiencing a non-traditional graduate fellowship program. *Journal of Research in Science Teaching*, 43(8), 852-873.

Kaftan, J., Buck, G., & Haack, A. (2006). Using formative assessments to individualize instruction and promote learning. *Middle School Journal*, 37(4), 44-49.

Leslie-Pelecky, D., Buck, G., & Zabawa, A. (2005). Broadening middle-school students' images of science and scientists. *Journal of Materials Education*, 27(3-6), 173-178.

Buck, G., Mast, C., Ehlers, N., and Franklin, E. (2005). Preparing teachers to create a mainstream science classroom that is conducive to the needs of English-language learners: A feminist action research project. *Journal of Research in Science Teaching*, 42,(9), 1013-1031.

Buck, G. & Cordes, J. (2005). An action research project on preparing teachers to meet the needs of under-served student populations. *Journal of Science Teacher Education*, 16(1), 43-64.

Buck, G. (2002). Teaching discourses: Science teachers' responses to the voices of adolescent girls. *Learning Environments Research International*, 5(1), 29-50.

Buck, G., and Ehlers, N. (2002). Four criteria for engaging girls in the middle level classroom. *Middle School Journal*, 34(1), 48-53.

Buck, G., Leslie-Pelecky, D., and Kirby, S. (2002). Bringing female scientists into the elementary classroom: Confronting the strength of elementary students' stereotypical images of scientists. *Journal of Elementary Science Education*, 14(2), 1-10.

Arhar, J. & Buck, G. (Fall, 2000). Learning to look through the eyes of our students: Action research as a tool of inquiry. *Education Action Research*, 8, (2), pp.327-339.

### **Refereed Journal Articles/Teaching:**

Donohue, K., & Buck, G. (2020). Diving into the deep. *The Hoosier Science Teacher*, 43(1).

Nageotte, N., Buck, G., & Kirk, H. (2018). Arguing about endangered species. *The Science Teacher*, 85, 54-58.

Donohue, K., & Buck, G. (2017). Swimming in vocabulary: K-1. *Science and Children*, 32-37.

Quigley, C., Cook, K., Escabedo, A., & Buck, G. (2011). All about me/ all about Gary: Kindergarteners use cameras to share the results of their localized research. *Science and Children*, 48(8), 47-51.

Quigley, C.F., Buck, G.A., & Akerson, V.L. (2011). The NOS challenge. *Science and Children*, 49(2), 57-61.

Trauth-Nare, A., & Buck, G., (2011). Assessment for learning. *The Science Teacher*, 78(1), 34-39.

Beeman-Cadwallader, N., Quigley, C., & Buck, G. (2010). Fix the potholes! Helping students translate their interests and life experiences into scientific investigations. *Science Scope*, 33(8), 42-46.

Cook, K., & Buck, G. (2010). Photovoice: A community-based socioscientific pedagogical tool. *Science Scope*, 33(7), 35-39.

Quigley, C., Beeman-Cadwallader, N., Riggs, M., Rodriguez, A., & Buck, G. (2009). Deer tracks in the city? Problem-based learning in a kindergarten classroom. *Science and Children*, 47(2), 34-37.

Buck, G., Plano Clark, V., & Beeman-Cadwallader, N. (2008). Science role models for adolescent girls. *Science Scope*, 32, 40-43.



Hesser, K., Buck, G., & Dop, S. (February, 2005). Using levers to teach inquiry. *Science Scope*.

Buck, G., and Meduna, P. (2001). Exploring alternative conceptions. *Science Scope*, 25(1), 41-45.

Buck, G. (2000). Teaching science to English-as-second language learners. *Science and Children* 38 (3), pp. 38-41.

### **Monographs & Conference Proceedings:**

Buck, G., Cook, K., Quigley, C., Eastwood, J., and Lucas, Y. (2009). Profiles of urban, low SES, African-American girls' attitudes toward science: A sequential explanatory mixed-methods study. In *National Association for Research in Science Teaching Conference Proceedings*.

Buck, G., Plano Clark, V., & Leslie-Pelecky, D. (2007). Comparing and Exploring the Perceptions of Science Role Models for Adolescent Girls. In *National Association for Research in Science Teaching Conference Proceedings*.

Leslie-Pelecky, D., Buck, G., & Zabawa, A. (2004). Broadening middle-school students' images of science and scientists. In S. Baker, F. Goodchild, W. Crone, & S. Rosevear. *Materials Resources Society Symposium Proceedings*. 861E, Warrendale, PA.  
Winner of Blue Ribbon Award (Outstanding Paper)

### **Dissertation:**

Buck, G. (1998). *Collaboration between science teacher educators and science faculty from Arts and Sciences for the purpose of developing a middle childhood science teacher education program: A case study*. Ann Arbor, MI: UMI Dissertation Services.

### **PRESENTATIONS:**

#### **Refereed Paper Presentations:**

Rahman, S., & Buck, G.A. (2022). Navigating the pandemic as an international teaching assistant in science education. Paper presentation at the Annual Conference of the Association for Science Teacher Education, Greenville, SC.

Donohue, K., & Buck, G. (2019, April). Teaching identity? Exploring the STEM graduate student identity while teaching in a summer outreach program. Research paper presentation for the National Association of Research on Science Teaching, Baltimore, MD. Accepted.

Donohue, K., Williamson, F., & Buck, G. (2019). Graduate women in STEM teaching fellows: A learning community focused on leadership. Paper presentation AAAS Conference, Washington, D.C.

Akerson, V., Erumit, B., & Buck, G. (2019, April). Culture or language?: Examining perceptions, challenges and lived experiences of international associate instructors in a U.S. university. Poster paper presentation for the National Association of Research on Science Teaching, Baltimore, MD. Accepted.

Gilles, B., & Buck, G. (2019, January). Spontaneous adoption of online text-based collaborative tools shaped scientific argumentation discourse. Paper presentation at the Annual Conference of the Association for Science Teacher Education, Savannah, GA.

Gilles, B., & Buck, G. (2018, April). Preservice teachers' use of discourse to control the construction of scientific arguments. Paper Presentation at the Annual Conference of the National Association of Research on Science Teaching, Atlanta, GA.

Nageotte, N., & Buck, G. (2017, April). Dirt, bugs, and worms: Attitudes and self-efficacy of educators regarding dirty and scary science. Paper Presentation at the Annual Conference of the National Association of Research on Science Teaching, San Antonio, TX.

Buck, G., & Akerson, V. (2017, January). Allowing our professional knowledge of pre-service teacher education to be enhanced by self-study research: Turning a critical eye on our practice. Themed Paper Set at the Annual Conference of the Association for Science Teacher Education, Des Moines, IA.

Gilles, B., & Buck, G. (2017, January). Comparing the classroom experiences of two urban high school teachers implementing scientific argumentation for the first time. Themed Paper Set at the Annual Conference of the Association for Science Teacher Education, Des Moines, IA.

Buck, G., Akerson, V., Feldman, A., Lederman, N., Bowen, G.M., Capobianco, B., Davis, E., Fuentes, S.Q., Gilles, B., Hume, A., Makki, N., Mansfield, J., Marble, S., Nyamupangedengu, E., Subramaniam, K., Trauth-Nare, A., Wallace, M. (2016, April). Allowing our professional knowledge of teacher education to be enhanced by self-study research. Administrative Symposium at the Annual Conference of the National Association of Research on Science Teaching, Baltimore, MD. Accepted.

Gilles, B., & Buck, G. (2016, April). Understanding enthusiasm in teaching: A self-study of teaching science at the undergraduate level. Paper Poster Presentation at the Annual Conference of the National Association of Research on Science Teaching, Baltimore, MD. Accepted.

Gilles, B., & Buck, G. (2016, April). An urban high school Biology teacher's initial experience implementing scientific argumentation. Paper Presentation at the Annual Conference of the National Association of Research on Science Teaching, Baltimore, MD. Accepted.

Buck, G., & Akerson, V. (2016, January). Supporting New Members as They Transition into our Science Education Community of Practice. Paper Presentation at the 24<sup>th</sup> Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE). Tshwane University of Technology, Pretoria, South Africa. Accepted.

Cook, K., & Buck, G. (2016, January). Our Neighborhood: A Place for Heightened Emotional Energy in Science Education. Paper Presentation at the Annual Conference for Association of Science Teacher Educators. Accepted.

Gilles, B., & Buck, G. (2016, January). Examining the Challenges a High School Biology Teacher has Implementing Scientific Argumentation for the First Time. Paper Presentation at the Annual Conference for Association of Science Teacher Educators. Accepted.

White, F., & Buck, G. (2015, April). Transitioning into Science Education: A Transformative Self-Study and Reflexive Approach to Understanding Equity. Paper presentation

at the Annual Conference of the National Association of Research on Science Teaching, Chicago, IL.

Wang, J., & Buck, G. (2015, April). Scrutinizing the Positions of Students and Teacher in Argumentation in a High School Physics Classroom. Paper presentation at the Annual Conference of the National Association of Research on Science Teaching, Chicago, IL.

Gatzke, J., Buck, G., & Akerson, V. (2015, April). Balancing Identities: Am I a Science Teacher Educator or an Environmental Educator? Paper presentation at the Annual Conference of the National Association of Research on Science Teaching, Chicago, IL.

Yin, X., & Buck, G. (2014, April). A tale with two tails: Doing formative assessment under Chinese and American high-stakes testing contexts. Paper presentation at the American Educational Research Association, Philadelphia, PA.

Cook, K., & Buck, G. (2014, April). The effects of socio-scientific inquiry on nature of science conceptions. Paper presentation at the American Educational Research Association, Philadelphia, PA.

Beeman-Cadwallader, N. & Buck, G. (2014, April). Environmental educators' expressions of personal environmental values. Paper presentation at the American Educational Research Association, Philadelphia, PA.

Yin, X., & Buck, G. (2014, March). Negotiating the use of formative assessment for learning in the era of accountability testing. Paper presentation at the National Association for Research in Science Teaching annual meeting, Pittsburgh, PA.

Buck, G., Cook, K., & Weiland, I. (2014, March). Making place-based SSI instruction discernible to urban middle school science teachers. Interactive poster/paper presentation at the National Association for Research in Science Teaching annual meeting, Pittsburgh, PA.

Buck, G., Mills, M., Wang, J., & Yin, X. (2014, March). Exploring a professional meeting for undergraduate female physics majors: Can one weekend make a difference? Paper presentation at the National Association for Research in Science Teaching annual meeting, Pittsburgh, PA.

Yin, X., & Buck, G. (2014, January). Brokering the boundary between formative and summative assessment. Paper presentation at International Conference for the Association of Science Teacher Educators, San Antonio, TX.

Cook, K., Buck, G. & Weiland, I. (2014, January). Preparing teachers to integrate place-based socioscientific issues in urban classrooms. Paper presentation at International Conference for the Association of Science Teacher Educators, San Antonio, TX.

Wang, J., & Buck, G. (2013, April). Promoting college students' argumentation skills and NOS understanding through class debate. Paper presentation at the National Association for Research in Science Teaching annual meeting, Rio Grande, Puerto Rico.

Beeman-Cadwallader, N., & Buck, G. (2013, April). Scientific literacy and curricular goals in contemporary East Africa. Paper presentation at the National Association for Research in Science Teaching annual meeting, Rio Grande, Puerto Rico.

Buck, G., & Yin, X. (2013, January). Fostering fundamental understandings about scientific inquiry and scientists at the undergraduate level. Paper presentation at International Conference for the Association of Science Teacher Educators, Charleston, SC.

Buck, G., Trauth-Nare, A., & Wang, J. (2013, January). Preparing teachers to leverage formative assessment to foster scientific argumentation. Paper presentation at International Conference for the Association of Science Teacher Educators, Charleston, SC.

Beeman-Cadwallader, N., Buck, G., & Trauth-Nare, A. (2013, January). Development and implementation of place-based science curricula for pre-service elementary teacher education. Paper presentation at International Conference for the Association of Science Teacher Educators, Charleston, SC.

Cook, K., & Buck, G. (2013, January). Understanding the nature of science through socio-scientific inquiry. Paper presentation at International Conference for the Association of Science Teacher Educators, Charleston, SC.

Akerson, V., Buck, G., Donnelly, L., Nargund, V., & Weiland, I. (2013, January). The importance of teaching and learning nature of science in the early childhood years. Paper presentation at International Conference for the Association of Science Teacher Educators, Charleston, SC.

Yin, X. & Buck, G. (2013, January). Integrating formative assessment in high school chemistry classroom in an era of standardized testing. Paper presentation at International Conference for the Association of Science Teacher Educators, Charleston, SC.

Buck, G., Trauth-Nare, A., & Wang, J. (2012, March). Leveraging formative assessment to foster scientific argumentation among students in a middle school classroom. Interactive poster paper presentation at the National Association for Research in Science Teaching annual meeting, Indianapolis, IN.

Trauth-Nare, A., Buck, G. & Beeman-Cadwallader, N. (2012, March). Levels of reasoning among girls engaged in technology-enhanced science inquiry in an urban elementary classroom. Paper presentation at the National Association for Research in Science Teaching annual meeting, Indianapolis, IN.

Buck, G., Yin, X., Koren, P., & Bar, V. (2012, March). A self-study on reframing non-science majors' fundamental understandings about scientific inquiry and scientists. Paper presentation at the National Association for Research in Science Teaching annual meeting, Indianapolis, IN.

Beeman-Cadwallader, N., Buck, G., & Trauth-Nare, A. (2012, March). Place-legitimized Kenyan scientific knowledge and its relevance to science education. Paper presentation at the National Association for Research in Science Teaching annual meeting, Indianapolis, IN.

Beeman-Cadwallader, N., & Buck, G. (2012, March). Confronting myths of the science teacher educator: Becoming a facilitator instead of an expert. Interactive poster paper presentation at the National Association for Research in Science Teaching annual meeting, Indianapolis, IN.

Cook, K. & Buck, G. (2012, March). The effect of studying socio-scientific issues on pre-service teachers' understanding of the nature of science. Interactive poster paper presentation at the National Association for Research in Science Teaching, Indianapolis, IN.

Yin, X., & Buck, G. (2012, March). Exploring the potentials and challenges of integrating formative assessment in examination-oriented science classrooms. Paper presentation at the National Association for Research in Science Teaching, Indianapolis, IN.

Cook, K. & Buck, G. (2012, March). Pre-Service Teachers' Experience in a Community of Practice through a Place-Based Socio-scientific Inquiry. Paper presentation at the American Educational Research Association, Vancouver, British Columbia, Canada.

Cook, K. & Buck, G. (2012, March). Democratic Participation with Scientists through Place-Based Socio-Scientific Inquiry. Paper presentation at the American Educational Research Association, Vancouver, British Columbia, Canada.

Yin, X., & Buck, G.A. (2012, January). Exploring a Chinese High School Chemistry Teacher's Conceptual Understanding and Practical Interpretations of Formative Assessment. Presentation at the Association for Science Teacher Education Conference, Clearwater, FL.

Franklin, E., & Buck, G. (2011, April). Teaching linguistically diverse students in a middle level science classroom: Perspectives and contradictions from an experienced teacher. Paper presentation at the American Educational Research Association annual meeting, New Orleans, LA.

Buck, G., Cook, K., & Quigley, C. (2011, April). The effects of becoming a science-focus school in regards to urban, low SES, African American Girls' Emotional Engagement with Science. Paper presentation at the National Association for Research in Science Teaching, Orlando, FL.

Trauth-Nare, A., & Buck, G. (2011, April). Promoting student agency in scientific inquiry: A self-study of relational pedagogy in preservice elementary education. Paper presentation at the American Educational Research Association annual meeting, New Orleans, LA.

Cook, K., Oliveira, A. W., & Buck, G.A. (2011, April). Framing evolution discussion intellectually. Paper presentation at the National Association for Research in Science Teaching, Orlando, FL.

Trauth-Nare, A., & Buck, G. (2011, April). Helping preservice teachers find meaningful engagement in scientific inquiry: A self-study of relational teacher education. Paper presentation at the National Association for Research in Science Teaching, Orlando, FL.

Buck, G., Quigley, C., Beeman-Cadwallader, N., & Akerson, V. (2010, March). Exploring Urban African-American Girls' Understandings of the Nature of Science through the use of Worldview Theory. Paper Presented at the National Association for Research in Science Teaching, Philadelphia, PA.

Buck, G., Trauth-Nare, A., & Cook, K. (2010, March). Forging the Relationship to Science Content for Adolescents in Problem-Based Science. Interactive Poster Paper Presented at the National Association for Research in Science Teaching, Philadelphia, PA.

Quigley, C., & Buck, G. (2010, March). Dressing rooms, jelly beans, and straws: An exploration into how urban, kindergarten girls integrate scientific and everyday discourses. Paper Presented at the National Association for Research in Science Teaching, Philadelphia, PA.

Trauth-Nare, A., Buck, G., & Morgan, A., (2010, March). Embedding formative assessment into middle level problem-based science: A participatory action research study. Paper Presented at the National Association for Research in Science Teaching, Philadelphia, PA.

Quigley, C., Serriere, S., & Buck, G. (2010, March). In Their Words: The Use of a Photo-elicitation Technique to Understand how Young Girls Acquire New Scientific Words. Paper Presented the American Educational Research Association (AERA). Denver, CO.

Buck, G., Beeman-Cadwallader, N., & Trauth-Nare, A. (2009, April). Examining adolescent girls' engagement in problem-based science instruction. Interactive poster paper presentation at the National Association for Research in Science Teaching, Garden Grove, CA.

Buck, G., Cook, K., & Quigley, C. (2009, April). Examining how urban African-American girls position themselves in science learning. Paper presentation at the National Association for Research in Science Teaching, Garden Grove, CA.

Beeman-Cadwallader, N., & Buck, G. (2009, April). Pre-service elementary teachers, data-related science practices and socioscientific issues. Interactive poster paper presentation at the National Association for Research in Science Teaching, Garden Grove, CA.

Cook, K., Buck, G., & Park Rogers, M. (2009, April). Exploring levels of engagement in students learning evolution in a project-based approach. Interactive poster paper presentation at the National Association for Research in Science Teaching, Garden Grove, CA.

Quigley, C., Oliveira, A., & Buck, G. (2009, April). Coming to terms with language: The translation of technical terminology in science textbooks. Interactive poster paper presentation at the National Association for Research in Science Teaching, Garden Grove, CA.

Trauth-Nare, A., Buck, G., & Park Rogers, M. (2009, April). A phenomenological exploration of secondary science students' experiences during the first year implementation of project-based learning. Interactive poster paper presentation at the National Association for Research in Science Teaching, Garden Grove, CA.

Buck, G., Trauth-Nare, A., & Kaftan, J. (2008, April). Making formative assessment discernible to pre-service teachers: A pragmatic self-study. Paper presentation at the National Association for Research in Science Teaching, Baltimore, MD.

Buck, G., Macintyre Latta, M., Kaftan, J., & Trauth-Nare, A. (2008, January). An exploratory study of using formative assessment to guide inquiry-based instruction. Paper presentation at the Association for Science Teacher Educators, St. Louis, MO.

Buck, G., Plano Clark, V., & Leslie-Pelecky, D. (2007, April). Comparing and Exploring the Perceptions of Science Role Models for Adolescent Girls. Paper presentation at the National Association for Research in Science Teaching, New Orleans, LA.

Macintyre Latta, M., & Buck, G. (2007, April). The Dynamics of Formative Assessment Demands Artistic Vision. Paper Discussion at the American Educational Research Association, Chicago, IL.

Buck, G., Macintyre Latta, M., & Kaftan, J. (2007, April). Professional Development on Formative Assessment in Heterogeneous Science Classrooms. Poster paper presentation at the National Association for Research in Science Teaching, New Orleans, LA.

Buck, G., Plano Clark, V., & Leslie-Pelecky, D. (2007, April). Perceptions of Science Role Models as Held by 8<sup>th</sup> Grade Girls and Women Scientists. Paper presentation at the American Educational Research Association, Chicago, IL.

Macintyre Latta, M. & Buck, G. (2006, April). Enfleshing Embodiment: Falling into Trust with the Body's Role in Teaching and Learning. Paper presentation at the Annual National Meeting of the American Association for the Advancement of Curriculum Studies, Berkeley, CA.

Macintyre Latta, M. & Buck, G. (2006, April). Risks and Opportunities within Self-Study. Paper presentation at the American Educational Research Association, San Francisco, CA.

Duclos, L., Zabawa, A., Buck, G., & Leslie-Pelecky, D. (2005, July). Project Fulcrum: Broadening Students' Images of Scientists. Paper presentation at Annual National Meeting of the American Society of Parasitologists, Mobile, AL.

Buck, G., Leslie-Pelecky, D., Lu, Y., Plano Clark, V., & Creswell, J. (2005, April). An Exploratory Case Study on the Impacts of Role Identity and Sociocultural Setting on a Female Scientist's Graduate School Experience. Paper presentation at the National Association for Research in Science Teaching, Dallas, TX.

Macintyre Latta, M., Buck, G., & Leslie-Pelecky, D. (2005, April). Authorizing Inquiry. Paper presentation at the National Association for Research in Science Teaching, Dallas, TX.

Buck, G., Macintyre Latta, M., & Leslie-Pelecky, D. (2005, April). Learning how to make inquiry discernible: A participatory action research project. Paper presentation at the American Educational Research Association, Montreal.

Leslie-Pelecky, D., Buck, G., & Zabawa, A. (2004, November). Broadening middle-school students' images of science and scientists. Paper presentation at the Materials Research Society Meeting, Boston, MA.

Buck, G. & Cordes, J. (2004, April). The effects of a community-based science education field experience on pre-service teachers' confidence and knowledge in teaching science to children from under-served populations. Paper presentation at the National Association of Research in Science Teaching, Vancouver, BC.

Buck, G. & Cordes, J. (2004, April). Experience beyond the public school classroom: An action research project on preparing teachers for diversity. Roundtable paper presentation at the American Educational Research Association, San Diego, CA.

Buck, G., Ehlers, N., Franklin, E., and Mast, C. (2003, March). Limited-English learners in the mainstream science classroom: Implications for the lesson plan. Paper presentation at the National Association of Research in Science Teaching, Philadelphia, PA.

Buck, G., Ehlers, N., Franklin, E. and Mast, C. (2003, April). Creating a mainstream science classroom that is conducive to the needs of limited-English learners: A feminist action research project. Paper presentation at the American Educational Research Association, Chicago, IL.

Buck, G., Leslie-Pelecky, & Kirby, S. (2002, April). Confronting the strength of elementary students' stereotypical images of scientists. Paper presentation at the National Association of Research in Science Teaching, New Orleans, LA.

Franklin, E., & Buck, G. (2002, April). Learning the language of science: A case study of second language learners in a science classroom. Paper Presentation at the National Association of Research in Science Teaching, New Orleans, LA.

Buck, G., & Arhar, J. (2001, April). Researching our students' perspectives to improve classroom practice: An action research study. Paper presentation at the American Educational Research Association, Seattle, WA.

Buck, G. (2001, March). Through the looking glass: Teachers examine their science classrooms through the eyes of adolescent girls. Paper presentation at the National Association of Research in Science Teaching Conference, St. Louis, MO.

Gosselin, D., Buck, G., Bonnsetter, R., and Levy, R. (2001, March). Effects of research experiences for teachers on the knowledge and understanding of scientific principles and practices for teachers, Pre-Service, & Professors. Paper presentation at the National Association of Research in Science Teaching Conference, St. Louis, MO.

Bonnsetter, R., Buck, G., & Ollerenshaw, J. (2000, April). Teacher preparation: A multifaceted analysis of a program evaluation process. Paper presentation at the National Association for Research in Science Teaching Annual Conference, New Orleans, LA.

Buck, G. (2000, February). Improving middle-level science instruction for ESL students. In Lopez, W, Buck, G., et. al. The Nebraska ESL Reform Initiative: Learning the languages of math, science and social studies to make a difference in the learning of ESL students. Paper presentation at the American Association of Colleges for Teacher Education 2000 Annual Meeting, Chicago, IL

Buck, G. (2000, February). Conducting a case analysis of a program evaluation process. In Buck, G., Bonnsetter, R., Ollerenshaw, J. A case analysis of a three-level science education teacher preparation program evaluation plan. Paper presentation at the American Association of Colleges for Teacher Education 2000 Annual Meeting, Chicago, IL.

Buck, G. (1999, April). Collaboration between science teacher educators and science faculty from arts and sciences: A phenomenological study. Paper presented at the National Association for Research in Science Teaching Annual Conference, Boston, MA.

### **Refereed Presentations:**

Buck, G., & Akerson, V. (July 21-23, 2021). Globalizing science teacher preparation in the United States. Presentation at the national conference of the National Science Teachers Association (NSTA), Chicago, IL. In review.



Gilles, B., & Buck, G. (2015). Using scientific argumentation in your projects. Workshop presentation at Hoosier Association of Science Teachers, Inc. (HASTI), Indianapolis, IN.

Buck, G., Erumit, B., Erumit, S., Fouad, K., Harris, T., & Mills, M. (2013). Is there an app for that? Scientific inquiry enhanced by smartphones and electronic tablets. Hoosier Association of Science Teachers, Inc. (HASTI), Indianapolis, IN.

Buck, G., Erumit, B., Harris, T., Mills, M., & Erumit, S. (2013). Is there an app for that? Scientific inquiry enhanced by smartphones and electronic tablets. National Science Teachers Association STEM Forum & Expo, ST. Louis, MO.

Trauth-Nare, A., Buck, G., & Cook, K. (February, 2012). Forging relational connections through formative assessment: Portrait of collaborative inquiry in a middle school classroom. Curriculum and Instruction Research and Creative Activity Symposium, Indiana University Bloomington.

Wang, J., & Buck, G. (February, 2012). Promoting college students' argumentation skills and NOS understandings through class debate. Curriculum and Instruction Research and Creative Activity Symposium, Indiana University Bloomington.

Buck, G. & Yin, X. (March, 2012). Enhancing undergraduate students' beliefs about scientific inquiry and scientists. Presentation at the national conference of the National Science Teachers Association, Indianapolis, IN.

Buck, G., Hudson, S., & Harsh, J. (2012, March). Merging scientific inquiry, technology and the standards. Presentation at the national conference of the National Science Teachers Association, Indianapolis, IN.

Akerson, V., Buck, G., Donnelly, L., Nargund, V., & Weiland, I. (2012, March). The importance of teaching and learning nature of science in the early childhood years. Presentation at the national conference of the National Science Teachers Association, Indianapolis, IN.

Cook, K., Buck, G., & Quigley, C. (2012, March). Using the tool of photovoice to engage students in place-based socio-scientific inquiry. Presentation at the national conference of the National Science Teachers Association, Indianapolis, IN.

Buck, G., & Wang, J. (2012, March). Promoting students' argumentation skills and NOS understandings through the nature of light. Presentation at the National Science Teacher Association Conference. Indianapolis, IN.

Quigley, C., Buck, G., Akerson, A (2012, March). Take the 30-day NOS Science Challenge . Presentation at the National Science Teacher Association Conference. Indianapolis, IN.

Yin, X., & Buck, G.A. (2011, November). Potentials and challenges: Integrating formative assessment in a Chinese high school chemistry classroom. National Science Teachers Association, New Orleans, LA.

Buck, G., & Yin, X. (2011, March). A self-study on enhancing pre-service teachers' conceptions of scientific inquiry and scientists. Women in Science Professions, Indiana University Bloomington.

Yin, X., & Buck, G. (2011, February). Exploring a Chinese teacher's understanding and practice of formative assessment. Curriculum and Instruction Research and Creative Activity Symposium, Indiana University Bloomington.

Buck, G., & Cook, K. (2010, March). Investigating soil degradation: Using photovoice to engage students in community-based inquiry. Presentation to the National Science Teachers Association National Conference, Philadelphia, PA.

Trauth-Nare, A., Buck, G., & Morgan, A. (2010, March). Using formative assessment to enhance teaching and learning in problem-based curricula. Presentation to the National Science Teacher Association Conference, Philadelphia, PA.

Trauth-Nare, A., Morgan, A., & Buck, G. (2010, February). Reflecting, probing, and evaluating claims: Using everyday assessment to support teaching and learning in the science classroom. Hoosier Association of Science Teachers, Inc. (HASTI), Indianapolis, IN.

Beeman-Cadwallader, N., & Buck, G. (2010, February). Can a new football field be considered a 'green space'? Learning about local environmental issues through problem-based learning. Hoosier Association of Science Teachers, Inc. (HASTI), Indianapolis, IN.

Beeman-Cadwallader, N., & Buck, G. (2009). Pre-service teachers, data-related science practices, and socioscientific issues: A self-study. Poster presentation at the Scholarship of Teaching and Learning Poster Session, Indiana University, Bloomington, IN.

Quigley, C., Beeman-Cadwallader, N. & Buck, G. (2009, February). Science fairs: Hate them? We'll help! Presentation at the Hoosier Association of Science Teachers, Indianapolis, IN.

Buck, G., Cook, K., Scott, B., et. al. (2009, February). Teacher created problem-based science units for middle school (4-8). Workshop presentation at the Hoosier Association of Science Teachers, Indianapolis, IN.

Cook, K., & Buck, G. (2008, December). Evolution teaching practices: Striving for scientific literacy. National Science Teachers Association's Area Conference, Cincinnati, OH.

Beeman-Cadwallader, N., & Buck, G. (2008, December). SatisfYing the YouTube generation's curiosities and building inquiry skills. National Science Teachers Association's Area Conference, Cincinnati, OH.

Trauth-Nare, A., & Buck, G. (2008, December). Making students' thinking visible: Using formative assessment effectively in a problem-based unit on evolutionary principles. National Science Teachers Association's Area Conference, Cincinnati, OH.

Buck, G., Amirshokohi, A., Beeman-Cadwallader, N., Caylor, E., Eastwood, J., Nargund, V., Schmelz, R. & Sher, M. (2007, November). Making inquiry into chemistry discernible to pre-service teachers. School Science and Mathematics Annual Conference, Indianapolis, IN.

Buck, G. (2007, November). A longitudinal study on the perceptions of science role models as held by adolescent girls and women scientists. School Science and Mathematics Annual Conference, Indianapolis, IN.

Schmitter, D., Rosa, L., Kraemer, K., Buck, G., and Leslie-Pelecky, D. (2005). MRSEC participation in Project Fulcrum: A partnership in middle-school education. Poster presentation at the Q-SPINS MRSEC Annual Symposium, Lincoln, NE.

Gosselin, D., Buck, G., Bonnsetter, R., & Levy, R. (2001, April). Effects of Research Experiences on the Knowledge and Understanding of Scientific Principles and Practices for Teachers, Pre-Service, & Professors. Nebraska Academy.

Franklin, E., Buck, G., Lopez, W., & Wunder, S. (2001). Learning the language of content areas. Teachers of English to Speakers of Other Languages (TESOL) Conference, St. Louis, MO.

Buck, G. (2000, November). A Synthesis of Special Needs Strategies. In Arth, A. How to Begin, Revise, and Continue to Develop an Excellent Middle Grades Program. National Middle School Conference, St. Louis, MO.

Buck, G. et. al. (2000, November). Giving Adolescent Girls a Voice in Science Education: NMSA Teachers Share Results of a National Study. National Middle School Conference, St. Louis, MO.

Arhar, J., Buck, G., and Mizelle, N. (2000, November). Have You Ever Wondered?: Collaborative Action Research for Teachers. National Middle School Conference, St. Louis, MO.

Buck, G. and Arhar, J. (2000, April). Learning to Look through the Eyes of our Students: Action research as a tool of inquiry. ICTR, Baton Rouge, LA.

Buck, G. (1999, October). Giving Adolescent Girls a Voice in Science Education: A Research Opportunity. National Middle School Conference, Orlando, FL.

Buck, G. (1999, October). Bringing Balance to the Middle Level Classroom: A Synthesis of Special Needs Strategies. In Arth, A. How to Begin, Revise, and Continue to Develop an Excellent Middle Grades Program. National Middle School Conference, Orlando, FL.

Arhar, J., Buck, G., & Mizelle, N. (1999, October). Action Research for Teachers. National Middle School Conference, Orlando, FL.

Arhar, J., Buck, G., & Langstaff, A. (1998, October). Action Research for Teachers. Pre-conference presentation. National Middle School Conference, Denver, CO.

Arhar, J., Buck, G. (1998, October). Collaboration in the Development of a Middle-Childhood Teacher Education Program. National Middle School Conference, Denver, CO.

Mizelle, N., Buck, G., et. al. (1998, October). Action Research: Opportunities and Challenges. National Middle School Conference, Denver, CO.

Weaver (Buck), G., & Arhar, J. (1997, October). Using Feminist Pedagogy to Engage Students in Environmental Science. National Middle School Conference, Indianapolis, Indiana

Arhar, J., Weaver (Buck), G., et. al. (1997, October). Action Research for Teachers. National Middle School Conference, Indianapolis, Indiana

Stratton, B., Weaver (Buck), G., et.al. (1997, March). Using Ishmael in the Classroom. Conference of Science Educators Council of Ohio, Toledo, Ohio

Pullman, S., Weaver (Buck) G., et.al. (1997). Classroom Teachers and University Staff in a Shared Decision-Making Process: Bringing Student Teaching Assessment in Line with State and National Standards. Conference of Association of Teacher Educators, Washington, D.C.

Pullman, S., Weaver (Buck) G., et.al. (1997). Classroom Teachers and University Staff in a Shared Decision-Making Process: Bringing Student Teaching Assessment in Line with State and National Standards. Teaching and Learning Conference, Columbus, Ohio.

### **Invited Presentations:**

Buck, G., Dimitrieska, V., & Akerson, V. (2022). A peer-led-teaming approach to globalizing rural science teacher preparation in the United States. Longview grantee virtual meeting.

Buck, G., & Mills, M. (2013). Overview and Initial Insights into the Impact of the Conferences. In, Reports from the Conference for Undergraduate Women in Physics. Invited Panel Presentation at the American Association of Physics Teachers, New Orleans, LA.

Lederman, N., Lederman, J., Akerson, V., Buck, G., Burton, E., & Walls, L. (2012, March). Teaching and assessment of inquiry and NOS with early childhood students. Strand 13 sponsored panel at the National Association for Research in Science Teaching Annual Conference, Indianapolis, IN.

Wang, J., & Buck, G. (February, 2012). Promoting college students' argumentation skills and NOS understandings. IU Science Education Research Symposium, Bloomington, IN.

Yin, X., & Buck, G. (February, 2012). Integrating formative assessment into high school chemistry instruction through collaborative action research. IU Science Education Research Symposium, Bloomington, IN.

Abrams, E., Annetta, L., Boone, B., Buck, G., Glasson, G., Nelson, T., Nilsson, P., & Wilson, B. (2009, April). Simple Participatory Accelerated Research Kick-Off (SPARK) Talks. Presidential Invited Session at the National Association for Research in Science Teaching Annual Conference, Garden Grove, CA.

Zabawa, A., Schmitter, D., Buck, G., & Leslie-Pelecky, D. (2005, August). Broadening middle-school student images of science and scientists. American Association of Physics Teachers Summer Meeting, Salt Lake City, UT.

Mizelle, N., Arhar, J., Beane, J., Hough, D., Valentine, J. Buck, G., et. al. (1999, October). Graduate Students and New Faculty Chat Session with Researchers in Middle Level Education. National Middle School Conference, Orlando, FL.

Chatelain, P., Gorden, H., & Weaver (Buck), G. (1995). Impact II. Teaching and Learning Conference, Columbus, Ohio

Weaver (Buck), G. (1994). Georgian Heights' Math/Science/Environmental Alternative School's Change Initiative. Impact II Teacher Leadership Seminar, Snowbird, Utah

Mahaffey, E., Weaver (Buck), G., et. al. (1994). Community Involvement/Business Partners. Restructuring Conference, Columbus, Ohio

Chatelain, P., Gorden, H., & Weaver (Buck), G. (1994). The Teacher's Role in School Improvement. Impact II Conference, Toledo, Ohio

## **GRANTS/CONTRACTS:**

### **External:**

*Developing an Informal Learning Model for Rural Youth Global Engineering Identity Development (AISL)* [07/01/22-06/30/27]. Submitted to the National Science Foundation. In review.

*Educational Pathways for Cancer Research (EPCR)*[07/01/22-06/30/27]. Submitted to the National Institutes for Health/Cancer. \$2,253,802. Multi-Principal Investigator. In review.

*Preparing Rural Educators to Teach Locally-Tailored and Globally-Focused Science.* Submitted to the National Science Foundation. \$2,802,941. Principal Investigator. In review.

*A Peer-Led-Teaming Approach to Globalizing Rural Science Teacher Preparation in the United States.* Funded by Longview Foundation [8/15/21-7/14/22]. \$24,998. Principal Investigator.

*Dual Language Immersion/Lawrenceburg Community School Corporation* [08/01/19-07/31/20]. Funded by Education and Workforce Initiatives. \$5,000.

*Southbend – Elkhart Regional Partnership* [04/06/20-07/31/20]. Funded by Education and Workforce Initiatives. \$15,000.

*Science the “Write” Way: Using Literacy in Science Teaching to Support Indiana’s Rural Teachers in Addressing the New Academic Science Standards.* Funded by the Indiana Commission for Higher Education (ITQ): \$300,863.00. Project Director.

*Natural Wonderers: Enhancing Southern Indiana’s Teachers’ Efforts to Integrate Scientific Practices and Educational Technologies into the Life and Earth Sciences* [06/01/16-12/31/18]. Funded by the Mathematics and Science Partnership Program (MSP): \$449,690.00. Project Director.

*Science of Sustainability: Preparing Teachers to Enhance Students’ Scientific Practices Associated with Sustainability Issues.* [01/01/2014-09/30/2015]. Funded by the Indiana Commission for Higher Education (ITQ): \$232,431.00. Project Director.

*Collaborative Research: Conferences for Undergraduate Women in Science.* Funded by the National Science Foundation (Division of Physics/Physics Education & Interdisciplinary Research): \$64,345.00. [09/12/12-09/11/13]. Principal Investigator  
One of seven involved in multi-institutional collaborative proposal.

*Collaborative Research: Conferences for Undergraduate Women in Science.* Funded by the National Science Foundation (Division of Physics/Physics Education & Interdisciplinary Research): \$51,402.00. [11/1/11-10/31/12]. Principal Investigator  
One of seven involved in multi-institutional collaborative proposal.

*Power Up for Science II: Technology Enhanced Data Collection and Analysis in Middle School Science.* Funded by the Indiana Commission for Higher Education (Improving Teacher Quality): \$266,895.00 [1/1/2010-12/31/2011]. Project Director

*Staff Development in Indianapolis Public Schools.* Contract with Indianapolis Public Schools: \$6,000.00 [10/15/2009-6/30/2010]. Project Director

*Power Up for Science.* Funded by the Indiana Commission for Higher Education (Improving Teacher Quality): \$350,450.00 [1/1/2008-12/31/2009]. Project Director

*Staff Development in Indianapolis Public Schools.* Contract with Indianapolis Public Schools: \$6,000.00 [9/10/2008-6/30/2009]. Project Director

*Shifting Mindsets: A Study of a First-Year Implementation of "New Technology High School".* Funded by the National Science Foundation (ESI): 196,695.00 [8/1/2007-7/31/2009]. Co-Principal Investigator.

*GK12: Project Fulcrum, Phase II.* Funded by the National Science Foundation (DGE): \$1,994,628. [Awarded Spring '04]. Co-Principal Investigator.

*An Inquiry-Based Instruction Model for Using Insects in the Classroom.* Funded by Nebraska Coordinating Commission for Postsecondary Education: \$38,760. [Awarded Spring, '02]. Heng-Moss (PI), Ellis, Buck.

*Working Together to Better Meet the Needs of Children from Underserved Populations: A collaborative project.* Funded by Nebraska Coordinating Commission for Postsecondary Education: \$22,812.00 [Awarded Spring, '01]. Buck (PI), Leslie-Pelecky, Bull, and Kirby.

*Project FULCRUM: Building Partnerships.* Funded by National Science Foundation (DGE): \$1,442,816.00 [Awarded Spring, '01]. Leslie-Pelecky (PI), Buck, Dussalt, Kirby, and Kirby.

*Learning the Language of Content Areas: An ESL Reform Initiative.* Funded by U.S. Department of Education/Teacher & Personnel Grant: \$1,100,000.00. [Awarded 1999]. Franklin (PI), Lopez, and Buck.

*A Pilot Program for Professional Development of K-8 Teachers in Physical Sciences* Funded by Nebraska Coordinating Commission for Postsecondary Education: \$10,414.00 [Awarded Spring, '00]. PI's Leslie-Pelecky(PI), Buck, Kirby.

*Preparing Elementary Teachers to Meet the Needs of Girls from Underrepresented Populations: A Collaborative Project of UNL Teachers College and the Lincoln Children's Museum.* Funded by Nebraska Coordinating Commission for Postsecondary Education: \$23,632.00 [Awarded Spring, '00]. Buck (PI), Plano-Clark, Bull.

**Internal:**

*A Collaborative Action Research Project on Contextualizing Preservice Teachers' Practices of Science in Authentic Sustainability Issues.* Submitted to Indiana University, Office of the Vice Provost for Research, Collaborative Research and Creative Funding: \$20,000.00. [03/01]. Principal Investigator.

*Summer Writing-Teaching Grant.* Funded by the Indiana University Bloomington Campus Writing Program: \$1,500. [06/15]. Principal Investigator.

*Enhancing the Levels of Complex Reasoning Used by Pre-Elementary Education Majors Engaging in Technology-Enhanced Scientific Practices: Phase I.* Funded by the Scholarship of Teaching and Learning Grant Program: \$2,000. [01/01/15-12/3/15].

*Shifting Mindsets: Understanding the Structural Supports Needed to Successfully Implement Project-Based Instruction.* Funded by Indiana University, Office of the Vice Provost for Research, Bridge Grant Competition: \$64,013.00. [07/15/08-09/30/09]. Principal Investigator.

*Enhancing Urban, African American Girls' Conceptual Engagement in Science and Mathematics.* Funded by College of Education/Stage II Pathways Initiatives: \$39,965. [7/1/2008-6/30/2010]. Principal Investigator.

*Planning for Progress: A Working Conference to Coordinate and Extend Efforts towards Enhancing Math and Science Instruction.* Funded by the College of Education/Stage 1 Pathways Initiatives. Internal Grant Competition: \$5,000. [2/15/08-7/1/08]. Project Director.

*The Dynamics of Difference in Inquiry Science.* Funded by the Office of Research & Development Proffitt Internal Grant Competition: \$16,927. [7/1/2007-6/30/2008]. Principal Investigator.

*Relational Accountability: What Do Formative Assessments Look Like in Teacher & Learning Practices?* funded by College of Education & Human Sciences Multi-Disciplinary Research Program: \$20,000. [06/04 – 05/05]. Co-Principal Investigator.

*Food Safety Training for the Development of Standard Operating Procedures by School Food Service Personnel Project* funded by UNL Office of Extended Education and Outreach [Awarded Summer '01]. Schwarz (PI), Tickner, Wells, and Buck.

*Virtual Science Teaching Practicum Experience* funded by Layman: \$7,500. [Awarded Spring '01]. Buck (PI), Bolick.

*Virtual Science Teaching Practicum Experience* funded by Teachers College Institute: \$4,500. [Awarded Spring '01]. Buck (PI), Bolick.

*Increasing the Support System for Women Faculty and Students in Science, Math and Engineering* \$10,200. [Awarded Fall '00]. Leslie-Pelecky (PI), Holmes, Buck, Clark, and Scofield.

*Understanding Middle School Absenteeism* funded by Layman: \$7,500. [Awarded Spring, '00]. Weissinger (PI), Newman, Buck, and Dlugosh.

*Understanding Middle School Absenteeism* funded by Teachers College Institute: \$4,500 [Awarded Spring, '00]. Weissinger (PI), Newman, Buck, and Dlugosh.

*Looking at the Environment Through the Eyes of Adolescent Girls.* funded by Layman: \$7,459.75 [Awarded Spring, '99]. Buck (PI).

**PROFESSIONAL ORGANIZATIONS:**

National Association of Research in Science Teaching (NARST)  
Association for Science Teacher Educators (ASTE)  
American Educational Research Association (AERA)  
National Science Teachers Association (NSTA)  
Hoosier Association of Science Teachers (HASTI)

**COURSES TAUGHT:**

**Indiana University**

M346: Exploring Secondary School Science Teaching (Undergraduate)  
Q546: Exploring Secondary School Science Teaching (Graduate)  
Q200: Introduction to Scientific Inquiry  
Q200: Introduction to Scientific Inquiry (lecture)  
J705: Inquiry in Curriculum & Instruction  
J795: Dissertation Proposal Preparation  
J710: Paradigms and Programs in Teacher Education  
J762: Topical Seminar: Teaching by Scientific Inquiry  
Q540: Teaching Environmental Education  
E548: Advanced Study in Teaching Science in the Elementary School/Urban School Partnerships  
Q612: Topical Seminar/Culture, Gender, Society and Science Education

**University of Nebraska-Lincoln**

TLTE315: Teaching Science in the Elementary School  
TLTE842: Seminar/ Diversity Science Field Experience  
TLTE543: Middle Level Science Methods  
TLTE895: Action Research Seminar  
TLTE888: Teacher as Scholar Practitioner  
TLTE801: Curriculum Inquiry  
TLTE842E: Objectives and Methods of Science Teaching (Middle Level)  
TLTE842A: Objectives and Methods of Science Teaching (Elementary)  
TLTE890: Culture and Schooling: Gender & Science