

**Nicole Bowers**  
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### EDUCATION

PhD in Learning, Literacies, and Technologies Arizona State University, Tempe, AZ	2016-2021
MA in Molecular Biology University of Kansas, Lawrence, KS	2000-2003
BS in Chemistry Cumberland College, Williamsburg, KY	1994-1997

### PUBLICATIONS

#### Peer-Reviewed Journal Articles

- Rimm-Kaufman, S. E., Merritt, E. G., Lapan, C., DeCoster, J., Hunt, A. & **Bowers, N.** (2021). Can service-learning boost science achievement, civic engagement, and social skills? A randomized controlled trial of Connect Science. *Journal of Applied Developmental Psychology, 74*, 1-15.
- Carlson, D., **Bowers, N.**, & Fasching-Varner, K.J. (2020). The affect of waste and the project of value: The rejected, the dross, the chucked, and/or the useless. *Taboo, 19*(3), 3-6.
- Merritt, E., & **Bowers, N.** (2020). Missed opportunities for observation-based ecology in the Next Generation Science Standards. *Science Education, 104*(4), 619-640.
- Hunt, A., Rimm-Kaufman, S.E., Merritt, E.G., & **Bowers, N.** (2020). "Because the sun is really not that big": An exploration of fourth graders tasked with arguing from evidence. *The Elementary School Journal, 121*(2), 256-282.
- Bowers, N.**, Merritt, E., & Rimm-Kaufman, S. (2019). Exploring teacher adaptive expertise in the context of elementary school science reforms. *Journal of Science Teacher Education, 31*(1), 34-55.
- Bowers, N.**, Evans, M., Jordan, M., Fisher, K., & Holman, Z. (2019). Fostering self-efficacy and engagement through an undergraduate summer internship: A model for engineering research education. Proceedings publication at the annual meeting of the American Society for Engineering Education, Tampa, FL.
- Merritt, E., **Bowers, N.**, & Rimm-Kaufman, S. (2019). Making connections: Elementary students' ideas about energy resources. *Renewable Energy, 138*, 1078-1086.
- Ricca, B., **Bowers, N.**, & Jordan, M. (2019). Seeking emergence through temporal analysis of collaborative group discourse: A complex systems approach. *The Journal of Experimental Education, 88*(3), 431-447.
- Judson, E., **Bowers, N.**, & Glassmeyer., K. (2019). Recruiting and encouraging students to complete advance placement (AP) science and math courses and exams: Policies and practices. *Journal for the Education of the Gifted, 42*(3), 243-265.

#### Book Chapters

- Koro, M., Vitrukh, M., **Bowers, N.**, Mark. L., & Wells, T. (2022). Mentoring (maybe) as a philosophical event. In K.W. Guyotte & J.R. Wolgemuth (Eds.), *Philosophical Mentoring in Qualitative Research*. (pp. 211-237). Routledge.

**Bowers, N.** (2022). Creating magical research: Writing for a felt reality in a more-than-human world. In M.F.G Wallace, J. Bazzul, & M. Higgins (Eds.), *Reimagining Science Education in the Anthropocene*. (pp. 73-90). Palgrave.

**Bowers, N.** & Clark, A. (2020). Soil storytelling of public intellectualism: Ideas mattering through care and collectivity. In T.C. Wells, D.L. Carlson, D. L., & M. Koro-Ljungberg (Eds.), *Intra-Public Intellectualism: Critical Qualitative Inquiry in the Academy*. Myers Education Press.

### Practitioner Articles

Merritt, E., & **Bowers, N.** (2019). Cultivating community through a chef in the garden program. *Green Schools Catalyst Quarterly*, 1(3), 56-65.

Close, K., **Bowers, N.**, Mehta, R., Mishra, P., & Henderson, J.B (2018). Students as teachers: How science teachers can collaborate with their students using peer instruction. *iWonder*, (5), 24-28.

### Book Reviews

**Bowers N.L.**, and Wilcox J. (2017, February 8). [Review of book *I Love Learning; I Hate School": An Anthology of College* by S. D. Blum]. Teachers College of Record. <http://www.tcrecord.org>  
ID Number: 21821

### Select Conference Presentations:

**Bowers, N.**, Markos, A., & Marsh, J. (2024, October) *Developing reflective data practices for EdD program growth, understanding, and improvement: A story of beginnings*. Paper to be presented at the annual meeting of the Carnegie Project on Education Doctorate (CPED), Honolulu, HI.

DeMartino, L., Weiser, S.G., & **Bowers, N.** (2024, October). *Connecting to Huliau: Embracing collaborative, emancipatory, and/or PAR for transformative research in CPED-influenced programs*. Paper to be presented at the annual meeting of the Carnegie Project on Education Doctorate (CPED), Honolulu, HI.

**Bowers, N.** (2024, June). *In-service teacher adaptive and routine expertise in elementary school science reforms*. Poster to be presented at the annual meeting of the International Society of the Learning Sciences (ISLS), Buffalo, NY.

**Bowers, N.** (2020, August). *Creating magical research: Writing for a felt reality in a more-than-human world*. Paper presented at the annual meeting of the European Association of the Study of Science and Technology (EASST)/Society for Social Studies of Science (4S), Prague, CZE.

Ricca, B., & **Bowers, N.** (2020, April). *Knowledge building as an evolutionary process: Towards a method of analysis*. Conference canceled due to COVID-19 pandemic. Paper accepted at the annual meeting of the American Educational Research Association (AERA), San Francisco, CA.

**Bowers, N.**, & Wallace, M. (2019, October). *Defying gravity: Matters of joy-full resistance to neoliberal 'orbits of practice' in STEM teacher education*. Paper presented at the annual meeting of Science Educators for Equity Diversity and Social Justice (SEEDS), Norfolk, VA.

**Bowers, N.** (2019, October). *Technique to technicity: Becoming in qualitative inquiry through writing techniques*. Paper presented at the annual meeting of the National American Association of Environmental Education (NAAEE), Lexington, KY.

**Bowers, N.** (2019, May). *Fractured science: How the multiplicities of science are exposed in the climate change debate*. Paper presented at the annual meeting of the International Congress of Qualitative Inquiry (ICQI), Champaign-Urbana, IL.

Merritt, E., **Bowers, N.**, & Chapman, T. (2019, March). *Solving problems that matter: Elementary students applying NGSS concepts through environmental service-learning*. Paper presented at the annual meeting of the National Association of Research in Science Teaching, Baltimore, MD.

## RESEARCH EXPERIENCE

### Arizona State University, Mary Lou Fulton Teachers College. Tempe, AZ

*Primary Investigator*

Spring 2024-now

EdD in Leadership and Innovation Program

Co-PIs: Dr. Bowers and Dr. Marsh

- Design protocol for qualitative analysis of program dissertations.
- Design protocol of network analysis of program curriculum to dissertations.
- Map dissertation data to current program evaluation metrics for use in evaluation and redesign.

*Project Coordinator*

Fall 2022

Project Coordinate

Co-PIs: Dr. Brownell and Dr. Benedict

- Conducted school/teacher recruitment and retention.
- Managed a team of facilitators and research assistants.
- Led teacher professional development and coaching sessions.
- Conducted student assessments and classroom observation.

*Graduate Service Assistant*

Summer 2020

Design for Global Virtual Collaboration: Women Leadership

Co-PIs: Dr. Thompson and Dr. Oakes

- Co-wrote a grant proposal for the Stevens Initiative.
- Co-designed cross-cultural women's leadership program.
- Co-designed program evaluation metrics.
- Collaborated with Moroccan counterpart in cross-cultural design elements.
- Coordinated among the grant writing team and program participants.

*Graduate Research Assistant*

2018-2019

Chef in The Garden Program, K-8 School, Scottsdale, AZ

PI: Dr. Merritt

- Co-constructed mini-lessons and demonstrations with the school's master gardener and volunteer chefs based on grade level and standards for different classes.
- Co-constructed follow up lessons with k-8 teachers based on the garden and cooking lessons.
- Designed ethnographic research including writing the IRB, data collection, data management, and data analysis.

*Graduate Service Assistant*

Winter 2018

Center for Advanced Studies in Global Education, ASU, Tempe, AZ

Co-PIs: Dr. Silova and Dr. Nielsen

- Collaborated in designing the interview protocol for study.

- Collaborated with a Vietnamese counterpart to interview various stakeholders in schools to include parents, teachers, staff, and administration.
- Led photo-voice focus groups with students and teachers at various school sites.
- Managed data for our team.

*Graduate Research Assistant*

2017-2019

[Connect Science](#) (IES)

Co-PIs: Dr. Rimm-Kaufmann, Dr. Merritt, and Ms. Harkins

University of Virginia, Charlottesville, VA and ASU, Tempe, AZ

- Designed and wrote NGSS science lessons around systems thinking and renewable and non-renewable energy.
- Collaborated on additional NGSS lessons and service-learning lessons.
- Collaborated in performing professional development for NGSS science lessons.
- Collaborated in project meetings to design research with a large, diverse team.
- Managed data for different research projects including, surveys, videos, small group discussions, and student artifacts.
- Consulted on qualitative research design and analysis for other team members' projects.
- Collaborated in planning the dissemination of Connect Science work post-grant.

*Graduate Service Assistant*

Summer 2017

Quantum Energy and Sustainable Solar Technologies ([QESST](#))

NSF Engineering Research Center (ERC), ASU, Tempe, AZ

Education Director: Dr. Jordan

Engineering Directors: Dr. Holman and Ms. Fischer

- Co-designed the program for both undergraduates and teachers in a team of engineering and educational experts.
- Brought theoretical grounding and practical experience to activity design for the program.
- Collaborated to organize the schedule of activities and run their implementation.
- Facilitated program sessions including audience and presenter roles, reading technical journal articles, introduction to NGSS, and transfer of research experience to curriculum writing.
- Led sessions for engineering graduate student mentors on best practices for mentoring undergraduates.
- Mentored individual teachers in curriculum writing.
- Co-designed the educational research project to include writing the IRB, designing surveys, interview, and observation protocols, and training new researchers in data collection techniques.
- Collected data daily throughout the nine-week program including interviews, surveys, videos, pictures, focus groups, and field notes.
- Collaborated in weekly research meetings with the educational research team.
- Collaborated in weekly program meetings with the program engineers and educational experts.

*Research Assistant*

Summer 2016

Learning and Cognition Lab (LCL)(IES)

PI: Dr. Chi

- Created intervention videos and teaching protocol for the pilot sessions.
- Recruited 9<sup>th</sup> grade students for the laboratory pilot intervention.

- Conducted the intervention with individual students in a laboratory setting.
- Collected and analyzed data for the pilot intervention.
- Managed data collected.

**University of Kansas, Molecular and Cellular Biology Department.** Lawrence, KS

*Graduate Research Assistant*

2003

Corbin Lab (NIH)

PI: Dr. Corbin

- Constructed transgenic flies with different developmental patterns due to *kirre* and *irre* fragments.
- Ran molecular and cellular assays to analyze data.
- Organized laboratory spending, working with the grant department.
- Mentored undergraduate science students in authentic research in the Corbin Lab.
- Led lab meetings and journal reading groups pertaining to our research.

## TEACHING EXPERIENCE

### Higher Education

*Instructor, ASU*

Spring 2023- Now

- Leading courses as appointed for the EdD in Leadership and Innovation program. Courses include Systems Change and Leadership, Dynamic Contexts in Education, and Qualitative Methods in Action Research.
- Serving on special projects as appointed.
- Serving on EdD doctoral committees.
- Advising students on research design and methodology.

*Academic Associate, ASU*

Fall 2022

TEL 713: Qualitative Methods in Action Research

- Led activities to facilitate students' understanding and practice of qualitative research design.
- Provided ongoing feedback on student work.
- Advise students on research design and methodology.

*Academic Associate, ASU*

Fall 2022

TEL 702: Dynamic Contexts in Education

- Designed and led activities to facilitate students' praxes of ethics, equity, social justice, and critical inquiry.
- Provided ongoing feedback on student work.
- Advised students on research design and methodology.

*Faculty Associate, ASU*

Spring 2022

TEL 702: Dynamic Contexts in Education

- Designed and led activities to facilitate students' praxes of ethics, equity, social justice, and critical inquiry.
- Provided ongoing feedback for student work.
- Managed course material and assignments in Canvas.
- Designed and piloted face-to-face activities for a hybrid version of a previously online only course.
- Advised students on research design and methodology.

*Graduate Teaching Intern, ASU*

Spring 2020

COE 503: Introduction to Qualitative Research

- Designed and led class activities for ethnography and case study.
- Assisted instructor during class sessions.
- Managed course material in Canvas.
- Advised students on design and implementation of their final project.

*Instructor, ASU*

Summer 2019

EED 529: Elementary School Science Methods

- Designed and led activities to facilitate students' best practices in science pedagogy and logistics of hands-on science in elementary school classrooms.
- Designed and led activities to introduce Ambitious Science Teaching, Teacher Adaptive Expertise, The Nature of Science, Emerging Understandings of Science Concepts for Elementary Students, Project and Problem Based Learning, and Science Argumentation and Modeling.
- Facilitated the use of both state standards and NGSS in lesson plan writing and unit design.
- Facilitated student use of various instructional technologies including use of Google Classroom, Concept Mapping Software, Digital Interactive Notebooks, Storybird, Storyboard That, and Animiz.

*Graduate Teaching Assistant, ASU*

Fall 2018

EED 529: Elementary School Science Methods

- Designed and led lessons on science argumentation, modeling, misconceptions as emergent understanding, and teacher adaptive expertise.
- Designed and led class discussion activities.
- Organized and transferred class content from Blackboard to Canvas.

*Graduate Teaching Intern, ASU*

Spring 2018

LSE 542: Research Methods in Learning Sciences

- Designed and led activities for design-based research design and implementation.
- Designed and led activities for ethnographic data collection techniques including interviews, observations, and field note taking.
- Supervised students at the zoo as they collected data.
- Designed and facilitated lessons on data management.
- Facilitated student-led creation of curriculum and practices for the zoo night camp.
- Coached students on stake-holder collaboration.

*Graduate Teaching Intern, ASU*

Fall 2017

EED 411: Science in Elementary Schools

- Assisted instructor during class sessions.
- Designed and led a classroom activity on science argumentation.
- Designed and led a classroom activity on chemistry projects.

*Adjunct Instructor, Mesa Community College, Mesa, AZ*

2011-2012

BIO 100: General Biology for Non-majors

*Assistant Professor, Austin Peay State University, Clarksville, TN*

2004- 2007

\*This was a non-tenured track position.

Intro to Biology (online); General Biology I and II; Principles of Evolution

### **Edd Student Mentoring (Chair)**

Jacob Bunch (2022-2023). Arizona State University, Mary Lou Fulton Teachers College, *Assistive technology, and lifeworld of postsecondary students with dyslexia: Understanding 'fractions' of experience through narrative storytelling.*

Staci Ellis (2022-2024). Arizona State University, Mary Lou Fulton Teachers College, *Student ambassadors: Creating a venue for middle school students to share their voices to impact their social emotional competencies.*

Rajalakshmi Anand (2023-now). Arizona State University, Mary Lou Fulton Teachers College, *Hope or hype? Faculty knowledge and perceptions of AI in medical education.*

Kyle McCarragher (2023-now). Arizona State University, Mary Lou Fulton Teachers College, *Student sense of belonging and residential physical spaces.*

Sean Moore (2023-now). Arizona State University, Mary Lou Fulton Teachers College, *Providing LGBTQIA+ Student Focused Opportunities to Increase LGBTQIA+ Student Involvement Aimed at Strengthening LGBTQIA+ Students' Authentic Identities at a Community College.*

Susie Odogba (2023-now). Arizona State University, Mary Lou Fulton Teachers College, Title TBA.

Inga Pazdziorny (2023-now). Arizona State University, Mary Lou Fulton Teachers College, *Enhancing mental health support: An interactive module approach.*

DanThai Xayaphanh (2023-now). Arizona State University, Mary Lou Fulton Teachers College, *Excluded voices in transit: Paving the way for diversity in study abroad through unpacking stories of facilitators of color.*

### **EdD Student Mentoring (Committee Member)**

Samantha Perkins (2024-now). Arizona State University, Mary Lou Fulton Teachers College, Title TBA.

Catherine Lockhart (2024-now). Arizona State University, Mary Lou Fulton Teachers College, Title TBA.

Annastatia Moody (2024-now). Arizona State University, Mary Lou Fulton Teachers College, Title TBA.

Rhonda Schulters (2024-now). Arizona State University, Mary Lou Fulton Teachers College, Title TBA.

Alisha Rosas (2024-now). Arizona State University, Mary Lou Fulton Teachers College, Title TBA.

Melissa Nelson (2023-now). Arizona State University, Mary Lou Fulton Teachers College, *The impact of mindfulness on prekindergarten students' self-regulation and agency: A transformative, emancipatory mixed methods action research project.*

Chantell Rodgers (2023-now). Arizona State University, Mary Lou Fulton Teachers College, *Fostering wellness among Black undergraduate students at predominantly White institutions: An investigation into the efficacy of wellness workshops.*

Steve Nash (2023-now). Arizona State University, Mary Lou Fulton Teachers College, Title TBA.

Debra Kouda (2023-now). Arizona State University, Mary Lou Fulton Teachers College, *Transformative learning experiences in tourism: Crafting a tourism journey in West Africa.*

Providence Ryan (2022-now). Arizona State University, Mary Lou Fulton Teachers College, *Investigating the impact of a participatory critical inquiry learning team on teachers' perceptions of inclusion for LGBTQIA+ students.*

April Jacobsen (2022-2024). Arizona State University, Mary Lou Fulton Teachers College, *Collaborating to innovate: How school district works with outside organizations to design and implement an emergent program.*

Kathie Kanavel (2022-2024). Arizona State University, Mary Lou Fulton Teachers College, *Research practice partnerships a case study about boundary work across communities of practice: University researchers and K-12 practitioners "A tale of two brokers".*

*Biology Instructor* 2014-2016  
BASIS Mesa, Mesa, AZ.

- Taught AP, Honors, and 8<sup>th</sup> grade Biology.
- Mentored students in projects.
- Designed online material for hybrid learning in Canvas.

*Instructor* 2007-2010  
Szczecin International School, Szczecin, Poland

*Middle School Science and IB Chemistry Instructor*

- Taught 6<sup>th</sup>-7<sup>th</sup> grade science.
- Taught IB Chemistry and ran the Group 4 project.
- Collaborated to reorganize the IGCSE curriculum to fit with various national requirements.
- Acted as a form teacher for grade 6.

*Elementary Classroom Teacher*

- Acted as the 3<sup>rd</sup> and 5<sup>th</sup> grade classroom teacher in separate years.
- Mentored primary teacher colleagues in including more science in their lessons.
- Collaborated to organize primary-wide events and offered extracurricular dance lessons.

## OTHER RELEVANT EXPERIENCE

*Focus Group Data Collector* Winter 2022  
Barry Goldwater High School, Phoenix AZ

- Designed protocol for focus group data collection for a project on inner city youth and equitable teacher interaction experience.
- Ran 15 focus groups of 9<sup>th</sup>-12<sup>th</sup> graders.
- Organized data.

*Volunteer Curriculum Designer and Instructor* Summer 2020- Winter 2021  
Arizona Master Naturalists

- Redesigned face-to-face curriculum for online delivery due to COVID.
- Collected and analyzed data from previous class implementations.
- Designed new section on justice, equity, diversity, and inclusion for the master naturalist certification course.
- Facilitated online classes.

*Content Editor* Winter 2018  
Center for Advanced Studies in Global Education (CASGE), ASU, Tempe, AZ

- Edited for science content in lessons.
- Reformatted lessons to a unified template.
- Performed language and grammar editing.

*Math and Science Specialist* Spring 2012  
Phoenix College, Phoenix, AZ

- Garnered support for science awareness programs from faculty and outside partners.
- Designed programs to enhance student participation in science courses and activities.
- Designed STEM Scholar's program for inclusion and diversity.
- Mentored STEM Scholars.



- Organized a STEM Scholar space for event planning and tutoring.
- Reported outcomes in compliance with Title V Grant guidelines.
- Advised students on STEM internships and career paths.
- Collaboratively organized a STEM internship fair for college and high school students.
- Created and maintained blog.

## GRANTS AND FELLOWSHIPS

<b>ASU, Mary Lou Fulton Teachers College Conference Travel Grant</b>		
\$750 each		2017, 2018, 2019 & 2024
<b>University Graduate Fellowship, ASU</b>		
\$10,000		2016
\$3,000		2017
\$960		2018
\$2000		
\$857		2019
<b>LLT Dissertation Grant Award</b>		
\$1000		2020

## TECHNICAL SKILLS

**Data Analysis:** SPSS, Gephi, Excel, Dedoose, MAXQDA, NVivo  
**Data Collection:** Qualtrics, Survey Monkey, Google Forms, Question Pro  
**Project Management/Collaboration:** Jira, Basecamp, Slack, Trello, Google Docs/Drive, Dropbox, Mural  
**LMS:** Canvas, Blackboard, Google Classroom  
**Other:** Microsoft Suite, LaTeX, Adobe Captivate, Adobe Photoshop, Adobe Premier Pro

## SERVICE

<i>Course Coordinator, TEL 713: Qualitative Methods in Action Research</i>	2023-now
EdD in Leadership and Innovation Program	
Mary Lou Fulton Teachers College, ASU, Tempe, AZ	
<i>Application Reviewer</i>	
EdD in Leadership and Innovation Program	2023-now
Mary Lou Fulton Teachers College, ASU, Tempe, AZ	
<i>Doctoral Research Conversations Committee</i>	
EdD in Leadership and Innovation Program	2023-now
Mary Lou Fulton Teachers College, ASU, Tempe, AZ	
<i>Invited Reviewer</i>	
Science Education	2020-now
Teachers College Record	2024
Cultural Studies ↔ Critical Methodologies	2022
Taboo	2021
Reconceptualizing Educational Research Methodology	2021
<i>Graduate Student Representative</i>	2019-2020
Learning, Literacies, and Technologies Doctoral Program Committee	

Mary Lou Fulton Teachers College, ASU, Tempe, AZ	
<i>Awards Reviewer</i>	2019
Graduate and Professional Student Association, ASU, Tempe, AZ	
<i>Junior Editor</i>	2018-2019
Taboo: The Journal of Culture and Education, Special Issue on Waste	
<i>Graduate Student Representative</i>	2018-2019
University Hearing Board, ASU, Tempe, AZ	
<i>Reviewer</i>	2018
North American Association for Environmental Education Conference	
<i>Social Media Officer</i>	2017-2018
Teachers College Doctoral Committee, ASU, Tempe, AZ	
<i>Graduate Student Volunteer</i>	2016-2017
Teachers College Doctoral Committee, ASU, Tempe, AZ	
<i>Faculty Representative, Elementary School Science Outreach</i>	2006-2007
Austin Peay State University, Biology Department, Clarksville, TN	
<i>Faculty Representative, Student Recruiting Committee</i>	2004-2007
Austin Peay State University, Biology Department, Clarksville, TN	
<i>Faculty Representative, Textbook Selection Committee</i>	2005, 2007
Austin Peay State University, Biology Department, Clarksville, TN	
<i>Graduate Student Representative, New Professor Search Committee</i>	2002-2003
University of Kansas, Department of Molecular Biosciences, Lawrence, KS	
<i>Vice President, Graduate Student Organization for Molecular Biosciences</i>	2002
University of Kansas, Department of Molecular Biosciences, Lawrence, KS	
<i>Graduate Student Representative, University Senate</i>	2001
University of Kansas, the Department of Molecular Biosciences, Lawrence, KS	
<i>President, University of Kansas Ballroom Dancing Association</i>	2001
University of Kansas, Lawrence, KS	
<i>Vice President, University of Kansas Ballroom Dancing Association</i>	2000
University of Kansas, Lawrence, KS	

### **PROFESSIONAL MEMBERSHIPS**

American Educational Research Association (AERA)  
Carnegie Project on the Education Doctorate (CPED)  
International Congress of Qualitative Inquiry (ICQI)  
North American Association for Environmental Education (NAAEE)  
Science Educators for Equity Diversity and Social Justice (SEEDS)  
Society for Social Studies of Science (4S)