

PROFESSIONAL WORK EXPERIENCE

Academic Experience

1. Associate Professor, Science Education – University of Louisville (Louisville, KY)
 - Elementary, Middle, & Secondary Teacher Education [2021– Present]
2. Assistant Professor, Science Education – University of Louisville (Louisville, KY)
 - Elementary, Middle, & Secondary Teacher Education [2015 – 2020]

EDUCATION

University of Minnesota – Minneapolis, MN [2012 & 2015]

- **Ph.D.** – STEM Education & **M.A.** – Science Education
- Dissertation – *Teachers as Designers: The Iterative Curriculum Design Process of Science Teachers Focused on STEM Integration.*
- Advisor: Dr. Gillian Roehrig

Minnesota State University Moorhead – Moorhead, MN [2006]

- **B.S.** – Biology and Life Science Education

RESEARCH AND SCHOLARLY CONTRIBUTION

ResearchGate Profile

- https://www.researchgate.net/profile/Justin_Mcfadden3

A. Journal Articles

1. **McFadden, J.**, Tinnell, T., Trzaskus, M., Robinson B., Tretter, T. (2024). "Supporting K-8 Teachers' Capacity to Develop Quality Formative Science Assessments." *Journal of Science Teacher Education*: 1-21. <https://doi.org/10.1080/1046560X.2024.2326318>
2. Biesecker, T., **McFadden, J.**, Tretter, T.R., & Robinson, B. (2023). Professional Development Course Evaluation: Reinvigorating STEM Teachers via Energy Research with Engineers. ASEE Annual Conference & Exposition. Conference Proceedings.
3. Roehrig, G.H., Anwar, T., Ellis, J. A., & **McFadden, J.** (2022). Exploring Reflective Practices of Beginning Science Teachers in an Online Induction Program. *Contemporary Issues in Technology and Teacher Education: Science*.
4. **McFadden, J.**, Jung, K., Tretter, T., & Robinson, B. (2021). Teacher-developed multi-dimensional science assessments supporting elementary teacher learning about the next generation science standards. *Journal of Science Teacher Education*. <https://doi.org/10.1080/1046560X.2021.1905331>
5. **McFadden, J.**, Thornburgh, W., & Robinson, B. (2021). 5E and the PEs: The popular instructional model can help meet multiple performance expectations. *Science and Children*.
6. **McFadden, J.R.**, Fuselier, L (2020). Graduate teaching assistants: sharing epistemic agency with non-science majors in the biology laboratory. *Disciplinary & Interdisciplinary Science Education Research*. 2, 7. <https://doi.org/10.1186/s43031-020-00024-5>.
7. **McFadden, J.** & Roehrig, G. H. (2020). Missed Expectations: Teacher and Coach Tensions at the Boundary of STEM Integration in an Elementary Classroom. *Disciplinary and Interdisciplinary Science Education Research*.
8. Thornburgh, W., **McFadden, J.**, & Robinson, B. (2020). The Sixth E: Incorporating engineering into a 5E learning cycle on matter. *Science and Children*. 57(6).
9. Fuselier, L., **McFadden, J.**, & Ray King, K. (2019). Do biologists' conceptions of science as a social epistemology align with critical contextual empiricism?. *Science & Education*. <https://doi.org/10.1007/s11191-019-00084-8>.
10. **McFadden, J.** (2019). The great ice investigation: Preparing preservice elementary teachers for a sensemaking approach of science instruction. *Innovations in Science Teacher Education*, 4(3). Retrieved

from <https://innovations.theaste.org/the-great-ice-investigation-preparing-pre-service-elementary-teachers-for-a-sensemaking-approach-of-science-instruction/>

11. **McFadden, J.** & Roehrig, G. H. (2019). Engineering design in the elementary science classroom: Discourse practices and dilemmas. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-018-9444-5>.
12. **McFadden, J.** (2019). Transitions in the perpetual beta of NGSS: One science teacher's beliefs and attempts for instructional change, 1-30. *Journal of Science Teacher Education*. <https://doi.org/10.1080/1046560X.2018.1559559>.
13. Tretter, T. & **McFadden, J.** (2018). Modeling structure and properties of matter: People as particles. *Science and Children*, 56(4).
14. Jung, K.G. & **McFadden, J.** (2018). Student justifications in engineering design descriptions: Examining authority and legitimation. *International Journal of Education in Mathematics, Science and Technology*, 6(4), 398-423. DOI: 10.18404/ijemst.440342.
15. **McFadden, J.**, & Roehrig, G. H. (2017). Exploring teacher design team endeavors while creating an elementary-focused STEM-integrated curriculum. *International Journal of STEM Education*, 4(1), 21.
16. Ellis, J., **McFadden, J.**, Anwar, T., & Roehrig, G. (2015). Investigating the social interactions of beginning teachers using a video annotation tool. *Contemporary Issues in Technology & Teacher Education*, 15(3). Retrieved from <http://www.citejournal.org/vol15/iss3/general/article1.cfm>.
17. **McFadden, J.**, Ellis, J., Anwar, T., & Roehrig, G. (2014). Beginning science teachers' use of a digital video annotation tool to promote reflective practices. *Journal of Science Education and Technology*, 23(3), 458-470. <https://doi.org/10.1007/s10956-013-9476-2>.
18. **McFadden, J.** (2014). Why can't teachers work in the cloud: An examination of science teacher online professional development using Ning. *EdTechnology Ideas*, 1(3). Retrieved from <http://edtechnologyideas.com/education-technology-journal-issue-3>.

B. International and National Conference Presentations

1. Biesecker, C. L., & **McFadden, J.**, & Tretter, T., & Robinson, B. S., & Lewis, J. E. (2023, June), *Reinvigorating Energy Teaching via Research with Engineers (Evaluation)* Paper presented at 2023 ASEE Annual Conference & Exposition, Baltimore, Maryland. <https://peer.asee.org/44092>
2. **McFadden, J.** (2020). Knowing your coach's role: Navigating a coaching relationship at the boundaries of STEM integration. Association of Science Teacher Education – San Antonio, TX.
3. **McFadden, J.** (2020*). Missed Expectations: Teacher and Coach Tensions at the Boundary of STEM Integration in an Elementary Classroom. National Association for Research in Science Teaching Conference – Portland, OR.
4. Fuselier, L., & **McFadden, J.** (2020*). Identifying Opportunities for an Epistemic Shift with Graduate Teaching Assistants in the Laboratory. National Association for Research in Science Teaching Conference – Portland, OR.
5. **McFadden, J.** & Tretter, T. (2019) Developing and Using 3-D Embedded Formative Assessments. National Science Teachers Association – Cincinnati, OH.
6. **McFadden, J.** & Cunningham, H. (2019) An Environmentally Focused Program: A University-Elementary School Collaboration. Engagement Scholarship Consortium – Denver, CO.
7. Tretter, T. & **McFadden, J.** (2019 - invited). NSTA Elementary Extravaganza: People as Particles National Science Teachers Association – St. Louis, MO.
8. **McFadden, J.**, Tinnell, T., Trzaskus, M., Tretter, T., & Robinson, B. (2019). Tracking the quality of classroom-embedded, formative assessments in the era of NGSS. National Association for Research in Science Teaching Conference – Baltimore, MD.
9. Jung, K. & **McFadden, J.** (2019). Engineering design in the elementary setting: Examining student justifications, authority and legitimation. National Association for Research in Science Teaching Conference – Baltimore, MD.
10. **McFadden, J.** (2019). Influential factors impacting the design of elementary-based formative assessments. Association of Science Teacher Education – Savannah, GA.
11. Fuselier L. & **McFadden, J.** (2018). Critical contextual empiricism as a framework for inclusive science

education. Feminist epistemologies methodologies, metaphysics and science studies [FEMS] – Portland, OR.

12. **McFadden, J.** (2018). An exploratory study of video-based coaching and a virtual community of practice on a beginning science teacher. Association of Science Teacher Education – Baltimore, MD.
13. Philipp, S., **McFadden, J.** (2018). Working towards NGSS-aligned instruction through development of multi-dimensional formative assessments (*pre-conference workshop*). Association of Science Teacher Education – Baltimore, MD.
14. Tretter, T., **McFadden, J.**, Robinson, B. (2018) Influential factors impacting the design and use of three-dimensional, formative assessments in elementary science classrooms. National Association for Research in Science Teaching Conference – Atlanta, GA.
15. King, K., Fuselier, L., & **McFadden, J.** (2018). Characterizing epistemic beliefs among scientists. National Association for Research in Science Teaching Conference – Atlanta, GA.
16. **McFadden, J.**, Fuselier, L., & King, K. (2018). Characterizing graduate teaching assistant epistemic beliefs as they emerge in the biology laboratory. National Association for Research in Science Teaching Conference – Atlanta, GA.
17. Works, P., Johnson, D., **McFadden, J.**, & Tretter, T. (2018). Classroom-embedded assessments: 3D assessments for learning in elementary and middle school classrooms. National Science Teaching Association National Conference – Atlanta, GA.
18. King, K., Fuselier, L., & **McFadden, J.** (2017). Characterizing epistemic beliefs among scientists. Society for the Advancement of Biology Education Research National Conference – Twin Cities, MN.
19. Fuselier, L., & **McFadden, J.** (2017). Connecting instructor epistemic beliefs to student understanding of science in argument-driven labs. Society for the Advancement of Biology Education Research National Conference – Twin Cities, MN.
20. **McFadden, J.** & Roehrig, G.H. (2017). Exploring teacher design teams endeavors while creating an elementary-focused STEM-integrated curriculum. National Association for Research in Science Teaching Conference – San Antonio, TX
21. **McFadden, J.** (2017). How should an engineer talk? Exploring the language demands of engineering design in an elementary science classroom. National Association for Research in Science Teaching Conference – San Antonio, TX
22. Roehrig, G., Andzenge, S., & **McFadden, J.** (2015). Service learning in high school environmental science classrooms. National Science Teachers Association Conference – Kansas City, MO.

C. Regional, State & Local Presentations

1. **McFadden, J.** & Robinson, B. (2022). Reinvigorating Energy Teaching (RET) via Research with Engineers. Kentucky Science Teachers Association Annual Conference – Richmond, KY.
2. **McFadden, J.** (2019). Knowing your coach's role: Navigating a coaching relationship at the boundaries of STEM integration. Mid-Atlantic, Association of Science Teacher Education Regional Conference – Pipestone, WV.
3. **McFadden, J.** (2018). Influential factors impacting the design of elementary-based formative assessments. Mid-Atlantic, Association of Science Teacher Education Regional Conference – Harrisonburg, VA.
4. **McFadden, J.**, & Tretter, T. (2018). Examples of classroom embedded assessments in action. Kentucky Science Teachers Association Annual Conference – Lexington, KY.
5. **McFadden, J.**, Works, P., & Johnson, D. (2017). Classroom embedded assessment: Making student thinking visible. Kentucky Science Teachers Association Annual Conference – Lexington, KY.
6. **McFadden, J.**, Philipp, S., Mark, S., & Tretter, T. (2017). Developing K-5 classroom embedded assessments. Kentucky Science Teachers Association Annual Conference – Lexington, KY.
7. **McFadden, J.** (2017). An exploratory study of video-based coaching and a virtual community of practice on a beginning science teacher. Mid-Atlantic, Association of Science Teacher Education (MA-ASTE) Regional Conference – Prestonsburg, KY.
8. **McFadden, J.** (2016). Exploring the language demands of engineering design in an elementary science classroom. P12 Engineering & Design Education Research Summit – Chicago, IL.
9. **McFadden, J.** (2015). Elementary teachers as designers: STEM-Integrated curriculum design with coaches. Mid-Atlantic, Association of Science Teacher Education Regional Conference – Lore City, OH.

D. Manuscripts in Progress

GRADUATE STUDENTS (*graduated, ABD**)

William Thornburgh*
Terri Tinnell*
Marsha Buerger*
Katie Humrick*
Sarah Spaulding*
Matthew Trzaskus*

Lucas Elliot**
Jessie Newhouse**
Peter Azmani**

AWARDS AND DISTINCTIONS

2019 – Nystrand-Offutt Scholar (Nystrand Center of Excellence in Education – University of Louisville): *Exploring Elementary Teachers’ Beliefs about a Sensemaking Approach of Science Instruction.*

2014 – Association for Science Teacher Education (ASTE). Award IV: Innovations in Teaching Science Teachers. *If You Can’t Say Something Nice: A Design-Based Research Approach Investigating the Social Interactions of New Science and Math Teachers Using a Video Annotation Tool.*

RESEARCH ACTIVITY: FUNDING

Project Name	Investigators	Source	Amount
BIO-RETS Site: Urban Ecology Research and Environmental Justice	Fuselier, L. & McFadden, J.	National Science Foundation	\$591,092
Reinvigorating Energy Teaching (RET) via Research with Engineers	Robinson, B., & McFadden, J.	National Science Foundation: Research Experiences for Teachers (RET) in Engineering and Computer Science Supplements and Sites	\$599,595
ASSESS – Assessments of Science Enabling Successful Students	Tretter, T., McFadden, J. , Robinson, B.	Kentucky Department of Education (<i>Math Science Partnership</i>)	\$409,884
Connecting epistemic beliefs to pedagogical practice in argument-driven labs.	Fuselier, L. & McFadden, J.	Spencer Small Grant: Teaching, Learning, and Instructional Resources	\$49,920
Utilizing Outdoor Learning Spaces and Digital Technologies in Urban Schools to Leverage Diverse Students’ Cultural Assets for Meaningful STEM Learning	McFadden, J. , Cunningham, H., & Fitzpatrick, R.	Siemens Industry, Inc. (Building Technologies Division)	\$39,200
Infusing and Sustaining Critical Thinking Pedagogy in Biology Laboratory Courses	McFadden, J. & Fuselier, L.	Ideas to Action (<i>University of Louisville</i>)	\$5,000
Exploring Elementary Teachers’ Beliefs about a Sensemaking Approach of Science Instruction	McFadden, J.	Nystrand Center of Excellence in Education: Nystrand-Offutt Scholar	\$4,777
An Exploratory Study of the Influences that Video-based Coaching and a Virtual Community of Practice have on a Beginning Science Teacher’s Classroom Practice	McFadden, J.	Research and Faculty Development Grant (<i>College of Education and Human Development, University of Louisville</i>)	\$1,400

The Purpose and Place of Student Self-Assessment in an Elementary Science Classroom Driven by Formative Assessments	McFadden, J.	Research and Faculty Development Grant (<i>College of Education and Human Development, University of Louisville</i>)	\$1,290
Total			\$1,111,066

IN DEVELOPMENT - NOT FUNDED

Project Name	Investigators	Source	Amount
Strengthening Understanding of Science Teachers Abilities to Implement NGSS - (<i>SUSTAIN</i>)	McFadden, J. , DeCaro, M., Philipp, S., & Tretter, T.	James S. McDonnell Foundation - Understanding Teacher Change and Teachers as Learners in K-12 Classrooms	\$2.4 million
Play-based STEM: Utilizing an Informal Science Institution to Connect Young Children's Play and Learning Across Formal and Informal Contexts [pb-STEM]	Norton-Meyer, L., McFadden, J. , Philipp, S., Jacobi-Vessels, J. Tretter, T.	National Science Foundation: Advancements for Informal Science Learning – <i>Research in Service to Practice.</i>	\$2.9 million
Transdisciplinary Epistemology Science Studies Education Teaching Practice	Fuselier, L. & McFadden, J.	The Center for Ethics and Education: Research Grant	\$39,215

TEACHING EXPERIENCE

College/University

1. Instructor – University of Louisville (Louisville, KY)
 - **Education: Advanced Practitioner 789: Advanced Research Design**
2. Instructor – University of Louisville (Louisville, KY)
 - **Education: Teacher Preparation 355: Educational Assessment & Research**
3. Instructor – University of Louisville (Louisville, KY)
 - **Education: Advanced Practitioner: Chemistry: Big Bang & Radioactivity**
4. Instructor – University of Louisville (Louisville, KY)
 - **Education: Advanced Practitioner: Chemistry: Chemical Reactions**
5. Instructor – University of Louisville (Louisville, KY)
 - **Education: Advanced Practitioner: Learning Theories & Classical Research in STEM Education**
6. Instructor – University of Louisville (Louisville, KY)
 - **Education: Teacher Preparation 582: Technology Applications for Science Teachers** (Online)
7. Instructor – University of Louisville (Louisville, KY)
 - **Education: Teacher Preparation 201: The Teaching Profession**
8. Instructor – University of Louisville (Louisville, KY)
 - **Education: Teacher Preparation 324/605: Elementary Science Methods**
9. Instructor – University of Minnesota (St. Paul, MN)
 - **Curriculum and Instruction 5531/5596: Teaching Middle School Science**
10. Instructor – University of Minnesota (St. Paul, MN)
 - **EDHD 5007: Technology for Teaching and Learning Science**

High School

1. Science Teacher – 2006 to 2012
 - Mounds View Public Schools (New Brighton, MN)
 - Foley Public Schools (Foley, MN)
 - Crookston Pubic Schools (Crookston, MN)
 - Humboldt Senior High (St. Paul, MN)

SERVICE ACTIVITIES

National

- School Science and Mathematics – Editorial Review Board
 - <https://onlinelibrary.wiley.com/page/journal/19498594/homepage/editorialboard.html>
 - 2020 – current
- Journal of Science Teacher Education – Editorial Review Board
 - <https://www.tandfonline.com/action/journalInformation?show=editorialBoard&journalCode=uste20>
 - 2019 – current
- Contemporary Issues in Technology and Teacher Education – Editorial Review Board
 - <https://www.citejournal.org/review-boards/science-section-reviewers/>
 - 2017 – 2022
- National Science Foundation-funded – *Out-of-Field Teaching in Science Conference*. St. Louis, MO, February 25-26, 2019.
- Journal of Research in Science Teaching – Ad hoc Reviewer
 - <https://publons.com/author/1268982/justin-mcfadden#profile>
- Journal of Pre-College Engineering Education Research (J-PEER) – Ad hoc Reviewer
- Science & Education – Ad hoc Reviewer
- School Science and Mathematics – Ad hoc Reviewer
- Journal of Engineering Education – Ad hoc Reviewer
 - <https://publons.com/author/1268982/justin-mcfadden#profile>
- NARST – Publication Advisory Board Committee & Scholarship Subcommittee (2018 – current)
- National Science Foundation (NSF) - Panel Review Committee Member
 - Discovery Research K-12 (2016, 2019)

College Committees

- The Grawemeyer Award in Education (panelist/reviewer)
 - <http://grawemeyer.org/education/>
- Planning and Budget Committee
- Research and Professional Development Committee
- Technology Committee

State/Community

- Board of Directors – Kentucky Academy of Science
- Board of Directors – Kentucky Science Teachers Association
- Board of Directors – Kentucky Engineering and Technology Education Association
- Judge – Robo-Challenge Xtreme
- Member – Presidential Awards for Excellence in Mathematics and Science Teaching Selection Committee
- Judge – Junior Science and Humanities Symposium

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

National Association of Research in Science Teaching (NARST)	2013 - Present
Association of Science Teacher Education (ASTE)	2013 - Present
North-Central Association of Science Teacher Education (N-ASTE)	2012 – 2015
Mid-Atlantic Association of Science Teacher Education (MA-ASTE)	2015 - Present