

# Ryan S. Nixon, PhD

rynixon@byu.edu

## PROFESSIONAL EXPERIENCE

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- Associate Professor, Science Education** 2021-current  
Brigham Young University, Department of Teacher Education
- Assistant Professor, Science Education** 2015-2021  
Brigham Young University, Department of Teacher Education

## EDUCATION

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- Doctor of Philosophy, Science Education** 2015  
University of Georgia, Athens, Georgia  
Dissertation: *Knowing science like a teacher: An exploration of the content knowledge of new science teachers.*  
Adviser: Julie A. Luft, PhD
- Master of Arts, Teacher Education, Integrated STEM emphasis** 2012  
Brigham Young University, Provo, Utah  
Thesis: *The effect of explicitly teaching multiple modes of representation in middle school science classrooms.*  
Adviser: Leigh K. Smith, PhD
- Bachelor of Science, Physics Teaching, Cum Laude** 2009  
Weber State University, Ogden, Utah  
Level 2 Utah teaching certification: Physics, physical science, middle school science

## SCHOLARSHIP

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### *Peer-Reviewed Papers*

#### *Published*

- Smith, L. K., Nixon, R. S., Sudweeks, R. R., & Larsen, R. A. (2022). Elementary teacher characteristics, experiences, and subject matter knowledge: Understanding the relationships through structural equation modeling. *Teaching and Teacher Education, 113*, 103661. <https://doi.org/https://doi.org/10.1016/j.tate.2022.103661>
- Nixon, R. S., & Campbell, B. K. (2021). Attending to science concepts during planning: Exploring and supporting the process. *School Science and Mathematics, 121*, 333–344. <https://doi.org/10.1111/ssm.12486>
- Nixon, R. S., Navy, S. L., <sup>1</sup>Barnett, S., <sup>2</sup>Johnson, M., & <sup>3</sup>Larson, D. (2021). Pinning and planning: Five tips for using Pinterest to teach science. *Science and Children 58*(3), 22-25.

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<sup>1</sup> Undergraduate student

<sup>2</sup> Undergraduate student

<sup>3</sup> Undergraduate student

- <sup>4</sup>Maguet, M. L., Morrison, T. G., Wilcox, B., Nixon, R. S., & Billen, M. T. (2020). Identifying elements of voice in first-grade science writing. *Reading Psychology, 41*(8), 803-820. <https://doi.org/10.1080/02702711.2020.1782292>
- Navy, S. L., Nixon, R. S., Luft, J. A., & Jurkiewicz, M. A. (2020). Accessed or latent resources? Exploring new secondary science teachers' networks of resources. *Journal of Research in Science Teaching, 57*, 184-208. doi: 10.1002/tea.21591
- Nixon, R. S., Smith, L. K., & Sudweeks, R. R. (2019). Elementary teachers' science subject matter knowledge across the teacher career cycle. *Journal of Research in Science Teaching, 56*(6), 707-731. doi: <https://doi.org/10.1002/tea.21524>
- Nixon, R. S., Toerien, R., & Luft, J. A. (2019). Knowing more than their students: Characterizing secondary science teachers' subject matter knowledge. *School Science and Mathematics, 119*, 150-160. doi: <https://doi.org/10.1111/ssm.12323>
- Nixon, R. S., Hill, K. M., & Luft, J. A. (2017). Secondary science teachers' subject matter knowledge development across the first five years. *Journal of Science Teacher Education, 28*(7), 574-589. doi: 10.1080/1046560X.2017.1388086
- Nixon, R. S., Luft, J. A., & Ross, R. J. (2017). Prevalence and predictors of out-of-field teaching in the first five years. *Journal of Research in Science Teaching, 54*(9), 1197-1218. doi: 10.1002/tea.21402
- Nixon, R. S., Campbell, B. K., & Luft, J. A. (2016). Effects of subject-area degree and classroom experience on new chemistry teachers' subject matter knowledge. *International Journal of Science Education, 38*(10), 1636-1654. doi: 10.1080/09500693.2016.1204482
- Nixon, R. S., Godfrey, T. J., Mayhew, N. T., & Wiegert, C. C. (2016). Undergraduate student construction and interpretation of graphs in physics lab activities. *Physical Review Physics Education Research, 12*(1), 010104.
- Luft, J. A., Dubois, S. L., Nixon, R. S., & Campbell, B. K. (2015). Supporting newly hired teachers of science: Attaining teacher professional standards. *Studies in Science Education, 51*(1), 1-48. doi: 10.1080/03057267.2014.980559
- Nixon, R. S., Smith, L. K., & Wimmer, J. J. (2015). Teaching multiple modes of representation in middle school science classrooms: Impact on student learning and multimodal use. *School Science and Mathematics, 115*, 186-199. doi: 10.1111/ssm.12119
- Luft, J. A., Nixon, R. S., Dubois, S. L., & Campbell, B. K. (2014). Supporting newly hired science teachers: Using research to inform practice. *The Science Teacher, 81*(6), 67-71.

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<sup>4</sup> Masters student

Nixon, R. S., & Barth, K. N. (2014). A comparison of TIMSS items using cognitive domains. *School Science and Mathematics, 114*(2), 65-75. doi: 10.1111/ssm.12054

Nixon, R. S., & Johnston, A. (2009). Investigations into the hot chocolate effect. *Ergo, 3*, 63-69.

#### *In review*

Navy, S. L., & Nixon, R. S. (major revisions). Searching for quality: Examining Pinterest as a resource for science teachers. *Teaching and Teacher Education*.

Nixon, R. S., & Smith, L. K. (major revisions). Elementary teachers' self-regulated learning of science subject matter through teaching experience. *Journal of Science Teacher Education*.

Nixon, R. S., & Navy, S. L. (in review). Beak simulations and car investigations: Investigating Pinterest as a resource for two science topics. *Journal of Research in Science Teaching*.

Nixon, R. S., & Swain, A. D. (in review). Do college science courses help prospective elementary teachers learn the science they need to teach? *Journal of Science Teacher Education*.

Abbott, B. W., Underwood, K. L., Seybold, E. C., Kincaid, D. W., Hamshaw, S. D., Lee, R. M., Rizzo, D. M., Brown, B., Toolin, R., Chorover, J., Li, L., Lewis, G., Sayedi, S., St. Clair, S., Buck, R. L., Aanderud, Z. T., Brahney, J., Nixon, R. S., Wang, W., Flox, C., Perdrial, J. (in review). Resistance, recovery, and resilience: Rethinking the three Rs of survival in the Anthropocene. *Earth's Future*.

#### **Book Chapters**

##### *Published*

Nixon, R. S. (in press). Clarissa says God doesn't exist. In D. Tippins & L. Bryan (Eds.), *Cases in science teaching and learning: Exploring complexities, promises and dilemmas*. Springer.

<sup>5</sup>Ondricek, B., & Nixon, R. S. (in press). A question I couldn't answer. In D. Tippins & L. Bryan (Eds.), *Cases in science teaching and learning: Exploring complexities, promises and dilemmas*. Springer.

Nixon, R. S., & Luft, J. A. (2015). Teaching chemistry with a biology degree: Crosscutting concepts as boundary objects. In J. A. Luft & S. L. Dubois (Eds.), *Newly hired teachers of science: A better beginning* (pp. 75-85). Rotterdam, The Netherlands: Sense Publishers.

Luft, J. A., Dubois, S. L., Banilower, E. R., Campbell, B. K., Criswell, B. A., Donna, J. D., Firestone, J. B., Greisen, K., Henschel, M. M., Hill, K. M., McDonnough, J. T., Merk, H., Nixon, R. S., Richmond, G., Rushton, G. T., Stroupe, D., Webb, A. W., Windschitl, M., Wong, S. S. (2015). Connecting research to practice for better beginnings: Drawing upon

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<sup>5</sup> Practicing teacher

what we know to enhance the teaching and learning of newly hired science teachers. In J. A. Luft & S. L. Dubois (Eds.), *Newly hired teachers of science: A better beginning* (pp. 197-203). Rotterdam, The Netherlands: Sense Publishers.

### **Conference Presentations**

#### *International Conferences*

Leavitt, T. .... Nixon, R. S. (2023, accepted). *Individuals in diverse and unique partnership roles working together for shared governance and leadership* [Paper presentation]. National Association for Professional Development Schools, Jacksonville, FL.

Nixon, R. S., Bennion, A., <sup>6</sup>Swain, A. D., & <sup>7</sup>Tagg, E. (2023, April, accepted). *Exploring elementary teachers' subject matter knowledge development in the first year of teaching* [Paper presentation]. NARST Annual International Conference, Chicago, IL.

Navy, S. L., Nixon, R. S., <sup>8</sup>Beaver, B., <sup>9</sup>Oyewole, P., <sup>10</sup>Prince, A., & <sup>11</sup>Currey, B. (2023, April, accepted). *Science teachers interactions with resources from Teachers Pay Teachers* [Paper presentation]. American Education Research Association, Chicago, IL.

Nixon, R. S., Benedict-Chambers, A., Bismack, A. S., & Fick, S. J. (2023, January, accepted). *Science teaching rehearsals: Observing, enacting, and debriefing approximations of practice* [Workshop]. Association for Science Teacher Education, Salt Lake City, UT.

Nixon, R. S., & <sup>12</sup>Hill, S. K. (2023, January, accepted). *Where am I in the water cycle? Sharing new water cycle representations* [Workshop]. Association for Science Teacher Education, Salt Lake City, UT.

Nixon, R. S., & Fick, S. J. (2022, March). *An exploration of learning science subject matter knowledge through teaching in a methods course* [Paper presentation]. NARST Annual International Conference, Vancouver, British Columbia.

Fick, S. J., Johnson, S. R., & Nixon, R. S. (2022, March). *Preservice elementary teachers' recognition of resources students bring to science learning* [Paper presentation]. NARST Annual International Conference, Vancouver, British Columbia.

Nixon, R. S., <sup>13</sup>Swain, A. D., & <sup>14</sup>Ang, S. (2022, January). *What do elementary teachers learn from college science coursework?: Preservice teachers' subject matter knowledge and knowledge monitoring* [Paper presentation]. annual meeting of the Association for Science Teacher Education, Greenville, SC.

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<sup>6</sup> Undergraduate student

<sup>7</sup> Undergraduate student

<sup>8</sup> Doctoral student

<sup>9</sup> Doctoral student

<sup>10</sup> Doctoral student

<sup>11</sup> Doctoral student

<sup>12</sup> Postdoctoral researcher

<sup>13</sup> Undergraduate student

<sup>14</sup> Undergraduate student

- Nixon, R. S., & Smith, L. K. (2021, September). *Primary teachers learning science subject matter through everyday teaching experience* [Paper presentation]. European Conference on Education Research, Geneva, Switzerland (online).
- Navy, S. L., & Nixon, R. S. (2021, April). *Beyond cute: Examining the quality of Pinterest as a resource for science teachers* [Paper presentation]. American Educational Research Association, virtual.
- Nixon, R. S., & Navy, S. L. (2021, April). *Pinterest as a resource for elementary science teachers: A comparison of two science topics* [Paper presentation]. NARST Annual International Conference, virtual.
- Campbell, B. K., & Nixon, R. S. (2021, January). *Practicing teachers' conceptual models of science phenomena: Correspondences between science discipline and model robustness* [Paper presentation]. Association for Science Teacher Education, virtual.
- Nixon, R. S., & Smith, L. K. (2020, August, canceled). *Primary teachers learning science subject matter through everyday teaching experience* [Paper presentation]. European Conference on Education Research, Glasgow, Scotland.
- Smith, L. K., Nixon, R. S., & Hall-Kenyon, K. M. (2020, April, canceled). *Elementary teachers' conceptions of successful science and literacy integration* [Paper presentation]. NARST Annual International Conference, Portland, OR.
- Nixon, R. S., & Campbell, B. K. (2020, January). *Analysis of concept models: A tool for supporting teachers' in working through science concepts* [Paper presentation]. Association for Science Teacher Education, San Antonio, TX.
- <sup>15</sup>Maguet, M. L., Morrison, T. G., Wilcox, B., & Nixon, R. S. (2019, November). *Fostering development of voice in first-grade science writing* [Paper presentation]. Association of Literacy Educators and Researchers, Corpus Christi, TX.
- <sup>16</sup>Maguet, M. L., Morrison, T. G., Wilcox, B., & Nixon, R. S. (2019, November). *Identifying elements of voice in first-grade science writing* [Paper presentation]. Association of Literacy Educators and Researchers, Corpus Christi, TX.
- Navy, S. L., Nixon, R. S., Luft, J. A., & Jurkewicz, M. A. (2019, April). *Accessed or latent resources? Exploring new secondary science teachers' networks of resources* [Paper presentation]. American Educational Research Association, Toronto, Canada.

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<sup>15</sup> Masters student

<sup>16</sup> Masters student

- <sup>17</sup>Mendenhall, M. P., Smith, L. K., & Nixon, R. S. (2019, March). *Developing scientific literacy: Grades 6-8 teachers' knowledge and beliefs* [Paper presentation]. NARST Annual International Conference, Baltimore, MD.
- Nixon, R. S., Smith, L. K., & Sudweeks, R. R. (2019, April). *"I've always been curious about science": Elementary teachers' experiences outside of teaching* [Paper presentation]. NARST Annual International Conference, Baltimore, MD.
- Nixon, R. S., & Campbell, B. K. (2019, January). *Concept models as a planning tool for practicing science teachers* [Paper presentation]. Association for Science Teacher Education, Savannah, GA.
- Navy, S. L., Nixon, R. S., Luft, J. A., & Jurkiewicz, M. A. (2018, March). *Availability and activation of contextual resources by new secondary science teachers* [Paper presentation]. NARST Annual International Conference, Atlanta, GA.
- Nixon, R. S., Smith, L. K., & Sudweeks, R. R. (2018, March). *"I've got some work to do": Elementary teachers learning science through teaching experience* [Paper presentation]. NARST Annual International Conference, Atlanta, GA.
- Smith, L. K., Nixon, R. S., & Sudweeks, R. R. (2018, January). *Elementary teachers' experience, subject matter knowledge, and knowledge of student misconceptions* [Paper presentation]. Association for Science Teacher Education, Baltimore, MD.
- Luft, J. A., & Nixon, R. S. (2017, April). *Exploring subject matter knowledge among science teachers: The potential of concept sketches* [Paper presentation]. NARST Annual International Conference, San Antonio, TX.
- Smith, L. K., Nixon, R. S., Sudweeks, R. R., & Larsen, R. A. (2017, April). *Aspects of elementary teachers' experience: Predictors of science subject matter knowledge?* [Paper presentation]. NARST Annual International Conference, San Antonio, TX.
- Nixon, R. S., Smith, L. K., & Sudweeks, R. R. (2017, January). *Prospective vs. novice teachers: Teaching experience and science subject matter knowledge* [Paper presentation]. Association for Science Teacher Education, Des Moines, IA.
- Wiegert, C. C., Nixon, R. S., Godfrey, T. J., & Mayhew, N. T. (2016, July). *Construction and interpretation of linear best-fit graphs in introductory labs* [Paper presentation]. American Association of Physics Teachers, Sacramento, CA.
- Luft, J. A., Nixon, R. S., Campbell, B. K., Hill, K. M., & Dubois, S. L. (2016, April). *Beginning secondary science teachers' subject matter knowledge: Additional explorations and implications* [Paper presentation]. American Educational Research Association, Washington, DC.

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<sup>17</sup> Masters student

- Nixon, R. S., Hill, K. M., & Luft, J. A. (2016, April). *Content knowledge development when teaching out of field: The first five years* [Paper presentation]. NARST Annual International Conference, Baltimore, MD.
- Nixon, R. S., Ross, R. J., & Luft, J. A. (2016, January). *Prevalence and predictors of out-of-field teaching in the first five years* [Paper presentation]. Association for Science Teacher Education, Reno, NV.
- Campbell, B. K., Nixon, R. S., & Luft, J. A. (2015, April). *Context and constraints on noticing in classrooms of early career science teachers* [Paper presentation]. NARST Annual International Conference, Chicago, IL.
- Dubois, S. L., Nixon, R. S., Toerien, R., & Jurkewicz, M. A. (2015, April). *Transcending national contexts: Cross-national and comparative science education research* [Paper presentation]. NARST Annual International Conference, Chicago, IL.
- Nixon, R. S., Toerien, R., Luft, J. A., & Hewson, P. W. (2015, April). *Science knowledge for teaching of beginning teachers in South Africa and the US* [Paper presentation]. NARST Annual International Conference, Chicago, IL.
- Luft, J. A., Dubois, S. L., Nixon, R. S., & Campbell, B. K. (2015, March). *Supporting new science teachers: What the research says about how to support new science teachers* [Paper presentation]. NSTA National Conference, Chicago, IL.
- Crawford, B. A., Murray, J., Mazur, A., Capps, D. K., Ammons, J., Ross, R., & Nixon, R. S. (2015, January). *Tracking teachers' engaging their students in inquiry/science practices following authentic science professional development* [Paper presentation]. Association for Science Teacher Education, Portland, OR.
- Luft, J. A., Hill, K. M., Nixon, R. S., Campbell, B. K., & Dubois, S. L. (2015, January). *The knowledge needed to teach science: Approaches, implications, and potential research* [Paper presentation]. Association for Science Teacher Education, Portland, OR.
- Nixon, R. S. (2015, January). *Teaching chemistry with a biology degree: Crosscutting concepts as boundary objects* [Paper presentation]. Association for Science Teacher Education, Portland, OR.
- Nixon, R. S., Campbell, B. K., & Luft, J. A. (2015, January). *Knowledge use when in- or out-of-field: Exploring beginning chemistry teacher content knowledge* [Paper presentation]. Association for Science Teacher Education, Portland, OR.
- Jurkewicz, M. A., Nixon, R. S., Toerien, R., & Brennan, A. R. (2014, January). *Beginning secondary science teachers' views of formative assessment* [Paper presentation]. Association for Science Teacher Education, San Antonio, TX.

- Luft, J. A., Campbell, B. K., Dubois, S. L., Nixon, R. S., & Bang, E. (2014, January). *Newly qualified science teachers: What the research says* [Paper presentation]. Association for Science Teacher Education, San Antonio, TX.
- Nixon, R. S., Dubois, S. L., Jurkiewicz, M. A., Toerien, R., Campbell, B. K., & Luft, J. A. (2014, January). *Science Knowledge for Teaching: Characterizations from early career teachers* [Paper presentation]. Association for Science Teacher Education, San Antonio, TX.
- Hill, K. M., Luft, J. A., Weeks, C. B., Raven, S., & Nixon, R. S. (2013, September). *Content knowledge for teaching science: Capturing an elusive construct* [Paper presentation]. European Science Education Research Association, Nicosia, Cyprus.
- Nixon, R. S. (2013, June). *Science knowledge for teaching: A beginning characterization of science teacher knowledge* [Poster presentation]. SAARMSTE Research School, Cape Town, South Africa.
- Luft, J. A., Weeks, C. B., Hill, K. M., Raven, S., & Nixon, R. S. (2013, April). *Science teacher knowledge: The impact of in- and out-of-field instruction* [Paper presentation]. American Educational Research Association, San Francisco, CA.
- Luft, J. A., Hill, K. M., Weeks, C. B., Raven, S., & Nixon, R. S. (2013, April). *The knowledge needed for teaching science: A study of in and out-of-field teachers* [Paper presentation]. NARST Annual International Conference, Rio Grande, Puerto Rico.
- Nixon, R. S., Barth, K. N., Young, J. S., & Wentworth, N. (2013, April). *A comparison of TIMSS items using cognitive domains* [Paper presentation]. American Educational Research Association, San Francisco, CA.
- Nixon, R. S., & Smith, L. K. (2013, April). *Teaching multiple modes of representation in middle school science classrooms: Impact on student learning and multimodal use* [Paper presentation]. NARST Annual International Conference, Rio Grande, Puerto Rico.
- Local/Regional Conferences*
- Nixon, R. S., & <sup>18</sup>Hill, S. K. (2022, October). *Where is the water? New and improved representations of the water cycle* [Workshop]. Utah Science Teachers Association, Provo, UT.
- Nixon, R. S., <sup>19</sup>Tagg, E., & <sup>20</sup>Zumwalt, E. (2022, October). *From four to fourteen years old: Student-led learning in an after school program* [Workshop]. Utah Science Teachers Association, Provo, UT.

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<sup>18</sup> Postdoctoral researcher

<sup>19</sup> Undergraduate student

<sup>20</sup> Undergraduate student



- <sup>21</sup>Marks, S., <sup>22</sup>Na, A., <sup>23</sup>Rosdahl, V., Smith, L. K., Hall-Kenyon, K. M., & Nixon, R. S. (2018, October). *“Successful integration of science and literacy:” What it looks like in K-2 classrooms* [Paper presentation]. Northern Rocky Mountain Educational Research Association, Salt Lake City, UT.
- Campbell, B. K., & Nixon, R. S. (2015, February). *Exploring the development of new chemistry teacher content knowledge: The combined impact of degree and experience* [Poster presentation]. UGA College of Education Faculty Research Conference, Athens, GA.
- Campbell, B. K., & Nixon, R. S. (2015, February). *A layered way to think about science: Using multiple frameworks to represent science concepts* [Presentation]. Georgia Science Teachers Association Annual Conference, Macon, GA.
- Dubois, S. L., Nixon, R. S., Campbell, B. K., & Luft, J. A. (2014, February). *Research to strengthen and support induction science teachers: Building the capacity of science teachers* [Poster presentation]. UGA College of Education Faculty Research Conference, Athens, GA.
- Campbell, B. K., Luft, J. A., Nixon, R. S., & Dubois, S. L. (2014, February). *Applying a 5E framework to PhET simulations* [Workshop]. Georgia Science Teachers Association Annual Conference, Macon, GA.
- Nixon, R. S. (2013, February). *“It’s easy, you can use pictures”: A discussion on multimodal assessments.* [Paper presentation]. JoLLE Conference for Activist Literacies, Athens, GA.
- Nixon, R. S., Barth, K. N., Young, J. S., & Wentworth, N. (2012, October). *A comparison of TIMSS scores using cognitive domains* [Paper presentation]. Northern Rocky Mountain Educational Research Association, Park City, UT.
- Nixon, R. S., Johnson, K., & Cantrell, P. (2011, October). *Comparing test blueprints in elementary and secondary science* [Paper presentation]. Northern Rocky Mountain Educational Research Association, Jackson, WY.
- Young, J. R., Despain, S., Klvacek, M., Miley, T., Nixon, R. S., Johnson, K., Litster, C. A., & Larsen, C. S. (2011, October). *Teachers as educational researchers: Taking up new ways of being* [Symposium]. Northern Rocky Mountain Educational Research Association, Jackson, WY.

## **Grants**

### *External*

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<sup>21</sup> Undergraduate student

<sup>22</sup> Undergraduate student

<sup>23</sup> Undergraduate student

- Nixon, R. S., Gossen, D. & Wilcox, J. (2022). *Design considerations for specialized science courses for preservice elementary teachers*. National Science Foundation IUSE Conference Grant. \$49,553. (applied)
- External evaluator for: Murray, J. K. (2022-2025). *Modeling for understanding physical phenomena and engaging pre-service teachers in science (MUPPETS)*. National Science Foundation IUSE Track 1. \$299,939. (funded)
- Nixon, R. S. (2021). *Improving elementary teachers' science knowledge and instruction through improved water cycle representations*. Spencer Foundation Research Grants for Education: Small. \$38,200. (declined)
- Fick, S., RunningHawk Johnson, S., & Nixon, R. S. (2021). *Supporting pre-service teachers to notice students' community and experience-based resources for classroom science learning*. University of Washington College of Education Faculty Funding Award. \$8,624. (awarded)
- Nixon, R.S. (2020) *CAREER: Development of elementary teachers' science subject matter knowledge through teaching experience*. National Science Foundation Faculty Early Career Development Program (CAREER). \$483,750 (declined)
- Nixon, R. S. & Abbott, B. W. (2019). *Elementary teachers' informal learning of science content with innovative water cycle materials*. National Science Foundation Education and Human Resources Directorate Core Research Program (ECR). \$490,600. (declined)
- Nixon, R. S. (2019). *CAREER: Learning science subject matter knowledge through teaching experience*. National Science Foundation Faculty Early Career Development Program (CAREER). \$562,966. (declined)
- Pinnegar, S., Hall-Kenyon, K., Smith, L. K., Nixon, R. S., & Leary, H. (2018). *Increasing English Learners' (ELs) science based academic literacy through improving and sustaining the quality of their teachers*. U. S. Department of Education. \$6,062,883. (declined)
- Nixon, R. S. (2017). *CAREER:Elementary teachers' development of science knowledge through teaching experience*. National Science Foundation Faculty Early Career Development Program (CAREER). \$812,562. (declined)
- Internal*
- Nixon, R. S. (2023) *Undergraduate participants in ASTE workshop*. McKay School of Education experiential learning grant. \$4,500 (funded)
- Abbott, B. W., Ames, D., Glenn, K. S., Nixon, R. S., Hopkins, B. G., Gill, R., Carling, G. (2021). *Transforming water education to address the global water crisis*. Brigham Young University Interdisciplinary Research Origination Awards, \$120,000. (funded)

- Nixon, R. S. (2020). *Development of elementary teachers' science subject matter knowledge through teaching experience*, Brigham Young University McKay School of Education Research Grant, \$21,378. (funded)
- Abbott, B. W. & Nixon, R. S. (2020) *Grants on the edge: Water literacy*. Brigham Young University College of Life Sciences, \$13,100. (declined)
- Abbott, B. W., Nixon, R. S., Glenn, K. S., Ames, D., Carling, G., Gill, R., Hopkins, B. G. (2020). *Transforming water education to address the global water crisis*. Brigham Young University Interdisciplinary Research Origination Awards, \$119,500. (declined)
- Nixon, R. S. (2020). *Pinterest as a resource for elementary teacher learning of science subject matter*. Brigham Young University McKay School of Education mini-grant, \$3,420. (funded)
- Abbott, B. W., Ames, D., Glenn, K. S., Nixon, R. S., Hopkins, B. G., Gill, R., Carling, G. (2019). *We are teaching the water cycle wrong: Fixing misconceptions of water in the Anthropocene*. Brigham Young University Interdisciplinary Research Origination Awards, \$119,500. (declined)
- Smith, L. K., Hall-Kenyon, K., & Nixon, R. S. (2017). *Science literacy: Elementary teachers' knowledge and beliefs about what it means and how to teach it*. Brigham Young University McKay School of Education Research Grant, \$18,510. (funded)
- Nixon, R. S., Smith, L. K., & Sudweeks, R. R. (2015). *Influence of teaching experience on elementary teachers' grade-level subject matter knowledge and documented science misconceptions*. Brigham Young University Mentoring Environments Grant, \$20,000. (declined)
- Nixon, R. S., Smith, L. K., & Sudweeks, R. R. (2015). *Influence of teaching experience on elementary teachers' grade-level subject matter knowledge and documented science misconceptions*. Brigham Young University McKay School of Education Research Grant, \$22,900. (funded)

### ***Invited Talks***

- Nixon, R. S. (2021, October). *Learning science subject matter knowledge while teaching*. Colloquium presented at Florida State University, Tallahassee, FL.
- Nixon, R. S. (2021, October). *Teachers learning science: In college and on their own*. Colloquium presented at Western Washington University, Bellingham, WA.
- Nixon, R. S. (2019, April). *Graduate student forum at an annual conference of NARST*. Baltimore, MD.

Nixon, R. S., Ross, R. J., & Smith, L. K. (2019, February). *Patterns of re-novicing: Out-of-field teaching in elementary schools*. Paper presented at the Out-of-Field Teaching in Science Conference, St. Louis, MO.

Nixon, R. S. (2018, April). *Graduate student forum at an annual conference of NARST*. Atlanta, GA.

Nixon, R. S. (2018, March). *Influence of teaching experience on elementary teachers grade-level subject matter knowledge and documented science misconceptions*. UGA Science Education Research Day, Athens, GA.

Nixon, R. S. (2016). *A scenic overlook on the road to becoming a science teacher educator: Graphing in undergraduate physics labs*. Weber State University physics seminar. Ogden, UT.

Nixon, R. S. (2016, April). *Graduate student forum at an annual conference of NARST*. Baltimore, MD.

*Research Interests:* Teacher subject matter knowledge, out-of-field teaching, new science teachers

#### **UNIVERSITY TEACHING EXPERIENCE**

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***Intro to Inquiry 2 Instructor***, Brigham Young University, Provo, UT      Fall 2022  
Taught a masters level class on how to conduct qualitative and quantitative educational research, focusing on surveys, interviews, observations, and content analysis.

***Teaching Science in PreK-3 Instructor***, Brigham Young University, Provo, UT      since 2019  
Taught prospective elementary teachers methods of teaching science to students in grades preK-3.

***Teaching Science in Grades K-6 Instructor***, Brigham Young University, Provo, UT      since 2015  
Taught prospective elementary teachers methods of teaching science to students in grades K-6.

***Middle School Physical Science Instructor***. University of Georgia, Athens, Georgia      2014  
Co-taught physical science content course for 23 prospective middle school science teachers with another graduate student. Supervised by David Jackson, EdD.

#### ***Teaching Grants***

Nixon, R. S. (2023) *STEM Club 2023 at South Franklin Community Center*. Brigham Young University McKay School of Education Mini-Grant, \$4,422. (funded)

Nixon, R. S. (2023) *Undergraduate Participants in ASTE Workshop*. Brigham Young University McKay School of Education Experiential Learning Grant, \$4,500. (funded)

Nixon, R. S. (2022) *Flight Club 2022 at South Franklin Community Center*. Brigham Young University McKay School of Education Mini-Grant, \$3,460. (funded)

Nixon, R. S. (2021) *Flight Club at South Franklin Community Center*. Brigham Young University McKay School of Education Mini-Grant, \$1,500. (funded)

Nixon, R. S. (2019). *Teacher candidates participation in the National Science Teaching Association conference*. Brigham Young University McKay School of Education Experiential Learning Grant, \$3,640. (funded)

Nixon, R. S. (2018). *Teacher candidates participation in the Utah Science Teachers Association conference*. Brigham Young University McKay School of Education Experiential Learning Grant, \$6,000. (funded)

## **K-12 TEACHING EXPERIENCE**

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**Science Teacher.** Dixon Middle School, Provo, Utah 2009-2012  
Taught Eighth Grade Integrated Science to 130 students in classes consisting of 16-32 students from ethnically and socioeconomically diverse backgrounds for three years. Also taught Study of Flight, an elective course that integrated science, engineering, and social studies content related to flight.

**Outreach Team Student Director.** OttReach/Science in the Parks, Ogden, Utah 2009  
Under the direction of a Weber State University professor, organized and led an informal science education program in Ogden City parks. Supervised by Adam Johnston, PhD.

**Outreach Team Member.** OttReach/Science in the Parks, Ogden, Utah 2008  
Informally taught simple science concepts and encouraged curiosity in young children at low-income area parks. Supervised by Adam Johnston, PhD.

## **AWARDS AND SCHOLARSHIPS**

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National Association for Research in Science Teaching <i>Research Worth Reading</i> awardee	2021
National Association for Research in Science Teaching <i>Research Worth Reading</i> finalist	2020
National Association for Research in Science Teaching <i>Research Worth Reading</i> finalist	2017
Association for Science Teacher Education 2016 Conference Paper Award V: Implications for Research for Educational Practice	2017
Outstanding Teaching Assistant Award	2015
NARST Research School Scholarship for participation in South African research school	2013
Distinguished Paper Award, NRMERA 2012 Conference	2012
Praxis II Recognition of Excellence	2011
Armed Forces Communications and Electronics Association STEM Teacher Scholarship and Teaching Tools Award	2010, 2011
Outstanding Science Teaching Major Award, University of Georgia	2009

## **Selected Press Coverage**

Nixon, Navy, Barnett, Johnson, & Larson (2021): Pinterest

Seek Learning Podcast (2022, December). "Five tips for teaching using Pinterest" with Ryan Nixon. <https://podcasts.apple.com/us/podcast/five-tips-for-teaching-using-pinterest-with-ryan-nixon/id1547494801?i=1000589306315>

Nixon (2021-2023): STEM Club

Kimzey, S. (2022, August). McKay School students teach science lessons at South Franklin Community Center. McKay School of Education News. [education.byu.edu/news/stem-club-builds-science-learning-for-children-and-their-teachers](https://education.byu.edu/news/stem-club-builds-science-learning-for-children-and-their-teachers)

Nixon, Luft, & Ross (2017): Out-of-field teaching

Christensen, A. (2017, July). Teaching without training. BYU News. [news.byu.edu/news/teaching-without-training](https://news.byu.edu/news/teaching-without-training)

Hale, L. (2017, July). Study shows science teachers often teach beyond their training. KUER Radio. [www.kuer.org/education/2017-07-25/study-shows-science-teachers-often-teach-beyond-their-training](http://www.kuer.org/education/2017-07-25/study-shows-science-teachers-often-teach-beyond-their-training)

## SERVICE

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### *Professional Organizations*

<i>School Science and Mathematics</i> reviewer	2020-present
<i>Science Education</i> reviewer	2019-present
<i>Teaching and Teacher Education</i> reviewer	2017-present
<i>International Journal of Science Education</i> reviewer	2017-present
Reviewer for ASTE Annual Conference	2014-present
Reviewer for NARST Annual Conference	2013-present
<i>Journal of Science Teacher Education</i> Editorial Review Board	2021-2023
<i>Journal of Science Education and Technology</i>	2022
<i>Education Research International</i>	2022
<i>Open Education Studies</i>	2022
External reviewer for promotion and tenure	2022
National Science Foundation DRK-12 grant reviewer	2022
NARST conference graduate student symposium mentor	2021, 2022
<i>Open Education Studies</i> reviewer	2021
NARST Program Committee, strand coordinator	2019-2021
National Science Foundation grant reviewer	2019
<i>Chemistry Education Research and Practice</i> reviewer	2018
Graduate student forum speaker at NARST Annual Conference	2018, 2019

### *State*

Utah State Science Education Coordinating Committee	2020-present
Elementary Science Competencies Committee	2021-2022
Utah SEEd standards core guide team member	2019
Utah elementary science endorsement team member	2018-2020
Utah 5th grade science standards writing team member	2018-2019

### *Brigham Young University*

Institutional Review Board, member 2020-2022

*McKay School of Education*

Executive Early childhood and elementary partnership advisory council, chair 2022-present  
Educator preparation program council, member 2022-present  
Initial Programs Council, member 2022-present  
Early childhood and elementary partnership advisory council, member 2016-present  
Undergraduate recruitment council 2017-2021  
Convocations, name reader of graduates 2019

*Department of Teacher Education*

Stewardship committee, ex officio member 2023-present  
Associate chair, Department of Teacher Education 2022-present  
Elementary science education search committee chair 2022-present  
Elementary education program co-coordinator 2022-present  
Elementary science coordinator 2016-present  
TED Student Council member 2022  
Graduate recruitment committee 2019-2021  
Study group co-leader, with Sarah Clark 2019-2020  
Study group member, directed by Robert Bullough 2019  
TED Student Council chair 2018-2021  
Faculty load council member 2017-2018  
Curriculum committee member 2016-2019  
Elementary mathematics education search committee member 2016-2019  
Graduate admissions committee ad hoc member 2016

*Community*

Gail S. Halvorsen Aviation Education Foundation 2020-2022

**PROFESSIONAL ORGANIZATIONS**

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National Association for Research in Science Teaching (NARST) 2011-present  
Association for Science Teacher Education (ASTE) 2013-present  
Utah Science Teachers Association (USTA) 2017-present  
Georgia Science Teachers Association 2015-2020  
Teaching Across Specialisations Collective 2014-2020  
School Science and Mathematics Association (SSMA) 2012-2021  
American Educational Research Association (AERA) 2012-2020  
Northern Rocky Mountain Educational Research Association (NRMERA) 2011-2016  
National Science Teachers Association (NSTA) 2007-2019  
American Association of Physics Teachers (AAPT) 2006-2011