

# **Joshua Rosenberg, Ph.D.**

## **Curriculum Vitae**

### **Contact Information**

Associate Professor, STEM Education  
Department of Theory and Practice in Teacher Education  
The University of Tennessee, Knoxville  
513 Claxton, 1122 Volunteer Blvd., Knoxville, TN 37996  
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865-974-5973

### **Education**

#### **Degrees**

2018, PhD, Educational Psychology & Educational Technology  
Michigan State University

2012, MA, Education  
Michigan State University

2010, BS, Biology  
University of North Carolina, Asheville

#### **Additional Qualifications**

2016, Graduate Certificate, Science Education  
Michigan State University

2010, Educator's License - Science and Biology, Teacher Licensure Program  
University of North Carolina, Asheville

## Professional Experience

2023-present, Associate Professor, STEM Education  
University of Tennessee, Knoxville

2018-2023, Assistant Professor, STEM Education  
University of Tennessee, Knoxville

2012-2018, Graduate Research and Teaching Assistant  
Michigan State University

2010-2012, Science Teacher (Biology and Earth Science)  
Shelby High School, Shelby, NC

2009-2010, Science Teacher Intern (Biology and Chemistry)  
C.D. Owen High School, Swannanoa, NC

## Additional Professional Affiliations

Faculty Fellow (Data Science), College of Emerging and Collaborative Studies, University of Tennessee, Knoxville

Faculty Fellow, Center for Enhancing Education in Mathematics and Sciences, University of Tennessee, Knoxville

Faculty Fellow, Education Research & Opportunity Center, University of Tennessee, Knoxville

Steering Committee Member and Affiliated Researcher, [Center for the Dynamics of Cultural Complexity \(DySoC\)](#), University of Tennessee, Knoxville

Affiliated Researcher, [AmplifyLearn.AI](#), University of Washington

## Fellowships and Awards

2025, College of Emerging and Collaborative Studies, Champion of the Year (External Member), University of Tennessee, Knoxville

2024, Professional Promise in Research and Creative Achievement award, University of Tennessee, Knoxville

2024, Lura Odland Excellence award, College of Education, Health, and Human Sciences, University of Tennessee, Knoxville

2023-2024, Expanding Horizons Mid-Career Faculty Development Program, University of Tennessee, Knoxville

2023, GDGP (German Society for the Teaching of Chemistry and Physics) Best Paper Award

2023, NSF CAREER awardee

2023, Faculty Mentor, SEC Emerging Scholars Program Postdoctoral Researcher (Maryrose Weatherton)

2023, Research Worth Reading Award, Research in Artificial Intelligence in Science Education Research Interest Group, National Association for Research in Science Teaching

2023, Outstanding Graduate Research Mentor Award, Graduate Student Senate, University of Tennessee, Knoxville

2022, Early Career Award, Technology as an Agent of Change in Teaching and Learning (TACTL) Special Interest Group (SIG), American Educational Research Association (AERA)

2021, Best Poster Award, Fourteenth International Conference on Educational Data Mining

2021-2022, Open Educational Resources (OER) Research Fellow, William and Flora Hewlett Foundation

2021, Louie M. & Betty M. Phillips Faculty Support in Education Award, University of Tennessee, Knoxville (UTK)

2021, Mentor, Summer Undergraduate Research Internship Program, Office of Undergraduate Research, UTK

2020, Research Assistant Award, Office of Undergraduate Research, UTK

2020, Southeastern Conference (SEC) Visiting Faculty Travel Grant Program (Host: Annelise Russell, Martin School of Public Policy, University of Kentucky)

2016, Best Paper Award, Technological Pedagogical Content Knowledge SIG, Society for Information Technology and Teacher Education International Conference

2014, Outstanding Paper Award, Society for Information Technology and Teacher Education International Conference

## Grants

*\$9,245,867 as Principal Investigator (PI) or Co-PI*

## PI or Co-PI

2024-2028, PI, *Collaborative Research: Learning How to Help Middle Grades Science Teachers Integrate Data Exploration and Sensemaking in the Classroom* (\$2,997,783.00; with lead PI Jonathan Griffith, CU, Boulder; UTK sub-contract: \$99,296). NSF. NSF Grant No. 2405912.

2024-2025, Investigator, *AI for Education: Developing Curricula, Planning for External Funding, and Connecting Faculty* (\$21,000; with PI Louis Rocconi), AI Tennessee Initiative, University of Tennessee, Knoxville.

2023-2028, PI, *CAREER: Creatively Reimagining Engagements with Data in Biology Learning Environments*, (\$846,612), NSF. [NSF Grant No. 2239152](#).

2022-2025, Co-PI, *Computer Science for Appalachia: Expanding a research-practice partnership to integrate computer science and literacy in rural East Tennessee schools*, (\$999,980; with PI Lynn Hodge). NSF. NSF Grant No. 2219418.

2022-2024, Co-PI, *Broadening participation in introductory computer science: investigating self-assessment practices for increasing student learning and self-efficacy in two institutional contexts* (\$299,836; with PI Alex Lishinski). NSF. [NSF Grant No. 2215245](#)

2022-2023, Co-PI, *Launching a Micro-credential in Educational Data Analytics* (\$10,000; with Co-PI Louis Rocconi). University of Tennessee, Knoxville's College of Education, Health, and Human Sciences Strategic Investment Program.

2022-2025, Co-PI, *Quantifying the robustness of causal inferences: Extensions and applications*. (\$899,319.13; PI: Kenneth Frank, Michigan State University; UTK subcontract: \$105,727). Institute of Education Sciences.

2021-2022, PI, *Not only for scientists and engineers: Advancing Bayesian methods for pre-collegiate learners* (\$1,991), Supplemental funding to NSF Grant No. [193770](#) (Dear Colleague Letter: Research Collaboration Opportunity in Europe for NSF Awardees). National Science Foundation.

2020-2021, Co-PI, *Propelling teacher professional development through FFAST feedback on student epistemic views* (\$15,000; PI: Christina Krist, University of Illinois Urbana-Champaign). Technology Innovations in Educational Research and Design Pilot Projects Program.

2019-2021, PI, *Understanding the development of interest in computer science: An experience sampling approach* (\$346,688). National Science Foundation [NSF]. <http://picsul.utk.edu/> (NSF Grant No. [1937700](#))

2019-2021, Co-PI, *CS for Appalachia: A research-practice partnership for integrating computer science into East Tennessee schools* (\$252,453; PI: Lynn Hodge, UTK). NSF. (NSF Grant No. [1923509](#))

2019-2022, Co-PI, *Advancing computational grounded theory for audiovisual data from STEM classrooms* (\$1,313,855; PI: Christina Krist, University of Illinois Urbana-Champaign; UTK subcontract: \$101,469). NSF. <https://tca2.education.illinois.edu/> (NSF Grant No. 1920796)

2019-2020, PI, *Planting the seeds for computer science education in East Tennessee through a research-practice partnership* (\$13,200). Community Engaged Research Seed Program, UTK.

2018-2020, Co-PI, *Exploring how beginning elementary mathematics teachers seek out resources through social media* (\$8,820; PI: Stephen Aguilar). Herman & Rasiej K-5 Mathematics Initiative, University of Southern California.

## Senior Personnel/Investigator

2025-2030, Senior Personnel, Picturing Possibilities and Envisioning Selves; PiPES3 (PI: Erin Hardin), National Institutes of Health

2024-2029, Senior Personnel, AmplifyGAIN: Generative AI for Transformative Learning. University of Washington (PI: Min Sun). \$9,999,976. <https://www.amplifylearn.ai/amplifygain-generative-ai-for-transformative-learning/>

2025-2025, Senior Personnel, Building a Sustainable Future: Examining Community College Student Enrollment and Completions in Green Sector Occupations, JP Morgan Chase. <https://cehhs.utk.edu/ero/completions-in-green-sector-occupations/>

2020-2025, Co-I, *Imagining possibilities in post-secondary education and STEM in rural Appalachia* (\$1,208,563), National Institutes of Health.

2020-2023, Senior Personnel, *Learning analytics in STEM education research institute* (\$933,150; PI: Shaun Kellogg, North Carolina State University; UTK subcontract: \$62,870. National Science Foundation (NSF), [NSF Grant No. 2025090](#)

2019-2022, Senior Personnel, *Medical entomology and geospatial analyses: Bringing innovation to teacher education and surveillance studies* (\$149,611; PI: Rebecca Trout Fryxell). United States Department of Agriculture - Agriculture and Food Research Initiative. (USDA Grant No. 2019-68010-29119) <https://www.megabitess.org/>

## Consultant and Advisory Board Member Roles

2024-2026, Advisory Board Member, *A Multipronged Approach to Small-Teaching Interventions for Reducing Academic Procrastination: A Randomized Control Study via Terracotta*, NCER grant no. R305N240063. Miyake, A. (PI), Bernacki, M., Kane, M., & Snyder, H. (Co-PIs).

2023-2026, Data Science Assessment Consultant, *NSF AISL: Integrating Research and Practice: Reimagining Youth Community Science through Make-and-Take Data Sensing Kits*, NSF grant no. [2314089](#). Blikstein, P. & Perez, S. (PIs)

2023-2025, Advisory Board Member, *Integration of Computer-Assisted Methods and Human Interactions to Understand Lesson Plan Quality and Teaching to Advance Middle-Grade Mathematics Instruction*. Min Sun (PI). NSF Grant No. [2300291](#).

2023-2025, Advisor, *Sloan: Aligning Graduate Education and Workforce Opportunities: A Robust, Equity-Focused Landscape Scan of Computing Terminology*. Wofford, A., Perez-Felkner, L., & Staudt Willet, K. B. (PIs). Funded by Alfred P. Sloan Foundation.

2023-2026, Consultant, *WTG: Diffusion of Research on Supporting Mathematics Achievement for Youth with Disabilities through Twitter Translational Visual Abstracts*, Jessica Rodrigues (PI, University of Missouri), National Science Foundation, [https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=2244734&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2244734&HistoricalAwards=false)

2023-2025, Consultant, *Forschen mit epidemischer Unsicherheit Lernen (Project FEUL)* (Learning to do investigations with epistemic uncertainty), Marcus Kubsch (PI; IPN - Leibniz Institute, Kiel, Germany), Joachim Herz Foundation

2022-2024, Participating Faculty, *Bayesian Thinking in STEM*, (NSF Grant No. [2215879](#)), <https://www.stat.uci.edu/bayes-bats/>

2022-2027, Advisory Board Member, *Collaborative Research: Enhancing Data Science and Statistics Teacher Education—Transforming and Building Community*, Holly-lynn Lee (PI; North Carolina State University), National Science Foundation. [https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=2141727&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2141727&HistoricalAwards=false)

2022-2025, Advisory Board Member, *A Learning Ecosystem for Teaching High School Students Machine Learning Concepts and Data Science Skills in Healthcare and Medicine*, Kathryn Eller (PI; East Bay Educational Collaborative), National Science Foundation. [https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=2148451&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2148451&HistoricalAwards=false)

2022-2025, Advisory Board Member, *Mathematizing, Visualizing, and Power (MVP): Appalachian youth becoming data artists for community learning*, Lynn Hodge (PI), National Science Foundation, [https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=2215004&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2215004&HistoricalAwards=false)

2021-2026, Advisory Board Member, *SEER Research Network for Digital Learning Platforms*, Jeremy Roschelle (PI; Digital Promise), Institute for Education Sciences, Digital Learning Platforms to Enable Efficient Education Research Network

2021-2022, Lead STEM Education Consultant, *Supporting Students' Meaningful Engagement With Data From Small Orbiting Satellites*, Art Palisoc (PI), STEM Ed LLC, NSF Phase I SBIR, *STEM Experiments and Games in Low Earth Orbit – Making STEM Learning Fun*

## Publications

+ Denotes a collaboration with a mentee who is a graduate student

^ Denotes a collaboration with a mentee who is an undergraduate student

### Books (3)

Akcaoglu, M., Rosenberg, J. M., Lishinski, A., Narvaiz, S., & Bulut, O. (under contract). *Computational social science cookbook with R: A practical guide* (a volume in the *Chapman & Hall/CRC Big Data Series*). CRC Press.

Rosenberg, K., & Rosenberg, J.M. (in press). Little kids, big adventures: A guide to family hikes around Knoxville. UT Press. <https://familyhikesaroundknox.com/>

Estrellado, R. A., Freer, E. A., Mostipak, J., Rosenberg, J. M., & Velásquez, I. C. (2020). *Data science in education using R*. Routledge. *Note.* All authors contributed equally. <http://www.datascienceineducation.com/>

### Articles Under Review or in Press

Lopez, F., Darriet, C., Santibanez, L., Cervantes-Soon, C., Frankenberg, E., Asson, S., Delcid, G., Serrano, E., & Rosenberg, J.M (revise and resubmit). Enrollment patterns and online portrayals of dual language programs in California: Obstacles and promising efforts for equitable access. *American Educational Research Journal*.

Staudt-Willet, B., Na. H., & Rosenberg, J. M. (under review). Understanding the work of educational data scientists: A mixed methods exploration. *Journal of Research on Technology in Education*.

Rosenberg, J., Kubsch, M., Sorge, S., Tautz, S., Pritchard, C+, Garner, A., & Xu, Z. (in press). Embracing uncertainty in science: The ABCs of data and the confidence updater. *Science Scope*.

### Articles Published in Refereed Journals (64)

Fischer, M., Pritchard, C., Xu, Z., & Rosenberg, J. (2025). Finding Your Way into Data Science Education as a Science Teacher. *The Science Teacher*, 92(6), 49-55.

Rosenberg, J. M., Veletsianos, G., Romero-Hall, E., & Allen, E. (2025). The Accessibility of Published Research in AERA Journals, 2010–2022. *Teachers College Record*, 127(8), 110-118.

- Beymer, P. N., Schell, M. J., Alberts, K. M., Phun, V., Rosenberg, J. M., & Schmidt, J. A. (advance online publication). Students' situational engagement profiles in formal and informal science learning environments. *Journal of Research in Science Teaching*. <https://onlinelibrary.wiley.com/doi/full/10.1002/tea.22017>
- Borchers, C., Wang, Y., Hodge, E. M., & Rosenberg, J. M. (2025). Decoding Sentiment Signals: Lessons From the Political Reception of the Common Core and Next Generation Science Standards. *Educational Researcher*. <https://doi.org/10.3102/0013189X25133620>
- Dogucu, M., Kazak, S., & Rosenberg, J. M. (2025). The Design and Implementation of a Bayesian Data Analysis Lesson for Pre-Service Mathematics and Science Teachers. *Journal of Statistics and Data Science Education*, 33(2), 177-188.
- Borchers, C., Darriet, C., Rosenberg, J. M., & López, F. (2025). Dual Intent in Dual-language Programs: Internet Data Mining of School District Communications. *TechTrends*, 69(2), 400-412. <https://link.springer.com/article/10.1007/s11528-025-01049-1>
- Burchfield, M. A., Rosenberg, J. M., & Stegenga, S. M. (2025). Informed or outdated consent? An investigation into the media release policies of school districts in the United States. *Journal of Research on Technology in Education*, 57(4), 766-783.
- +Pritchard, C., +Borchers, C., Rosenberg, J. M., Fox, A. K., & Stegenga, S. M. (2024). The datafication of student information on X (Twitter). *Computers and Education Open*, 7, 1-10. <https://www.sciencedirect.com/science/article/pii/S2666557324000375>
- Rosenberg, J., & Jones, R. S. (2024). Data science learning in grades K–12: Synthesizing research across divides. *Harvard Data Science Review*, 6(3), 1-30. <https://doi.org/10.1162/99608f92.b1233596>
- Fütterer, T., Omarchevska, Y., Rosenberg, J. M., & Fischer, C. (2024). How do teachers collaborate in informal professional learning activities? An Epistemic Network Analysis. *Journal of Science Education and Technology*, 1-15. <https://link.springer.com/article/10.1007/s10956-024-10122-y%3E>
- +Narvaiz, S., Lin, Q., Rosenberg, J. M., Frank, K. A., Maroulis, S. J., Wang, W., & Xu, R. (2024). konfound: An R Sensitivity Analysis Package to Quantify the Robustness of Causal Inferences. *Journal of Open Source Software*, 9(95), 1-6. <https://joss.theoj.org/papers/10.21105/joss.05779.pdf>
- Carpenter, J. P., Rosenberg, J. M., Kessler, A., Romero-Hall, E., & Fischer, C. (2024). The importance of context in teacher educators' professional digital competence. *Teachers and Teaching*, 1-17. <https://www.tandfonline.com/doi/full/10.1080/13540602.2024.2320155>
- Ranellucci, J., & Rosenberg, J. M. (2023). Students' interest, engagement, and achievement in online high school science courses. *Educational Psychology*, 1-19. <https://doi.org/10.1080/01443410.2023.2299703>



- Staudt Willet, K.B., Rosenberg, J.M. (2023). The design and effects of educational data science workshops for early career researchers. *Journal Formative Design in Learning*. <https://doi.org/10.1007/s41686-023-00083-7>
- Hodge, E. M., Rosenberg, J. M., & López, F. A. (2023). “We Don’t Teach Critical Race Theory Here”: A sentiment analysis of K-12 school and district social media Statements. *Peabody Journal of Education*, 1-15. <https://www.tandfonline.com/doi/full/10.1080/0161956X.2023.2261318>
- Garner, A. V., & Rosenberg, J. (2023). Utilizing iNaturalist to support place-based learning and data analysis. *Science Scope*, 46(7), 54-60. <https://www.nsta.org/science-scope/science-scope-fall-2023/using-inaturalist-support-place-based-learning-and-data>
- Rosenberg, J. M. (2023). Open and useful? Exploring the science education resources on OER Commons. *Contemporary Issues in Technology and Teacher Education*, 23(3), 490-507. <https://citejournal.org/wp-content/uploads/2023/07/v23i3Science2.pdf>
- Borchers, C., Rosenberg, J. M., & Swartzentruber, R. M. (2023). Facebook post data: a primer for educational research. *Educational Technology Research and Development*, 1-20. <https://link.springer.com/article/10.1007/s11423-023-10269-2>
- Rosenberg, J. M., Beymer, P. N., Phun, V., & Schmidt, J. A. (2023). Using intensive longitudinal methods to quantify the sources of variability for situational engagement in science learning environments. *International Journal of STEM Education*, 10(1), 68. <https://link.springer.com/article/10.1186/s40594-023-00449-0>
- Carpenter, J. P., Morrison, S. A., Rosenberg, J. M., & Hawthorne, K. A. (2023). Using social media in pre-service teacher education: The case of a program-wide twitter hashtag. *Teaching and Teacher Education*, 124, 1-17. <https://www.sciencedirect.com/science/article/pii/S0742051X23000240>
- Rosenberg, J., ^Borchers, C., Stegenga, S. M., ^Burchfield, M. A., Anderson, D., & Fischer, C. (2022). How educational institutions reveal students’ personally identifiable information on Facebook. *Learning, Media, & Technology*. <https://www.tandfonline.com/doi/full/10.1080/17439884.2022.2140672>
- Rosenberg, J. M., ^Borchers, C., ^Burchfield, M. A., Anderson, D., Stegenga, S. M., & Fischer, C. (2022). Posts about students on Facebook: A data ethics perspective. *Educational Researcher*, 51(8), 547-550. <https://journals.sagepub.com/doi/full/10.3102/0013189X221120538>
- Kubsch, M., Krist, C., & Rosenberg, J. M. (2023). Distributing Epistemic Functions and Tasks - A framework for augmenting human analytic power with machine learning in science education research. *Journal of Research in Science Teaching*. <https://onlinelibrary.wiley.com/doi/full/10.1002/tea.21803>. Note. All authors contributed equally.

- Recipient of the 2023 Research Worth Reading Award for the Research in Artificial Intelligence in Science Education Research Interest Group, National Association for Research in Science Teaching
- Recipient of the 2023 GDGP (German Society for the Teaching of Chemistry and Physics) Best Paper Award

Rosenberg, J. M., Kubsch, M., Wagenmakers, E.-J., & Dogucu, M. (2022). Making sense of uncertainty in the science classroom: A Bayesian approach. *Science & Education*, 31, 1239–1262. <https://link.springer.com/article/10.1007/s11191-022-00341-3>

Jones, R. S., & Rosenberg, J. M. (2022). Characterizing whole class discussions about data and statistics with conversation profile analysis. *Journal of Mathematical Behavior*, 67, 1-16. <https://www.sciencedirect.com/science/article/abs/pii/S0732312322000645>

Rosenberg, J. M., Schultheis, E., Kjellvik, M., Reedy, A., & Sultana, O. (2022). Big data, big changes? A survey of K-12 science teachers in the United States on which data sources and tools they use in the classroom. *British Journal of Educational Technology*, 53(5), 1179-1201. <https://bera-journals.onlinelibrary.wiley.com/doi/10.1111/bjet.13245>

+Michela, E., Rosenberg, J., Kimmons, R., +Sultana, O., ^Burchfield, M. A., & ^Thomas, T. (2022). “We are trying to communicate the best we can”: Understanding districts’ communication on Twitter during the COVID-19 pandemic. *AERA Open*, 8, 1-18. <https://doi.org/10.1177/23328584221078542>

Trout Fryxell, R. T., Camponovo, M., Smith, B., Butefish, K., Rosenberg, J. M., Andsager, J. L., ... & Willis, M. P. (2022). Development of a community-driven mosquito surveillance program for vectors of La Crosse virus to educate, inform, and empower a community. *Insects*, 13(2), 164. <https://www.mdpi.com/2075-4450/13/2/164>

Rutherford, T., Duck, K., Rosenberg, J. M., & Patt, R. (2022). Leveraging mathematics software data to understand student learning and motivation during the COVID-19 pandemic. *Journal of Research on Technology in Education*, 54(1), 94-131. <https://www.tandfonline.com/doi/full/10.1080/15391523.2021.1920520>

Aguilar, S. J., Rosenberg, J., Greenhalgh, S., Fütterer, T., Lishinski, A., & Fischer, C. (2021). A different experience in a different moment? Teachers’ social media use before and during the COVID-19 pandemic. *AERA Open*, 7, 1-17. <https://journals.sagepub.com/doi/full/10.1177/23328584211063898>

+Lawson, M. A., Herrick, I. R., & Rosenberg, J. M. (2021). Better together: Mathematics and science pre-service teachers’ sensemaking about STEM. *Educational Technology & Society*, 24(4), 180–192.

Schweinsburg, M., ... Luis, S. (2021). Same data, different conclusions: Radical dispersion in empirical results. *Organizational Behavior and Human Decision Processes*, 165(7), 228-249. <https://www.sciencedirect.com/science/article/pii/S0749597821000200> (Note. I was an author and contributor to this large-scale, collaborative project.)

Greenhalgh, S. P., Rosenberg, J. M., & Russell, A. (2021). The influence of policy and context on teachers' social media use. *The British Journal of Educational Technology*, 52(5), 2020-2037. <https://bera-journals.onlinelibrary.wiley.com/doi/10.1111/bjet.13096?af=R>

Frank, K. A., Lin, Q., Maroulis, S., Strassman, A., Xu, R., Rosenberg, J. M., Hayter, C., Mahmoud, R., Kolak, M., Dietz, T., & Zhang, L. (2021). Hypothetical case replacement can be used to quantify the robustness of trial results. *Journal of Clinical Epidemiology*, 134(6), 150-159. <https://www.sciencedirect.com/science/article/pii/S0895435621000366> Note. I was a scientific programmer for this project.

Rosenberg, J. M., ^Borchers, C., Dyer, E., Anderson, D. J., & Fischer, C. (2021). Advancing new methods for understanding public sentiment about educational reforms: The case of Twitter and the Next Generation Science Standards. *AERA Open*, 7, 1-17. <https://journals.sagepub.com/doi/10.1177/23328584211024261>

Ranellucci, J., Robinson, K., Rosenberg, J. M., Lee, Y.-K., Roseth, C., & Linnenbrink-Garcia. (2021). Comparing the roles and correlates of emotions in class and during online video lectures in a flipped anatomy classroom. *Contemporary Educational Psychology*, 64(4), 1-15. <https://doi.org/10.1016/j.cedpsych.2021.101966>

Akcaoglu, M., Rosenberg, J. M., Hodges, C. B., Hilpert, J. (2021). An exploration of factors impacting middle school students' attitudes toward computer programming. *Computers in the Schools*, 38(1), 19-35. <https://doi.org/10.1080/07380569.2021.1882209>

Rosenberg, J. M., & Krist, C. (2021). Combining machine learning and qualitative methods to elaborate students' ideas about the generality of their model-based explanations. *Journal of Science Education and Technology*, 30(2), 255-267. <https://link.springer.com/article/10.1007%2Fs10956-020-09862-4>. Note. Both authors contributed equally.

Rosenberg, J. M., & Staudt Willet, K. B. (2021). Balancing participants' privacy and open science in the context of COVID-19: A response to Ifenthaler & Schumacher (2016). *Educational Technology Research & Development*, 69(1), 347-351. <https://link.springer.com/article/10.1007/s11423-020-09860-8>

Harper, F. K., Rosenberg, J. M., ^Comperry, S., ^Howell, K., & ^Womble, S. (2021). #Mathathome during the COVID-19 Pandemic: Exploring and reimaging resources and social supports for parents. *Education Sciences*, 11(2), 60, 1-24. <https://www.mdpi.com/2227-7102/11/2/60>

Anderson, D. J., Rowley, B., Stegenga, S., Irvin, P. S., & Rosenberg, J. M. (2020). Evaluating content-related validity evidence using a text-based, machine learning procedure. *Educational*

*Measurement: Issues and Practice*, 39(4), 53-64. <https://onlinelibrary.wiley.com/doi/abs/10.1111/emip.12314>

Rosenberg, J. M., Reid, J., Dyer, E., Koehler, M. J., Fischer, C., & McKenna, T. J. (2020). Idle chatter or compelling conversation? The potential of the social media-based #NGSSchat network as a support for science education reform efforts. *Journal of Research in Science Teaching*, 57(9), 1322-1355. <https://onlinelibrary.wiley.com/doi/10.1002/tea.21660>

Carpenter, J., Rosenberg, J. M., Dousay, T., Romero-Hall, E., Trust, T., Kessler, A., Phillips, M., Morrison, S., Fischer, C. & Krutka, D. (2020). What should teacher educators know about technology? Perspectives and self-assessments. *Teaching and Teacher Education*, 95(10), 103-124. <https://doi.org/10.1016/j.tate.2020.103124>

Ranellucci, J., Rosenberg, J. M., & Poitras, E. (2020). Exploring pre-service teachers' use of technology: The technology acceptance model and expectancy-value theory. *Journal of Computer Assisted Learning*, 36(6), 810-824. <http://dx.doi.org/10.1111/jcal.12459>

Schmidt, J. A., Beymer, P. N., Rosenberg, J. M., Naftzger, N. J., & Shumow, L. (2020). Experiences, activities, and personal characteristics as predictors of engagement in STEM-focused summer programs. *Journal of Research in Science Teaching*, 57(8), 1281-1309. <https://onlinelibrary.wiley.com/doi/full/10.1002/tea.21630>

Greenhalgh, S. P., Rosenberg, J. M., Koehler, M. J., Akcaoglu, M., & Staudt Willet, K. B. (2020). Identifying multiple learning spaces within a single teacher-focused Twitter hashtag. *Computers & Education*, 148(4). <https://doi.org/10.1016/j.compedu.2020.103809>

Beymer, P. N., Rosenberg, J. M., & Schmidt, J. A. (2020). Does choice matter or is it all about interest? An investigation using an experience sampling approach in high school science classrooms. *Learning and Individual Differences*, 78(2), 1-15. <https://doi.org/10.1016/j.lindif.2019.101812>

Rosenberg, J. M., +Edwards, A., & Chen, B. (2020). Getting messy with data: Tools and strategies to help students analyze and interpret complex data sources. *The Science Teacher*, 87(5). [https://learningcenter.nsta.org/resource/?id=10.2505/4/tst20\\_087\\_05\\_30](https://learningcenter.nsta.org/resource/?id=10.2505/4/tst20_087_05_30)

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Demirci, S., Dogucu, M., Zieffler, A. & Rosenberg, J. (2024) The Learning Difficulties of Introductory Data Science Students. In E. Jones (Ed) *Proceedings of the International Association for Statistical Education Satellite Conference*. [https://www.iase-pub.org/conference\\_proceedings/IASECP/article/view/254/247](https://www.iase-pub.org/conference_proceedings/IASECP/article/view/254/247)

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Rosenberg, J. M., & Kubsch, M. (2021). Considering K-12 learners’ use of Bayesian methods. In E. de Vries, Y. Hod, & J., Ahn (Eds.), *The International Society of the Learning Sciences 2020 Conference Proceedings* (pp. 947-948). International Society of the Learning Sciences. <https://repository.isls.org/handle/1/7635>

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Rosenberg, J. M., & Koehler, M. (2014). Context and Technological Pedagogical Content Knowledge: A content analysis. In M. Searson & M. Ochoa (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2014* (pp. 2412-2417). Chesapeake, VA: AACE. Retrieved from <http://www.editlib.org/p/131183>

Greenhalgh, S. P., Rosenberg, J. M., Zellner, A. & Koehler, M. J. (2014). Zen and the art of portfolio maintenance: Best practices in course design for supporting long-lasting portfolios. In M. Searson & M. Ochoa (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2014* (pp. 1604-1610). Chesapeake, VA: AACE. Retrieved from <http://www.editlib.org/p/131027>

Rosenberg, J., Terry, C., Bell, J., Hiltz, V., Russo, T. & The EPET Social Media Council (2014). What we've got here is failure to communicate: Social media best practices for graduate school programs. In M. Searson & M. Ochoa (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2014* (pp. 1210-1215). Chesapeake, VA: AACE. Retrieved from <http://www.editlib.org/p/130949>

Rosenberg, J. (2013). Review of mobile device use policies in public high schools. In R. McBride & M. Searson (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2013* (pp. 3774-3779). Chesapeake, VA: AACE. Retrieved from <http://www.editlib.org/p/48698>

## Presentations

Information on all presentations are provided [here](#); I often present at AERA, ISLS, and NARST, among others.

## Invited Talks

Rosenberg, J. M. (October, 2025). *Public opinion about science education: Social media as a context and data source* [Invited talk]. University of Memphis.

Rosenberg, J. M. (October, 2024). *The tensions and opportunities surrounding emerging educational technologies* [Keynote address]. International Computer & Instructional Technologies Symposium (ICITS), Kastamonu University, Turkey. <https://icits2024.kastamonu.edu.tr>

Rosenberg, J. M. (April, 2021). *AI and ML and data! Oh my! Supporting teachers' and learners' work by considering the human sides of data science*. Keynote presentation at the LEAD Graduate School and Research Network retreat. The University of Tübingen, Baden-Württemberg, Germany.

Rosenberg, J. M. (October, 2021). *All together now: Leveraging data science techniques alongside traditional approaches to understand learning*. Invited presentation at the International Conference on Education Research. Seoul National University, Seoul, South Korea.

Rosenberg, J. M. (February, 2020). *Studying education-focused Twitter hashtags in light of state-based and national policies and practices*. Presentation at the 2020 Spring Seminar Series at the Martin School of Public Policy at the University of Kentucky, Lexington, KY.

Rosenberg, J.M. (September, 2019). *Making data science education count: Exploring the integration of data science into education*. Presentation at the Middle Tennessee State University Mathematics and Science Education Doctoral Seminar series. Middle Tennessee State University, Murfreesboro, TN.

Rosenberg, J. M. (February, 2019). *Making sense of recent advances in the Technological Pedagogical Content Knowledge framework*. English International Congress at the Universidad Técnica del Norte, Ibarra, Ecuador.

## Select Workshops

I have led many workshops; additional references are provided in the above link.

Rosenberg, J. M. & D'Angelo, C. (2022, March). *An Introduction to Data Science in Science Education Using R*. National Association for Research in Science Teaching. *Note*. This session was sponsored by the Contemporary Methods Research Interest Group (RIG).



Kellogg, S., Jiang, S., Moore, R., & Rosenberg, J. M. (2021, August). *A LASER Focus on Understanding and Improving STEM Education*. Partnerships for Expanding STEM Education Research in STEM (AERA & ICPSR). <https://github.com/laser-institute/aera-workshop>

Rosenberg, J. M. (2021, July). *An Introduction to Natural Language Processing in Science Education*. Workshop carried out at the [Machine Learning and Computer-Based Text Analysis conference](https://joshuamrosenberg.com/post/2021/07/19/an-introduction-to-natural-language-processing-in-science-education/), Kiel, Germany. <https://joshuamrosenberg.com/post/2021/07/19/an-introduction-to-natural-language-processing-in-science-education/>

## Select Outreach and Community Engagement

Rosenberg, J. M. (2021, August). *Tools and Strategies to Work with Data in the Science Classroom*. Knox County Schools District Learning Day. <https://bit.ly/kcs-dld>

D'Angelo, C., & Rosenberg, J. M. (2021, April). *Analyzing Education Data with Open Science Best Practices, R, and OSF*. Webinar through the Center for Open Science. <https://www.youtube.com/watch?v=WxdWzTlzYmI>

## Teaching

### Courses Taught

Instructor at the University of Tennessee, Knoxville:

- *Foundations of Educational Data Science I* (STEM 680, M.A. and Ph.D. class)
- *Foundations of Educational Data Science II* (STEM 685, M.A. and Ph.D. class)
- *Visualizing Data Using R* (STEM 691, M.A. and Ph.D. class)
- *Capstone in Educational Data Science* (STEM 695, M.A. and Ph.D. class)
- *STEM Education Seminar* (STEM 612, Ph.D. class)
- *Trans-Departmental Seminar II* (TPTE 605, Ph.D. class)
- *Nature of Mathematics and Science Education* (SCED 572, M.A. and Ph.D. class)
- *Teaching Science in Grades 7-12* (TPTE 495, SCED 496, & SCED 543, B.S. & M.A. class)
- *VolsTeach Step 1 and Step 2* (TPTE 110 & TPTE 120, undergraduate-level class)

Instructor at Michigan State University:

- *Psychology of Learning in School and Other Settings* (CEP 800, M.A. class)
- *Approaches to Educational Research* (CEP 822, M.A. class)

- *Technology and Leadership* (CEP 815, M.A. class)

## Service

### Editorial Service

Associate Editor, *Journal of Statistics and Data Science Education*, 2023-Present

Associate Editor, *Journal of Research on Science Teaching*, 2024-Present

Editorial Review Board Member, *Review of Educational Research*, 2022-Present

Editorial Review Board Member, *Journal of Science Education and Technology*, 2023-Present

Editorial Review Board Member, *Journal of Research on Technology in Education*, 2016-2024

Editorial Review Board Member, *Contemporary Issues in Technology and Teacher Education (Science Education Section)*, 2019-2022

Special Section Editor, *British Journal of Educational Technology*, 2022

Editorial Review Board Member, *Journal of Research in Science Teaching*, 2019-2022

Special Issue Editor, *Australasian Journal of Educational Technology*, 2017

### Service to the Profession

Committee Member, Developing Competencies for the Future of Data and Computing: The Role of K-12, National Academies of Sciences, Engineering, and Medicine, 2024-2025

External Reviewer, Application for Promotion to Associate Professor, Ohio State University, 2024

External Reviewer, Application for Promotion to Associate Professor, Texas Tech, 2024

External Reviewer, Application for Promotion to Professor, Elon University, 2021

Member, OpenSciEd Research Agenda (Assessment) working group, 2021



## Review Panels

Panelist, CAREER program, National Science Foundation, *n.d.*

Ad-Hoc Reviewer, Building Capacity in STEM Education Research (one proposal), National Science Foundation, *n.d.*

Ad-Hoc Reviewer, Discovery Research K-12 (three proposals), National Science Foundation, *n.d.*

Ad-Hoc Reviewer, Advancing Informal STEM Learning, National Science Foundation (one proposal), *n.d.*

Panelist, Innovative Technology Experiences for Students and Teachers (ITEST), National Science Foundation, *n.d.* (two panels)

Panelist, Building Capacity in STEM Education Research (BCSER), National Science Foundation, *n.d.*

Panelist, Discovery Research PreK-12 (DRK-12), National Science Foundation, *n.d.*

## Service to the Community

Mentor, TN Promise (2022-2023; mentor to 12 college-going students)

Mentor, Diversity in Learning Analytics and Leadership program, <https://www.diversityindataandleadershipprogram.com/>

Reviewer, Proposals from Knox County Schools students for the NASA Student Spaceflight Experiment program

## Selected Ad-hoc Journal Article Reviewing

- AERA Open
- British Journal of Educational Technology
- Cognition & Instruction
- Computers & Education
- Contemporary Educational Psychology
- Educational Researcher
- Educational Psychologist
- Educational Technology Research & Development
- Journal of the Learning Sciences
- Journal of Open Source Software
- Science Education
- TechTrends

- Urban Education

### **University service**

2023-2025, Faculty Lead, Data Science Curriculum Committee, College of Emerging and Collaborative Studies, UTK

2022-2023, AI Visioning Working Group (Co-Chair, Education Committee), AI Tennessee Initiative, UTK

2021-2023, Data Science Faculty Committee member, UTK

### **College-level Service**

2025, Committee Member, Search for Assistant Dean for Research and Engagement, *College of Emerging and Collaborative Studies*, UTK

2023-2024, Search Chair, Unit Head, *Department of Theory and Practice in Teacher Education*, UTK

2023-2024, Search Co-Chair, Assistant/Associate Professor of Educational Data Science, *Department of Theory and Practice in Teacher Education*, UTK,

2021-2022, Search Committee Member, Two Tenure Track positions in Learning Design and Technology and Instructional Technology, *Department of Educational Psychology and Counseling*, UTK

### **Departmental Service**

2024-2025, Bylaws Revision Ad-hoc Committee, TPTE, UTK

2022-Present, Program Coordinator, Educational Data Science, TPTE, UTK

2021-Present, Institutional Review Board Departmental Representative (Quantitative), TPTE, UTK

2022-Present, Mentor (Five faculty members)

## Program Service and Service on Student Committees

*University of Tennessee, Knoxville*

Advisor for Doctoral students:

- 2025-: Gustavo Alvarez-Suchini (co-advisor with E. Romero-Hall)
- 2025-: Ronald Rupard
- 2024-: Bradley Holtz (co-advisor with L. Caudle)
- 2023-: Cody Pritchard
- 2021-: Emily McDonald
- 2020-: Omiya Sultana
- 2023-: Wei Wang
- 2023-: Hanhui Bao
- 2021-2024: Amanda Garner
- 2019-2021: Jennifer Longnecker

Committee Member for Doctoral students:

- 2025-: Richard Amoako (Educational Leadership & Policy Studies; ELPS)
- 2019-2023: Maryrose Weatherton (Department of Ecology and Evolutionary Biology, UTK)
- 2022-2024: Amanda Zeller (TPTE)
- 2020-2022: Anthony Schmidt (Department of Educational Psychology & Counseling)
- 2021-2025: Donna Wortham, ELPS
- 2020-2023: Sarah Narvaiz (Department of Educational Psychology & Counseling)
- 2021-2023: Anna Sintsova Banks (Department of Educational Psychology & Counseling)
- 2021-2024: John Mooneyham
- 2019-2021: Matthew Hensley
- 2018-2020: Shande King

## Host

I have hosted several guest scholars, including Gregor Benz (Technical University of Munich, Germany) and Matthias Fischer (Heidelberg University, Germany).

## Miscellaneous

### Software Developed

Rosenberg, J. M., van Lissa, C. J., Beymer, P. N., Anderson, D. J., Schell, M. J. & Schmidt, J. A. (2019). *tidyLPA: Easily carry out Latent Profile Analysis (LPA) using open-source or*

*commercial software* [R package]. <https://data-edu.github.io/tidyLPA/>

Rosenberg, J. M., Xu, R., & Frank, K. A. (2019). *konfound: Quantify the robustness of causal inferences* [R package]. <https://jrosen48.github.io/konfound/>

Rosenberg, J. M., Xu, R., & Frank, K. A. (2019). *Konfound-It!: Quantify the robustness of causal inferences* [R Shiny application]. <http://konfound-it.com>.

Estrellado, R. A., Bovee, E. A., Mostipak, J., Rosenberg, J. M., & Velásquez, I. C. (2019). *dataedu: Package for Data Science in Education Using R*. <https://github.com/data-edu/dataedu>

Rosenberg, J. M. (2020). *tidykids: State-by-State Spending on Kids Dataset*. <https://jrosen48.github.io/tidykids/>

Lishinski, A., & Rosenberg, J. M. (2019). *Short message survey: An open-source, text-message based application for the experience sampling method*. <https://github.com/picsul/short-message-survey>

Rosenberg, J. M. (2016). Diffusion & temperature. *Lab Interactive Simulation*. <https://lab.concord.org/interactives.html#interactives/external-projects/msu/temperature-diffusion.json>

## **Invited Participation in Workshops/Working Groups**

Invited Participant, *Scoping Workshop on Future of Science Education Research in Times of Artificial Intelligence*, Hannover, Germany, 2025

Invited Participant, *Advancing Critical Social Network Analysis to Address Issues of Equity in Education Policy and Politics*, Spencer Foundation, 2023

Invited Participant, *National Academy of Science - National Science Foundation Working Group - Tools & Transfer*, Data Science for Everyone, 2023

Invited Participant, *Foundations of data science for students in grades K-12: A workshop*, National Academies of Sciences, Engineering and Medicine, 2022

Invited Participant, *Open Scholarship in Education small expert meeting*, Center for Open Science, 2022

Invited Participant, *New applications of social network analysis to education policy: Building the capacity of the field*, Spencer Foundation, 2021

Invited Participant, *Data4Kids: Virtually teaching kids about data science*, Urban Institute, 2021

## Competitive Research Training

Early Career Workshop, International Conference of the Learning Sciences, 2020

New Faculty Mentoring Program, AERA Division C, 2019

## Media Coverage

[Outsmart ChatGPT: 8 Tips for Creating Assignments It Can't Do](#), *Education Week*, February 14, 2023

[Can Digital Tools Detect ChatGPT-Inspired Cheating?](#), *Education Week*, January 27, 2023

[When Does Posting Photos of Students Become a Data Privacy Problem?](#), *EdSurge*, January 9, 2023

[How School Social Media Accounts Put Student Privacy at Risk](#), *Tech & Learning*, November 30, 2022

[Professors publish playbook for how teachers can address parents concerned about CRT](#), *Fox News*, November 13, 2022

[Study: School Facebook Pages May Compromise Student Privacy](#), *Government Technology*, November 10, 2022

[Study Shows Millions of Student Privacy Breaches on Social Media](#) *THE Journal*, November 7, 2022

[School Facebook Pages and Privacy Concerns: What Educators Need to Know](#) *Education Week*, November 2, 2022

[Study: Schools' Facebook posts may violate student privacy](#) *K-12 Dive*, November 2, 2022

[Study: Schools' Social Media Posts May Be Compromising Student Privacy](#), *American Educational Research Association*, November 2, 2022

[The Tricky Ethics of Being a Teacher on TikTok](#), *Wired*, September 6, 2022

[Teaching Students to Understand the Uncertainties of Science Could Help Build Public Trust](#), *Education Week*

[School Posts on Facebook Could Threaten Student Privacy](#), *Tennessee News Service*

[Teaching R to 7th Graders](#), *Flowing Data*

**Professional Affiliations**

- American Educational Research Association
- International Society of the Learning Sciences
- National Association for Research in Science Teaching
- Society for Learning Analytics Research