

Joshua Rosenberg, Ph.D.

Curriculum Vita

Contact Information

Associate Professor, STEM Education
Department of Theory and Practice in Teacher Education
The University of Tennessee, Knoxville
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Education

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

2012, MA, Education
Michigan State University

2010, BS, Biology
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

Additional Professional Affiliations

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

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

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

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 Weatheron)

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 (Selected)

PI or Co-PI

\$9,245,867 as Principal Investigator (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. <https://datapuzzles.org/>

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. <https://projectcredible.com>

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. <https://ies.ed.gov/use-work/awards/quantifying-robustness-causal-inferences-extensions-and-application-existing-databases>

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)

Senior Personnel/Investigator

\$11,599,265 as Senior Personnel/Investigator

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 and the Community College Research Center at Columbia University; UTK subcontract (PI: Cameron Sublett): \$178,245. <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. <https://cehhs.utk.edu/ip-pipes/>

2020-2023, Senior Personnel, *Learning analytics in STEM education research institute* (\$933,150; PI, Shaun Kellogg, North Carolina State University; \$993,150; UTK subcontract: \$62,870. National Science Foundation (NSF), [NSF Grant No. 2025090](#))

Publications

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

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

Books (2)

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

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/> (2nd edition under contract in 2024)

Articles Published in Refereed Journals (61 total; selected)

Borchers, C., Wang, Y., Hodge, E. M., & Rosenberg, J. M. (advance online publication). Decoding sentiment Signals: Lessons from the political reception of the Common Core and Next Generation Science Standards. *Educational Researcher*. <https://doi.org/10.3102/0013189X251336>

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>

+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>

Dogucu, M., Kazak, S., & Rosenberg, J. M. (2024). The design and implementation of a Bayesian data analysis lesson for pre-service mathematics and science teachers. *Journal of Statistics and Data Science Education*, 1-21. <https://doi.org/10.1080/26939169.2024.2362148>

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>

Burchfield, M. A., Rosenberg, J. M., & Stegenga, S. M. (2024). 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*, 1-18. <https://doi.org/10.1080/15391523.2024.2313614>

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>

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 GDCP (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>

+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>

Commissioned Papers and White Papers, Reports, and Articles in the Popular Press (6; selected)

Bilal, D., Fagan, J., Rius, A., Vogiatzis, K., Liu, C., Dahms, H., Duncan, L., Kim, H., Odoi, A., Rosenberg, J., Singh, V., & Sobes, V. (2023). *AI TENNessee Initiative: Education. AI Tennessee Initiative. N.b.* I co-chaired the committee that wrote this white paper with C. Liu.

Rosenberg, J. M., & Jones, R. S. (2022). *K-12 data science learning*. Paper commissioned by the National Academies of Sciences, Engineering, and Medicine for *Foundations of Data Science for Students in Grades K-12: A Workshop*. <https://www.nationalacademies.org/event/09-13-2022/docs/DD667E469D0EC5DD91A7D85BC839A9852491A3CF9F15>

Rosenberg, J. M. (2021). School posts on Facebook could threaten student privacy. *The Conversation*. <https://theconversation.com/school-posts-on-facebook-could-threaten-student-privacy-160248>

Presentations

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

Invited Talks (Selected)

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.

Workshops (Selected)

Additional references are provided in the above link on presentations.

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>

Outreach and Community Engagement (Selected)

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 (Selected)

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)

Service

University service

2023-2025, Faculty Chair, 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-related Service

2025, Committee Member, 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 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 in TPTE)

Editorial Service (Selected)

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

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

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

Service to the Profession (Selected)

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

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

Program Service and Service on Student Committees

University of Tennessee, Knoxville

Advisor for Doctoral students:

- 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:

- 2019-2023: Maryrose Weatherton (Department of Ecology and Evolutionary Biology, UTK)
- 2022-: Amanda Zeller (TPTE)
- 2020-2022: Anthony Schmidt (Department of Educational Psychology & Counseling)
- 2021-: Donna Wortham (Educational Leadership & Policy Studies)
- 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