

# Joshua M. Rosenberg

## Curriculum Vitae

### Contact Information

Assistant Professor, STEM Education  
Department of Theory and Practice in Teacher Education  
Faculty Fellow, Center for Enhancing Education in Mathematics and Sciences  
The University of Tennessee, Knoxville  
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Research Group: <https://makingdatasciencecount.com>  
Google Scholar: <https://scholar.google.com/citations?hl=en&user=nxVowRQAAAAJ>

### Research Interests

Science education, science teacher education, data science education, computer science education, computational research methods

### Education

#### Degrees

2018, PhD, Educational Psychology & Educational Technology  
*Committee:* Matthew J. Koehler (Co-chair), Jennifer A. Schmidt (Co-chair), Lisa Linnenbrink-Garcia, and Christina V. Schwarz  
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, Teacher Licensure Program  
University of North Carolina, Asheville

### Professional Experience

2018-present, 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

## Grants

### Ongoing Grants (Principal Investigator [PI], Co-PI, or Co-I)

2020-2025, Co-I, *Imagining Possibilities in Post-Secondary Education and STEMM in Rural Appalachia*. (\$1,208,563), National Institutes of Health.

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, University of Tennessee, Knoxville). 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; University of Tennessee, Knoxville [UTK] subcontract: \$101,469). NSF. <https://tca2.education.illinois.edu/> (NSF Grant No. 1920796)

### Ongoing Grants (Senior Personnel or Consultant)

2020-2023, Senior Personnel, *Learning analytics in STEM education research institute* (\$993,150; *PI*, Shaun Kellogg, North Carolina State University; UTK subcontract: \$54,691). 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/>

### Completed Grants

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.

2017-2020, Consultant (statistical software development and data analysis), *Profiles of science engagement: Broadening participation by understanding individual and contextual influences* (\$499,927; *PI*: Jennifer Schmidt, Michigan State University). NSF. (NSF Grant No. 1661064)

2013, PI, *Basic biology for everyone* (\$2,000), Versal Foundation Grant

## Fellowships and Awards

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

2019-2020, Initiative for the Future Faculty Development Program, University of Tennessee, Knoxville (UTK)

2019, Finalist, Association for Science Teacher Education John C. Park National Technology Leadership Institute Fellowship

2017, Delia Koo Global Travel Fellowship, Michigan State University (MSU)

2017, Michigan Virtual Learning Research Institute Dissertation Fellowship

2017, Concord Consortium Data Science Educational Technology Fellowship

2017, Council of Graduate Students Disciplinary Leadership Award, MSU

2016, College of Education Alumni Fellowship, MSU

2016, Best Paper Award, Technological Pedagogical Content Knowledge Special Interest Group (SIG), Society for Information Technology and Teacher Education International Conference

2015, Cotterman Family Endowment for Education Summer Research Fellowship, MSU

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

2013, Massive Open Online Course Research and Development Fellowship, MSU

2009-2012, Burroughs Wellcome Fund Scholar, University of North Carolina, Asheville

## Publications

### Book

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

### Peer-Reviewed Journal Articles

Rosenberg, J. M., & Krist, C. (in press). Combining machine learning and human-driven interpretive methods to elaborate students' ideas about the generality of their model-based scientific explanations. *Journal of Science Education and Technology*. *Nb.* Both authors contributed equally.

Rosenberg, J. M., Reid, J., Dyer, E., Koehler, M. J., Fischer, C., & McKenna, T. J. (in press). 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*.

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

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

Schmidt, J. A., Beymer, P. N., Rosenberg, J. M., Naftzger, N. J., & Shumow, L. (advance online publication). Experiences, Activities, and personal characteristics as predictors of engagement in STEM-focused

- summer programs. *Journal of Research in Science Teaching*. <https://onlinelibrary.wiley.com/doi/full/10.1002/tea.21630>
- Anderson, D. J., Rowley, B., Stegenga, S., Irvin, P. S., & Rosenberg, J. M. (advance online publication). Evaluating content-related validity evidence using a text-based, machine learning procedure. *Educational Measurement: Issues and Practice*. <https://onlinelibrary.wiley.com/doi/abs/10.1111/emip.12314>
- 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)
- Xu, R., Frank, K. A., Maroulis, S., & Rosenberg, J. M. (2019). konfound: Command to quantify robustness of causal inferences. *The Stata Journal*, 19(3), 523-550. <https://journals.sagepub.com/doi/full/10.1177/1536867X19874223>
- Blondel, D. V., Sansone, A., Rosenberg, J. M., Yang, B. W., Linennbrink-Garcia, L., & Schwarz-Bloom, R. D. (2019). Development of an online experiment platform (Rex) for high school biology. *Journal of Formative Design for Learning*, 3(1) 62-81. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6716597/>
- Henriksen, D., Mehta, R. & Rosenberg, J. (2019). Supporting a creatively focused technology fluent mindset among educators: survey results from a five-year inquiry into teachers' confidence in using technology. *Journal of Technology and Teacher Education*, 27(1), 63-95. <https://www.learntechlib.org/primary/p/184724/>
- Rosenberg, J. M., & Lawson, M. J. (2019). An investigation of students' use of a computational science simulation in an online high school physics class. *Education Sciences*, 9(49), 1-19. <https://www.mdpi.com/2227-7102/9/1/49>
- Rosenberg, J. M., Beymer, P. N., Anderson, D. J., & Schmidt, J. A. (2018). tidyLPA: An R package to easily carry out Latent Profile Analysis (LPA) using open-source or commercial software. *Journal of Open Source Software*, 3(30), 978. <https://doi.org/10.21105/joss.00978>
- Greenhalgh, S. P., Staudt Willet, K. B., Rosenberg, J. M., & Koehler, M. J. (2018). Tweet, and we shall find: Using digital methods to locate participants in educational hashtags. *TechTrends*, 62(5), 501-508. <https://doi.org/10.1007/s11528-018-0313-6>
- Beymer, P. N., Rosenberg, J. M., Schmidt, J. A., & Naftzger, N. (2018). Examining relationships between choice, affect, and engagement in out-of-school time STEM programs. *Journal of Youth and Adolescence*, 47(6), 1178-1191. <https://doi.org/10.1007/s10964-018-0814-9>
- Akcaoglu, M., Rosenberg, J. M., Ranellucci, J., & Schwarz, C. V. (2018). Outcomes from a self-generated utility value intervention on fifth and sixth-grade students' value and interest in science. *International Journal of Educational Research*, 87, 67-77. <https://www.sciencedirect.com/science/article/pii/S0883035517308492>
- Schmidt, J. A., Rosenberg, J. M., & Beymer, P. (2018). A person-in-context approach to student engagement in science: Examining learning activities and choice. *Journal of Research in Science Teaching*, 55(1), 19-43. <https://dx.doi.org/10.1002/tea.21409> (Nb. This article was recognized as one of the 20 most-downloaded articles in JRST between June, 2016 and June, 2018)
- Rosenberg, J.M., Greenhalgh, S.P., Graves Wolf, L. & Koehler, M.J. (2017). Strategies, use, and impact of social media for supporting teacher community within professional development: The case of one urban STEM program. *Journal of Computers in Mathematics and Science Teaching*, 36(3), 255-267. <https://www.learntechlib.org/primary/p/180387/>

- Koehler, M. J., Greenhalgh, S. P., Rosenberg, M. J., & Keenan, S. (2017). What the tech is going on with digital teaching portfolios? Using the TPACK framework to analyze teachers' technological understanding. *Journal of Technology and Teacher Education*, 25, 31-59. <http://www.learntechlib.org/p/173346/> ">
- Rosenberg, J. M., Greenhalgh, S. P., Koehler, M. J., Hamilton, E., & Akcaoglu, M. (2016). An investigation of State Educational Twitter Hashtags (SETHs) as affinity spaces. *E-Learning and Digital Media*, 13(1-2), 24-44. <http://dx.doi.org/10.1177/2042753016672351>
- Greenhalgh, S. P., Rosenberg, J. M., & Wolf, L. G. (2016). For all intents and purposes: Twitter as a foundational technology for teachers. *E-Learning and Digital Media*, 13(1-2), 81-98. <http://dx.doi.org/10.1177/2042753016672131>
- Hamilton, E., Rosenberg, J. M., & Akcaoglu, M. (2016). Examining the Substitution Augmentation Modification Redefinition (SAMR) model for technology integration. *Tech Trends*, 60, 433-441. <http://dx.doi.org/10.1007/s11528-016-0091-y>
- Rosenberg, J. M., Terry, C. A., Bell, J., Hiltz, V., & Russo, T. (2016). Design guidelines for graduate program social media use. *Tech Trends*, 2, 167-175. <http://dx.doi.org/10.1007/s11528-016-0023-x>
- Rosenberg, J. M., & Koehler, M. J. (2015). Context and Technological Pedagogical Content Knowledge (TPACK): A systematic review. *Journal of Research on Technology in Education*, 47, 186-210. <http://dx.doi.org/10.1080/15391523.2015.1052663>

## Book Chapters

- Rosenberg, J. M., Lawson, M. A., Anderson, D. J., & Rutherford, T. (in press). Making data science count in and for education. In E. Romero-Hall (Ed.), *Research Methods in Learning Design & Technology*. Routledge: New York, NY.
- Greenhalgh, S. P., Staudt Willet, B., Rosenberg, J. M., & Koehler, M. J. (in press). Lessons learned from applying Twitter research methods to educational technology phenomena. In E. Romero-Hall (Ed.), *Research Methods in Learning Design & Technology*. Routledge: New York, NY.
- Dai, T., Rosenberg, J. M., & Lawson, M. A. (in press). Data representation. In T. L. Good & M. McCaslin (Eds.), *Educational Psychology Section*; D. Fisher (Ed.), *Routledge Encyclopedia of Education* (Online). Taylor & Francis: New York, NY.
- Eidelman, R., Rosenberg, J. M., & Shwartz, Y. (2019). Assessing the interaction between self-regulated learning (SRL) profiles and actual learning in the chemistry online blended learning environment (COBLE). In Sampson, D., D. Ifenthaler, M. Spector, P. Isafas, & S. Sergis (Eds), *Learning technologies for transforming teaching, learning and assessment at large scale* (pp. 231-255). Berlin, Germany: Springer.
- Herring, M., Koehler, M. J., Mishra, P., Rosenberg, J. M., & Teske, J. (2016). Introduction to the 2nd edition of the TPACK handbook. In M. Herring, M. J. Koehler, & P. Mishra (Eds.), *Handbook of Technological Pedagogical Content Knowledge (TPACK) for educators* (2nd ed., pp. 1-8). New York, NY: Routledge.
- Keenan, S., Rosenberg, J. M., Greenhalgh, S. P. & Koehler, M. J. (2016). Examining teachers' technology use through digital portfolios. In L. Liu & D. C. Gibson (Eds.), *Research highlights in technology and teacher education 2016* (pp. 53-60). Chesapeake, VA: Association for the Advancement of Computing in Education.
- Phillips, M., Koehler, M. J. & Rosenberg, J. M. (2016). Considering context: Teachers' TPACK development and enactment. In L. Liu & D. C. Gibson (Eds.), *Research highlights in technology and teacher education* (pp. 197-204). Chesapeake, VA: Association for the Advancement of Computing in Education. ">
- Rosenberg, J. M., & Koehler, M. J. (2015). *Context and teaching with technology in the digital age*. In M.L. Niess & H. Gillow-Wiles (Eds.), *Handbook of research on teacher education in the digital age* (pp. 440-465). Hershey, PA: IGI Global.

- Rosenberg, J. M., Greenhalgh, S. P., & Koehler, M. J. (2015). A performance assessment of teachers' TPACK using artifacts from digital portfolios. In L. Liu & D. C. Gibson, *Research highlights in technology and teacher education 2015*. Waynesville, NC: Association for the Advancement of Computing in Education (AACE).
- Koehler, M. J., Mishra, P., Akcaoglu, M., & Rosenberg, J. M. (2013). Technological pedagogical content knowledge for teachers and teacher educators. In N. Bharati and S. Mishra (Eds.), *ICT integrated teacher education: A resource book* (pp. 1-8). Commonwealth Educational Media Center for Asia, New Delhi, India.

## Conference Proceedings Papers

- Rosenberg, J. M., Schmidt, A., Rosenberg, A. M., Longnecker, J., & Mann M. (2020). Becoming 'tidier' over time. Studying #tidytuesday as a social media-based context for learning to visualize data. In M. Gresalfi and I. Horn (Eds.), *The Interdisciplinarity of the Learning Sciences: The International Conference of the Learning Sciences 2020 Conference Proceedings* (Vol 3., pp. 1811-1812). ISLS.
- Jones R. S., & Rosenberg, J. M. (2020). Studying whole class discussions at scale. In M. Gresalfi and I. Horn (Eds.), *The Interdisciplinarity of the Learning Sciences: The International Conference of the Learning Sciences 2020 Conference Proceedings* (Vol 5., pp. 2499-2506). ISLS.
- D'Angelo, C., Dyer, E. B., Krist, C., Rosenberg, J. M., & Bosch, N. (2020). Advancing computational grounded theory for audiovisual data from mathematics classrooms. In M. Gresalfi and I. Horn (Eds.), *The Interdisciplinarity of the Learning Sciences: The International Conference of the Learning Sciences 2020 Conference Proceedings* (Vol 4., pp. 2393-2394). ISLS.
- Dyer, E. B., D'Angelo, D., Bosch, N., Krist, C., & Rosenberg, J. M. (2020). Analyzing learning with speech analytics and computer vision methods: Technologies, principles, and ethics. In M. Gresalfi and I. Horn (Eds.), *The Interdisciplinarity of the Learning Sciences: The International Conference of the Learning Sciences 2020 Conference Proceedings* (Vol 5., pp. 2651-2652). ISLS.
- Rosenberg, J. M. (2020). More confidently uncertain? Teaching learners to apply Bayesian methods to make sense of scientific phenomena. In M. Gresalfi and I. Horn (Eds.), *The Interdisciplinarity of the Learning Sciences: The International Conference of the Learning Sciences 2020 Conference Proceedings* (Vol 5., pp. 2681-2682). ISLS.
- Carpenter, J., Rosenberg, J. M., Dousay, T., Romero-Hall, E., Trust, T., Kessler, A., Phillips, M., Morrison, S., Fischer, C. & Krutka, D. (2019). What do teacher educators think of teacher education technology competencies?. In K. Graziano (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 796-801). Las Vegas, NV, United States: Association for the Advancement of Computing in Education (AACE). Retrieved April 18, 2019 from <https://www.learntechlib.org/primary/p/207735/>.
- Peterson, A., Freer, D., & Rosenberg, J. M. (2017). Interacting with purpose: What is the difference between face-to-face and online student relationships in a combined program? In *Proceedings of Society for Information Technology & Teacher Education International Conference 2016* (pp. 3411-3414). Austin, TX: Association for the Advancement of Computing in Education. Retrieved from <https://www.learntechlib.org/p/177955/>
- Krist, C., & Rosenberg, J. M. (2016). Finding patterns in and refining characterizations of students' epistemic cognition: A computational approach. In Looi, C.-K., Polman, J., Cress, U., & Reimann, P. (Eds.), *Transforming Learning, Empowering Learners: The International Conference of the Learning Sciences Proceedings 2016* (Vol. 2, pp. 1223-1224). Singapore, Singapore: ICLS.
- Rosenberg, J. M., Koehler, M. J., Akcaoglu, M., Greenhalgh, S. P. & Hamilton, E. (2016). State Educational Twitter Hashtags: An introduction and research agenda. In *Proceedings of Society for Information Technology & Teacher Education International Conference 2016* (pp. 355-360). Chesapeake, VA: Association for the Advancement of Computing in Education. Retrieved from <http://www.editlib.org/p/171698>

- Greenhalgh, S. P., Rosenberg, J. M. & Wolf, L. G. (2016). For every tweet there is a purpose: Twitter within (and beyond) an online graduate program. In *Proceedings of Society for Information Technology & Teacher Education International Conference 2016* (pp. 2044-2049). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE). Retrieved from <http://www.editlib.org/p/171972>
- Schwarz, C. V., Ke, L., Lee, M., & Rosenberg, J. M. (2014). Developing mechanistic explanations of phenomena: Case studies of two fifth grade students' epistemologies in practice over time. In J. L. Polman, E. A. Kyza, K. O'Neill, I. Tabak, W. R. Penuel, A. S. Jurow, . . . L. D'Amico (Eds.), *Learning and becoming in practice: The international conference of the learning sciences (ICLS) 2014* (Vol. 1, pp. 182-189). Boulder, CO: ISLS. <http://www.isls.org/icls2014/Proceedings.html> ">
- 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/48698git>

## Editor-Reviewed Publications

- Naftzger, N., Schmidt, J. A., Shumow, L., Beymer, P. N., & Rosenberg, J. M. (2019). *Exploring the link between STEM activity leader practice and youth engagement: Findings from the STEM IE study*. Washington, DC: American Institutes for Research. <https://www.informalscience.org/exploring-link-between-stem-activity-leader-practice-and-youth-engagement-findings-stem-ie-study>
- Mehta, R., Henriksen, D., & Rosenberg, J. M. (2019). It's not about the tools. *Educational Leadership*, 76(5), 64-69. Retrieved from <http://www.ascd.org/publications/educational-leadership/feb19/vol76/num05/It's-Not-About-the-Tools.aspx> <a href="">
- Vo, T., & Rosenberg, J. M. (2018). Posts for the NARST Graduate Student Resources blog [four blog posts]. *NARST Graduate Student Resources Blog*. Linked through this page: <https://joshuaamroosenberg.com/job-market-resources.html>
- Rosenberg, J. M. (2018). Opportunities for engaging students in "data practices" in online science classes. *Michigan Virtual Learning Research Institute Blog: Research, Policy, Innovation & Networks*. <https://mvlri.org/blog/opportunities-engaging-students-data-practices-online-science-classes/>
- Rosenberg, J. M., & Logan, C. W. (2017). Review of the book What's Worth Teaching: Rethinking Curriculum in the Age of Technology, by A. Collins. *Teachers College Record*. <http://www.tcrecord.org/Content.asp?ContentID=22173>
- Phillips, M., Harris, J., Rosenberg, J. M., & Koehler, M. J. (2017). TPACK/TPACK research and development: Past, present, and future directions. *Australasian Journal of Educational Technology*. <https://doi.org/10.14742/ajet.3907>

Rosenberg, J. M., & Ranellucci, J. (2017). Student motivation in online science courses: A path to spending more time on course and higher achievement. *Michigan Virtual Learning Research Institute Blog: Research, Policy, Innovation & Networks*. <https://mvlri.org/blog/student-motivation-in-online-science-courses-a-path-to-spending-more-time-on-course-and-higher-achievement/>

## Pre-Prints and Unpublished Manuscript

Rosenberg, J. (2019). *Understanding the development of interest in CS: An experience sampling approach (Proposal to NSF 19-4327)*. <https://doi.org/10.31219/osf.io/9mg5y> Nb. This proposal is associated with NSF Grant no. 1937700.

Nosek, B. A., Ofiesh, L., Grasty, F. L., Pfeiffer, N., Mellor, D. T., Brooks, R. E., III, . . . Baraniuk, R. (2019). *Proposal to NSF 19-565 to create a STEM education research hub*. <https://doi.org/10.31222/osf.io/4mpuc> Nb. Contributors are listed in alphabetical order following the Principal Investigators. I contributed to this proposal.

Rosenberg, J. M. (2018). *Context and Technological Pedagogical Content Knowledge: An initial survey of teachers and validation data*.

Rosenberg, J. M. (2018). *Understanding work with data in summer STEM programs: An experience sampling method approach* (Doctoral dissertation). Retrieved from Proquest Dissertations and Theses. (Proquest No. 10747232)

## Presentations

### Peer-Reviewed Conference Presentations

Schmidt, J.A., Schell, M.J., Beymer, P.N., Alberts, K.M., Phun, V., Lee, M. & Rosenberg, J.M. (2020, August). *Students' momentary science engagement predicts end-of-course achievement*. Poster to be presented at the annual meetings of the American Psychological Association. Washington, DC.

Rosenberg, J. M., Reid, J., Dyer, E., Koehler, M. J., Fischer, C., & McKenna, T. J. (2020, April). A new context for professional networks: Understanding the social structure of #NGSSChat through social network analysis. In K. A. Frank, K., Torphy, K., Daly, A., & Greenhow, C. (Chairs), *Educators meet the fifth estate: Social media in education*. Symposium conducted at the American Educational Research Association Annual Meeting, San Francisco, CA. (Conference canceled)

Rosenberg, J. M., Hodge, L., Bertling, J., & King, S. (2020, April). Art as a context for data science: Exploring fourth-grade students' data visualization practices. In J. M. Rosenberg & B. Chen (Chairs), *Exploring data science across the curriculum and across grade levels*. Symposium conducted at the American Educational Research Association Annual Meeting, San Francisco, CA. (Conference canceled)

Rosenberg, J. M., Carpenter, J. P., Romero-Hall, E., & Kessler, A. (2020, April). *Teacher educators' technology competencies and the importance of context*. Paper presented at the American Educational Research Association Annual Meeting, San Francisco, CA. (Conference canceled)

Rosenberg, J. M., Beymer, P. N., Phun, V., Schmidt, J. A. (2020, April). Sources of variability for students' engagement in science: Findings from a cross-classified, multivariate modeling approach. In P. N. Beymer, D. K. Benden, & M. L. Bernacki (Chairs), *Affordances and modeling of intensive data*. Symposium conducted at the American Educational Research Association Annual Meeting, San Francisco, CA. (Conference canceled)

Rutherford, T., Rosenberg, J. M., & Staudt Willet, K. B. (2020, April). Which birds fill the branches of the AERA Twitter tree? Twitter networks around #AERA19. In P. N. Beymer, D. K. Benden, & M. L. Bernacki (Chairs), *Affordances and modeling of intensive data*. Symposium conducted at the American Educational Research Association Annual Meeting, San Francisco, CA. (Conference canceled)



- Jones, R. S., & Rosenberg, J. M. (2020, April). *Latent class modeling of whole-class discussions about data, statistics, and probability*. Paper presented at the American Educational Research Association Annual Meeting, San Francisco, CA. (Conference canceled).
- Rutherford, T., & Rosenberg, J. M. (2020, April). *Motivational correlates of choice to persist after failure*. Paper presented at the American Educational Research Association Annual Meeting, San Francisco, CA. (Conference canceled).
- Ranellucci, J. & Rosenberg, J. M. (2020, April). *Interest, engagement, and achievement in online high school science courses*. Paper presented at the American Educational Research Association Annual Meeting, San Francisco, CA. (Conference canceled).
- Rosenberg, J. M., & Lishinski, A. (2020, March). *Accruing Interest: What experiences contribute to students developing a sustained interest in computer science over time?*. Lightning talk at the Special Interest Group on Computer Science Education Technical Symposium, Portland, OR. YouTube recording: <https://www.youtube.com/watch?v=ZHTLejxTYbs> (Conference canceled)
- Lishinski, A., & Rosenberg, J. M. (2020, March). *Variable interest rate: What experiences explain differences in interest in computer science among students?*. Birds of a feather presentation at the Special Interest Group on Computer Science Education Technical Symposium, Portland, OR. (Conference canceled)
- Schmidt, J. A., Rosenberg, J. M., & Beymer, P. N. (August, 2019). *Sources of variability in engagement: Exploring situational, personal, and classroom influences*. Poster presented at the annual meeting of the American Psychological Association, Chicago, IL.
- Greenhalgh, S. P., Huang, K., & Rosenberg, J. M. (2019, October). *Understanding gaming communities and exploring learning opportunities: A computational grounded theory approach*. Paper to be presented at the meeting of the Association for Educational Communications and Technology International Convention, Las Vegas, NV.
- Rosenberg, J. M., Beymer, P. N., Houslay, T. M., & Schmidt, J. A. (2019, April). Using a multivariate, multi-level model to understand how youths' in-the-moment engagement predicts changes in youths' interest. In M. Bernacki, A. Kaplan, and L. Linnenbrink-Garcia (Chairs), *Embracing and modeling the complex dynamics of motivation and engagement: Contextual, temporal, dynamic, and systematic*. Symposium conducted at the Annual Meeting of the American Educational Research Association, Toronto, CA.
- Beymer, P. N., Schell, M. J., Alberts, K. M., Rosenberg, J. M., & Schmidt, J. A. (2019, April). *Student engagement profiles in formal and informal STEM learning settings*. Paper presented at the Annual Meeting of the American Educational Research Association, Toronto, Canada.
- Schell, M. J., Beymer, P. N., Albert, K. M., Rosenberg, J. M., & Schmidt, J. A. (2019, April). *Predictors of momentary student engagement profiles in high school science classrooms*. Paper presented at the Annual Meeting of the American Educational Research Association, Toronto, Canada.
- Reid, J., Rosenberg, J. M., Koehler, M. J., Fischer, C., & McKenna, T. J. (2019, March). *An exploration of #NGSSchat through social network analysis*. Paper presented at the National Association for Research in Science Teaching Annual International Conference, Baltimore, MD.
- Rosenberg, J. M., Reid, J., Koehler, M. J., Fischer, C., & McKenna, T. J. (2019, January). *The roles of the Twitter hashtag #NGSSchat in the context of science education reform efforts*. Paper presented at the Association for Science Teacher Education International Meeting, Savannah, GA. (Nb. This paper was nominated for the ASTE John C. Park National Technology Leadership Institute Fellowship)
- Akcaoglu, M., Hodges, C. B., Rosenberg, J. M., & Hilpert, J. (2018, October). *Factors impacting middle school students' interest, efficacy, and utility value of programming*. Paper presented at the Association for Educational Communications and Technology International Convention 2018. Kansas City, MO.
- Staudt Willet, K. B., Greenhalgh, S. P., Rosenberg, J. M., Koehler, M. J. (2018, October). *Won't you be my neighbor? How education stakeholders use hyperlinks to build information neighborhoods on Twitter*.

Paper to be presented at the Association for Educational Communications and Technology International Convention 2018. Kansas City, MO.

- Beymer, P. N., Rosenberg, J. M., Schmidt, J. A., Naftzger, N. J., & Shumow, L. (August, 2018). *Agency in summer STEM programs predicts interest and career aspirations*. Poster presented at the annual meeting of the American Psychological Association, San Francisco, CA.
- Schmidt, J. A., Beymer, P. N., Rosenberg, J. M., Naftzger, N. J., & Shumow, L. (August, 2018). *Examining the development of interest in summer STEM programs*. Poster presented at the annual meeting of the American Psychological Association, San Francisco, CA.
- Beymer, P. N., Rosenberg, J.M., & Schmidt, J. A. (2018, April). *Investigating the effects of interest and choice: An experience sampling approach*. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.
- Greenhalgh, S. P., Staudt Willet, B., Rosenberg, J. M., Akcaoglu, M., & Koehler, M. J. (2018, April). *Timing is everything: Comparing synchronous and asynchronous modes of Twitter for teacher professional learning*. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.
- Rosenberg, J. M., Beymer, P. N., & Schmidt, J. A. (2018, April). *How engagement during out-of-school time STEM programs predicts changes in motivation in STEM*. In J. M. Rosenberg (Chair), Data-intensive approaches to studying engagement in education: Exploring their current potential. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.
- Rosenberg, J. M., Lee, Y., Robinson, K. A., Ranellucci, J., Roseth, C. J., & Linnenbrink-Garcia, L. (2018, April). *Patterns of engagement in a flipped undergraduate class: Antecedents and outcomes*. In L. Daniels & A. Frenzel (Chairs), New empirical insights on what energizes learners – A session on emotions and engagement. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.
- Schmidt, J. A., Rosenberg, J.M., & Beymer, P. N. (2018, April). *Experiences, activities, and personal characteristics as predictors of interest and engagement in STEM-focused summer programs*. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.
- Shwartz, Y., Bayer, I., Bielik, T., Kolonich, A., Eidelman, R., Shwartz, G., . . . Rosenberg, J. M. (2018, March). *Graduate student international collaboration for investigating science teachers' professional learning*. Paper presented at the meeting of the National Association for Research in Science Teaching, Atlanta, GA.
- Yang, B. W., Blondel, D. V., Rosenberg, J. M., Sansone, A., Linnenbrink-Garcia, L., Schwarz-Bloom, R. D. (2017, November). *The Rex virtual experiment platform: Design, implementation, and effects on situational interest*. Poster presented at the Annual Meeting of the Society for Neuroscience, Washington, DC.
- Greenhalgh, S. P., Staudt Willet, K. B., Rosenberg, J. M., & Koehler, M. J. (2017, November). *No accounting for theory? The case for an affinity space approach to educational hashtag research*. Paper presented at the Association for Educational Communications and Technology International Convention 2017, Jacksonville, FL.
- Greenhalgh, S. P., Rosenberg, J. M., & Koehler, M. J. (2017, November). *Hide and go tweet: Comparing methods for locating educational hashtag participants*. Paper presented at the Association for Educational Communications and Technology International Convention 2017, Jacksonville, FL.
- Schmidt, J. A., Rosenberg, J. M., & Beymer, P. N. (2017, August). *Stability and variation in student engagement in science classes: A person-oriented approach*. Paper presented at the Annual Meeting of the American Psychological Association, Washington, DC.
- Beymer, P. N., Rosenberg, J. M., Schmidt, J. A., Naftzger, N., Sniegowski, S., Shumow, L. (August, 2017). *Examining relationships between choice, affect, and engagement in informal STEM programs*. Paper

- presented at the Annual Meeting of the American Psychological Association, Washington, DC.
- Greenhalgh, S. P., Rosenberg, J. M., & Koehler, M. J. (2017, April). *Combining data sets and methods to explore equity in teacher professional development*. In D. G. Krutka (Chair), *Data, big and small*. Symposium conducted at the meeting of the American Educational Research Association, San Antonio, TX.
- Schmidt, J. A., Rosenberg, J. M., & Beymer, P. N. (2017, April). *Momentary engagement profiles: A person-in-context approach to studying student engagement using experience sampling data*. Paper presented at the Annual Meeting of the American Educational Research Association, San Antonio, TX.
- Roseth, C. J., Linnenbrink-Garcia, L., Saltarelli, W., Lee, Y-K., Rosenberg, J. M. . . . & Beymer, P. N. (2017, April). *A design-based intervention on flipped instruction: Longitudinal effects on undergraduates' engagement and achievement*. Paper presented at the Annual Meeting of the American Educational Research Association, San Antonio, TX.
- Mikeska, J. N., Rosenberg, J. M., Holtzman, S., & McCaffrey, D. (2017, April). *Comparing the alignment between two observational measures of science teachers' instructional practice*. Poster presented at the National Association for Research in Science Teaching Annual International Conference, San Antonio, TX.
- Greenhalgh, S. P., Rosenberg, J. M., & Koehler, M. J. (2017, March). *Avoiding madness in our methods*. Paper presented at the Society for Information Technology and Teacher Education International Conference 2017, Austin, TX.
- Rosenberg, J. M., Akcaoglu, M., Staudt Willet, K. B., Greenhalgh, S. P., & Koehler, M. J. (2017, March). *A tale of two Twitters: Synchronous and asynchronous use of the same hashtag*. In P. Resta & S. Smith (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2017* (pp. 283-286). Waynesville, NC: Association for the Advancement of Computing in Education (AACE).
- Kessler, A., & Rosenberg, J. M. (2017, March). *Considering how teachers' TPACK is leveraged during the mental engineering of instruction: A theory of action*. Paper presented at the Society for Information Technology and Teacher Education International Conference 2017, Austin, TX.
- Nyland, R., Greenhalgh, S. P., Rosenberg, J. M., Koehler, M. J., Veletsianos, G., & Kimmons, R. (2016, October). *Public data mining methods, ethics, & legalities*. Panel presented at the Association for Educational Communications and Technology International Convention 2016, Las Vegas, NV.
- Rosenberg, J. M., Greenhalgh, S. P., & Wolf, L. G. (2016, October). *Participating from near and far: Analyzing online graduate learning communities with social network analysis*. Paper presented at the Association for Educational Communications and Technology International Convention 2016, Las Vegas, NV.
- Rosenberg, J. M. (2016, October). *Having agency in conditions that are not equitable: An examination of Donors Choose data*. Paper presented at the Association for Educational Communications and Technology International Convention 2016, Las Vegas, NV.
- Phillips, M., Koehler, M. J., & Rosenberg, J. M. (2016, September). *Contextualising teachers' TPACK development and enactment*. Paper presented at the Australian Council for Computers in Education, Brisbane, Australia.
- Rosenberg, J. M. & Schwarz, C. V. (2016, April). Examining fifth and sixth grade students' epistemic considerations through an automated analysis of embedded assessment items. In B. Reiser (Chair), *Longitudinal studies of elementary and middle school students' epistemic considerations through participation in scientific practice*. Related paper set presented at the National Association for Research in Science Teaching Annual International Conference, Baltimore, MD. (slides)
- Rosenberg, J. M. & Krist, C. (2016, April). *Characterizing students' epistemic considerations: An automated computational approach for embedded assessment responses*. Poster presented at the National Association

- for Research in Science Teaching Annual International Conference, Baltimore, MD. (slides)
- Ranellucci, J., Rosenberg, J. M., Klautke, H., Robinson, K. A., Saltarelli, W., Linnenbrink-Garcia, L., & Roseth, C. J. (2016, April). *Achievement goals, behavioral engagement, and achievement in a flipped undergraduate anatomy course*. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, DC.
- Lee, Y.-K., Rosenberg, J. M., Robinson, K. A., Klautke, H., Seals, C., Saltarelli, W., Linnenbrink-Garcia, L., & Roseth, C. J. (2016, April). *Comparing motivation and achievement in a flipped and traditional classroom*. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, DC.
- Wormington, S. V., Lee, Y.-K., Seals, C., Rosenberg, J. M., Saltarelli, W., Roseth, C. J., & Linnenbrink-Garcia, L. (2016, April). *Predicting profile permanence: When is motivation stable, why does it change, and what are the consequences?* Paper presented at the Annual Meeting of the American Educational Research Association, Washington, DC.
- Ranellucci, J., Robinson, K. A., Rosenberg, J. M., Saltarelli, W., Roseth, C. J., & Linnenbrink-Garcia, L. (2016, April). *Comparing emotions in-class and during online video lectures in a flipped classroom*. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, DC.
- Rosenberg, J. M., Ranellucci, J., Lee, Y.-K., Robinson, K., Saltarelli, W., Linnenbrink-Garcia, L., & Roseth, C. J. (2016, March). *Patterns of engagement in a flipped undergraduate anatomy class and their relations to achievement*. Paper presented at the Society for Information Technology & Teacher Education Annual Conference, Savannah, GA.
- Rosenberg, J. M. (2015, November). *Examining what teachers and researchers discuss at science education conferences through a computational analysis of Twitter data*. Paper presented at the meeting of the Association for Educational Communications and Technology, Indianapolis, IN.
- Rosenberg, J. M., Akcaoglu, M., Hamilton, E., Greenhalgh, S. P., & Koehler, M. J. (2015, November). *Tweeting U.S.A.: An examination of State Educational Twitter Hashtags (SETHs)*. Paper presented at the meeting of the Association for Educational Communications and Technology, Indianapolis, IN.
- Greenhalgh, S. P., Rosenberg, J. M., Keenan, S., & Koehler, M. J. (2015, November). *An investigation of the use of digital portfolios for understanding educators' technology knowledge*. Paper presented at the meeting of the Association for Educational Communications and Technology, Indianapolis, IN.
- Hamilton, E., Rosenberg, J. M., & Akcaoglu, M. (2015, November). *Examining the Substitution Augmentation Modification Redefinition (SAMR) Model for instructional design and technology integration*. Paper presented at the meeting of the Association for Educational Communications and Technology, Indianapolis, IN.
- Mehta, R., Rosenberg, J. M., Russo, T., Arnold, B., Marich, H., & Bell, J. (2015, November). *A survey of social media use and the effects of a social media initiative on graduate student engagement*. Paper presented at the meeting of the Association for Educational Communications and Technology, Indianapolis, IN.
- Rosenberg, J. M., & Koehler, M. J. (2015, April). Context and Technological Pedagogical Content Knowledge: A content analysis. In J. M. Rosenberg & M. J. Koehler (Chairs), *Addressing the complexity of teaching with technology: Context and Technological Pedagogical Content Knowledge*. Symposium conducted at the American Educational Research Association Annual Meeting, Chicago, IL.
- Hamilton, E., Rosenberg, J. M., & Akcaoglu, M. (2015, April). *The Substitution Augmentation Modification Redefinition (SAMR) framework for technology integration: Challenges to its use for guiding K-12 teacher's pedagogy and practice*. Paper presented at the American Educational Research Association Annual Meeting, Chicago, IL.
- Rosenberg, J. M., Ervin, L., Harris, J., Greenhow, C., Kessler, A., & Tai, D. (2015, March). *How should educational technology researchers consider context? An interactive discussion on context and teaching*

*and learning with technology*. Panel presented at the meeting of the Society for Information Technology and Teacher Education International Conference, Las Vegas, NV.

Akcaoglu, M., & Rosenberg, J. M. (2015, March). *Best practices for designing synchronous and asynchronous online teaching for adult learners*. Poster presented at the meeting of the Society for Information Technology and Teacher Education, Las Vegas, NV.

Rosenberg, J. M., Schwarz, C. V., & Lee, S. W.-Y., & Akcaoglu, M. (2015, April). A comparative longitudinal case study of the use of scientific modeling in the pedagogical practice of two fifth-grade science teachers. In A. Lo (Chair), *Leveraging the epistemic dimensions of scientific practice to support students' meaningful engagement in modeling*. Related paper set presented at the National Association for Research in Science Teaching Annual International Conference, Chicago, IL.

Rosenberg, J. M., Schwarz, C.V., Akcaoglu, M., & Lee, S.W-Y. (2014, October). *Comparative longitudinal case studies of two middle school teachers' use of scientific modeling*. Poster presented at the Advances in Educational Psychology Conference. Fairfax, VA.

Lee, M., Schwarz, C. V., Ke, L., & Rosenberg, J. M. (2014, April). *Analyzing fifth-grade students' engagement in scientific modeling: Changes in students' epistemologies-in-practice over time*. Paper presented at the meeting of the National Association for Research in Science Teaching, Philadelphia, PA.

Ke, L., Schwarz, C. V., Lee, M. & Rosenberg, J. M. (2014, April). *Examining elementary students' attention to mechanism as they engage in scientific modeling across content areas*. Paper presented at the meeting of the National Association for Research in Science Teaching, Philadelphia, PA.

Koehler, M. J., Rosenberg, J. M., Greenhalgh, S., Zellner, A. L., & Mishra, P. (2014, March). Analyzing students' portfolios for the development of TPACK. In J. Voogt (Chair), *Artifacts demonstrating teachers' technology integration competencies*. Symposium presented at the meeting of the Society for Information Technology and Teacher Education, Jacksonville, FL.

## Invited Talks

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.

## Other Presentations

Rosenberg, J. M., Dyer, E. B., Anderson, D. J., & Fischer, C. (September, 2020). *If you're happy and you know it, post a tweet? A study of the sentiment of posts to the #NGSSchat hashtag on Twitter*. Presentation at the AERA Satellite Conference on Educational Data Science, Stanford, CA.

Dyer, E. B., Rosenberg, J. M., Bosch, N., Krist, C., & D'Angelo, C. (September, 2020). *Better together? Initial findings and implications from combining qualitative coding and computational methods to analyze classroom audiovisual data*. Presentation at the AERA Satellite Conference on Educational Data Science, Stanford, CA.

Anderson, D., Rosenberg, J. M., Sáez, L., & Seeley, J. R. (September, 2020). *Using extreme gradient boosting to estimate community effects on school readiness*. Presentation at the AERA Satellite Conference on Educational Data Science, Stanford, CA.

- Estrellado, R. A., Bovee, E. A., Mostipak, J., Rosenberg, J. M., & Velásquez, I. C. (July, 2020). *Expanding R into education*. Presentation at the useR conference, St. Louis, MO.
- Rosenberg, J. M., Qinyun, L., Xu, R., Maroulis, S., & Frank, K. A. (July, 2020). *The konfound R package and Shiny app for robustness analysis*. Presentation at the useR conference, St. Louis, MO.
- Rosenberg, J. M., & Lishinski, A. (January, 2020). *Measuring what matters in-the-moment: An experience sampling approach to understanding the development of interest in computer science*. Presentation at the 14th Annual Tennessee STEM Education Research Conference, Cookeville, TN.
- Rosenberg, J. M., Hodge, L., Aydeniz, M., Schmidt, A. Lishinski, A., Rich, K., Longnecker, J., Mann. M., & Sadovnik, A. (January, 2020). *A survey of teachers and administrators regarding the implementation of new K-8 computing education standards in Tennessee*. Presentation at the 14th Annual Tennessee STEM Education Research Conference, Cookeville, TN.
- Camponovo, M., Lawson, M. A., & Rosenberg, M. J. (July, 2019). *Integrating geospatial tech with math and science pre-service teachers. 2019 Education Summit @ ESRI UC*. San Diego, CA.
- Jones, R. S., & Rosenberg, J. M. (February, 2019). *Latent class modeling of whole class discussions about data, statistics, and probability*. Presentation at the 13th Annual Tennessee STEM Education Research Conference, Murfreesboro, TN.
- Lawson, M., Rosenberg, J. M., & Camponovo, M. (February, 2019). *Better together? Findings from a combined, integrated STEM unit with pre-service mathematics and science teachers*. Presentation at the 13th Annual Tennessee STEM Education Research Conference, Murfreesboro, TN.

## Workshops

- Dyer, E. B., D'Angelo, D., Bosch, N., Krist, C., & Rosenberg, J. M. (2020, June). *Analyzing learning with speech analytics and computer vision methods: Technologies, principles, and ethics*. Workshop to be carried out at the International Conference of the Learning Sciences, Nashville, TN.
- Staudt Willet, K. B., Rosenberg, J. M., & Greenhalgh, S. P. (2020, March). *R U ready 4 R? Introduction to Analyzing Educational Internet Data Using R*. Workshop carried out for the *Students, Social Media, and Schools Research Group* at Florida State University, Tallahassee, FL.
- Rosenberg, J. M. (2020, January). *An introduction to using R for data science (zero prerequisites required!)*. Workshop carried out for the KnoxData group, Knoxville, TN.
- Rosenberg, J. M., Staudt Willet, K. B., & Greenhalgh, S. P. (2019, October). *Online data and open source tools: Analyzing educational internet data Using R*. Workshop carried out at the Association for Educational Communications and Technology, Las Vegas, NV.
- Rosenberg, J.M. (September, 2019). *An introduction to data science in education using R*. Workshop at Middle Tennessee State University. Middle Tennessee State University, Murfreesboro, TN.
- Rosenberg, J. M. (2019, June). *The use of mixed effects models for analyzing complex data*. Presentation for the KnoxData group, Knoxville, TN. YouTube recording: <https://www.youtube.com/watch?v=1YY2FoCFIm4>
- Rosenberg, J. M. (2019, May). *Won't you be my neighbor? An introduction to R for data science in education*. Workshop carried out for the Educational Psychology and Educational Technology program, Michigan State University.
- Anderson, D. J., and Rosenberg, J. M. (2019, April). *Transparent and reproducible research with R*. Workshop carried out at the Annual Meeting of the American Educational Research Association, Toronto, Canada.
- Rosenberg, J. M. (2017, April). *Introduction to R for Data Analysis*. Presentation at the School of Criminal Justice, Michigan State University.
- Rosenberg, J. M. (March, 2016). *An introduction to R for programming and statistical analysis in education*. Georgia Southern University College of Education, Statesboro, GA.

## Outreach and Engagement

- Rosenberg, J. M. (2020, April). *An informal, open introduction to using R Markdown in education*. Virtual workshop. <https://www.youtube.com/watch?v=BA1YFvmXCXQ&t=57s>
- Rosenberg, J. M. (2019, May). *Working with data in education: Using data and supporting students to use data*. Workshop carried out for teachers at Knoxville Jewish Day School. <https://docs.google.com/presentation/d/1uSdRvF2GjhUpO2fCHZIUdXmf0texzczGGlBzmZBggw/edit?usp=sharing>
- Trout-Fryxell, B., & Rosenberg, J. M. (2020, February). *Authentic science in the classroom with MEGA:BITESS*. Presentation at the Knox County Schools Science Department District Learning Day, Knoxville, TN.
- Ranellucci, J., & Rosenberg, J. M. (2016, February). *Motivating our students: A partnership between Michigan Virtual Schools and Michigan State University*. Workshop at Michigan Virtual University, East Lansing, MI.
- Rosenberg, J. M. (2014, April). *Action research with mobile devices and other “disruptive” technologies*. Presentation at the Best of the Michigan Association for Computer Users in Learning Conference, Waterford, MI.
- Rosenberg, J. M. (2014, February). *Action research with mobile devices*. Presentation at the Michigan Association for Computer Users in Learning Mobile Learning Conference, Kalamazoo, MI.
- Sawaya, S., & Rosenberg, J. M. (2014, February). *Master of Arts in Educational Technology Mobile Learning Workshop*. Workshop at Michigan State University, East Lansing, MI.

## Teaching

### Teaching Awards

MSU-AT&T Instructional Technology Award: Best Online Course, 2014

MSU-AT&T Instructional Technology Award (Honorable Mention): Best Online Course, 2013

### Courses Taught

Instructor at the University of Tennessee, Knoxville:

*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)

Teaching Assistant at Michigan State University:

*Proseminar in Educational Psychology and Educational Technology* (CEP 900, Ph.D. class)

*Proseminar in Educational Technology* (CEP 807 / ED 870, M.A. class)

*Educational Inquiry* (CEP 900, Ph.D. class)

*Social-Emotional Development Across the Lifespan* (CEP 904, Ph.D. class)

## Service

### Editorial Service

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

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

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

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

### **Service to the Profession**

American Educational Research Association, Division C, Section 1D: Science Program Co-Chair, 2019-2021

Panelist, National Science Foundation, 2020

Member, Technological Pedagogical Content Knowledge (TPACK) Special Interest Group (SIG) Award Committee, 2019

Co-chair, TPACK SIG, Society for Information Technology and Teacher Education , 2015-2017

Membership Committee, Division 15 (Educational Psychology), American Psychological Association (APA), 2014-2017

Communications Deputy, Division C, American Educational Research Association, 2015-2016

Associate Chair, TPACK SIG, Society for Information Technology and Teacher Education, 2014-2015

### **Conference Review Activity**

Review Panel Member, American Educational Research Association (AERA) Annual Meeting, 2015-2019

Reviewer, National Association for Research in Science Teaching Annual Conference, 2019

Reviewer, Association for Science Teacher Education Annual Conference, 2019

Program Committee Member, International Conference on Computer-Supported Collaborative Learning, 2017

Graduate Student Reviewer, American Educational Research Association (AERA) Annual Meeting, 2014

Reviewer, Association for Educational Communications and Technology (AECT) International Convention, 2016

Reviewer, American Psychological Association (APA) Convention, 2015

### **Service to the Community**

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

### **Ad-hoc Journal Article Reviews**

AERA Open (2019)

Australasian Journal of Educational Technology (2018: 2)

British Journal of Educational Technology (2016)

Computers & Education (2016, 2017, 2018, 2020)

Contemporary Educational Psychology (2018)

Contemporary Issues in Technology and Teacher Education (2015)

Educational Researcher (2020)

Education Sciences (2; 2019)

Educational Technology Research & Development (2020) E-Learning and Digital Media (2016: 2)

Journal of Educational Technology & Society (2017)

Journal of the Learning Sciences (2019)

Journal of Open Source Education (2019)



Journal of Open Source Software (2018; 2020)  
Journal of Research in Science Teaching (2019)  
Journal of Science Education and Technology (2019: 2; 2020)  
Journal of STEM Education Research (2019)  
TechTrends (2019: 2)

### **College-related Service**

Member, Online Academic Programs Investment and Growth Plan ad-hoc committee  
Organizer, Quantitative Methods Research Group

### **Departmental Service**

*University of Tennessee, Knoxville*

Mentor for AERA Bootcamp (2019)  
VolsTeach major ad-hoc committee (2019-)

*Michigan State University*

Search Committee Member, Program Specialist, Master of Arts in Educational Technology Program, Michigan State University, 2015

### **Program Service and Service on Student Committees**

*University of Tennessee, Knoxville*

Advisor for Doctoral students: Jennifer Longnecker (Co-advisor with Amy Broemmel), Michael Mann (co-advisor with Kristin Rearden), Omiya Sultana (co-advisor with Lynn Hodge)

Committee member for a Doctoral student: Shande King, Matthew Hensley

*Michigan State University*

Member of two practicum committees for Educational Psychology and Educational Technology program Ph.D. students, Michigan State University, 2014-2018

### **Campus and Departmental Presentations**

Rosenberg, J. M. (2020, January). *Multiple uses for multi-level models: Examples from recent research*. Presentation for the College of Education, Health, and Human Sciences Quantitative Methods Brownbag Seminar, Knoxville, TN.

Rutherford, T., & Rosenberg, J. M. (2019, February). *Motivational correlates of choice after failure within an elementary mathematics software*. Presentation at the NC State College of Education Celebration of Research.

Rosenberg, J. M. (2019, January). *Engaging students in science: Findings from an experience sampling method approach*. Presentation at the East Tennessee STEM Hub Crossing Boundaries for STEM Teaching regional meeting and mini-conference. Knoxville, TN.

Rosenberg, J. M., Beymer, P. N., & Schmidt, J. A. (2017, February). *Does choosing the problem or topic matter? Using a person-in-context approach to understand student engagement in science*. Poster presented at the Create4Stem MiniConference 2017, East Lansing, MI.

Rosenberg, J. M. (2016, April). *Momentary engagement profiles: An examination of student engagement in science settings using experience sampling methodology*. Presentation at the Michigan State University Educational Psychology and Educational Technology Program Informal Colloquium, East Lansing, MI.

- Rosenberg, J. M., & Schwarz, C. V. (2016, February). *Examining the development of fifth and sixth grade students' epistemic considerations over time through an automated analysis of embedded assessment items*. Poster presented at the Create4Stem MiniConference 2016, East Lansing, MI.
- Rosenberg, J. M. (2015, September). *Achievement goals, in- and out-of-class engagement, and students' achievement in a flipped undergraduate anatomy class*. Presentation at the Michigan State University Educational Psychology and Educational Technology Program Informal Colloquium, East Lansing, MI.
- Rosenberg, J. M., Akcaoglu, M., Schwarz, C.V., & Lee, S.W-Y. (2015, February). *Comparative longitudinal case studies of two middle school teachers' use of scientific modeling*. Poster presented at the Create4Stem MiniConference 2015, East Lansing, MI.
- Lee, M., Schwarz, C.V., Ke, L., Rosenberg, J. M., Reiser, B., Berland, L., Kenyon, L., Wilson, M., Draney, K. (2015, February). *Epistemic considerations in scientific practices for elementary & middle schools*. Poster presented at the Create4Stem MiniConference 2015, East Lansing, MI.
- Wolf, L. G., Henriksen, D., Sawaya, S., & Rosenberg, J. M. (2014, December). *EdCamp with Team MAET*. Presentation at the Michigan State University Master of Arts in Educational Technology Bridge Webinar Series, East Lansing, MI.
- Rosenberg, J. M. (2014, November). *Integrating "disruptive" technologies into teaching with action research and Technological Pedagogical Content Knowledge (TPACK)*. Presentation at the Michigan State University Educational Technology Conference, East Lansing, MI.
- Wolf, L. G., Henriksen, D., Sawaya, S., & Rosenberg, J. M. (2014, March). *Mobile learning for educators*. Presentation at the Michigan State University Master of Arts in Educational Technology Bridge Webinar Series, East Lansing, MI.
- Rosenberg, J. M. (2014, February). *Context and Technological Pedagogical Content Knowledge: Preliminary results of a content analysis*. Presentation at the Michigan State University Educational Psychology and Educational Technology Program Informal Colloquium, East Lansing, MI.
- Ke, L., Lee, M., Rosenberg, J. M., & Schwarz, C.V. (2014, February). *Modeling across content areas: Examining elementary students' attention to mechanism*. Poster presented at the Create4Stem MiniConference 2014, East Lansing, MI.
- Rosenberg, J. M., Rapa, L., & Wolf, L. G. (2013, February). *CEP 815 and the transition from ANGEL to Desire2Learn*. Poster presented at the 6th Annual Faculty Technology Showcase.
- Rosenberg, J. M. (2012, November). *Mobile learning for teachers*. Presentation at the Michigan State University Educational Technology Conference, East Lansing, MI.

## Software

### Author of R packages on Comprehensive R Archive Network (CRAN)

- 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., Schmidt, J. A., Beymer, P. N., & Steingut, R. (2018). *prcr: Person-Centered Analysis* [R package]. <https://CRAN.R-project.org/package=prcr>
- Rosenberg, J. M., & Lishinski, A. (2018). *clustRcompaR: Easy interface for clustering a set of documents and exploring group-based patterns* [R package]. <https://github.com/alishinski/clustRcompaR>

## Contributor to R package on CRAN

D'Agostina McGowan, L., Hester, J., Rosenberg, J. M., & Leek, J. (2020). *\*tidycode: Analyze Lines of R Code the Tidy Way*. <https://github.com/LucyMcGowan/tidycode>

## Author of R packages on GitHub

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>

Anderson, D. Heiss, A., and Rosenberg, J. M. (2019). *equatiomatic: Transform Models into LaTeX Equations*. <https://github.com/datalorax/equatiomatic>

Velásquez, I. and Rosenberg, J. M. (2019). *leaidr: U.S. School District Shapefiles* <https://github.com/ivelasq/leaidr>

Seo, J., & Rosenberg, J. M. (2020). *jladown: Writing a Reproducible Article for Journal of Learning Analytics in R Markdown*. <https://github.com/jooyoungseo/jladown>

Staudt Willet, B., & Rosenberg, J. M. (2020). *tidytags: Simple Collection and Powerful Analysis of Twitter Data* <https://github.com/bretsw/tidytags>

## Interactive Web Applications

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

Rosenberg, J. M., & Krist, C. (2019). *Generality embedded assessment classifier*. <https://jmmichaelrosenberg.shinyapps.io/generality-shiny/>

Rosenberg, J. M. (2019). *How many (MCMC) cores?* <https://jmmichaelrosenberg.shinyapps.io/how-many-cores/>

Rosenberg, J. M. (2016). *State Educational Twitter Hashtags (SETHs)*. <https://jmmichaelrosenberg.shinyapps.io/SETHs/>

## Computational Science Simulation

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

## Python-Based Web Application

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>

## Other Projects

I have contributed to a number of open-source projects by filing issues or making suggestions: <https://github.com/search?q=is%3Aissue+author%3Ajrosen48&type=Issues>

## Miscellaneous

### Competitive Research Training

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

New Faculty Mentoring Program, AERA Division C, 2019

Graduate Student Seminar, AERA Division C, 2016

Early Career Seminar, Association for Educational Communications and Technology, 2015

Research Methods with Diverse Groups Advanced Training Institute, American Psychological Association, 2014

### **Media**

2020, Education Data Chat podcast, <https://www.buzzsprout.com/1074286/4993430>

2019, Flowing Data, Teaching R to 7th Graders, <https://flowingdata.com/2019/11/26/teaching-r-to-7th-graders/>

2016, Innovative Education in VT, <https://tiie.w3.uvm.edu/blog/educators-on-twitter/#.XzkFq5NKiHE>

### **Podcast**

2018-2019, Co-host, *Impodster Syndrome* podcast

### **Consulting**

2017-2019, Statistical software development, Kenneth Frank, Michigan State University

2017, Statistical analysis, Yael Shwartz, Weizmann Institute

2016, Statistical analysis, Lara Kassab, San Jose State University

### **Professional Affiliations**

American Educational Research Association, 2012 - Present

International Society of the Learning Sciences, 2014 - Present

National Association for Research in Science Teaching, 2015 - Present