Joseph M. Reilly

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EDUCATION

2015 – 2020	Harvard University, Ph.D. in Education Dissertation: "*Dynamic Feedback as Automated Scaffolding to Support Learners and Teachers in Guided Authentic Scientific Inquiry Settings*"
2010 – 2012	American University, M.A. in Special Education: Learning Disabilities Thesis: "*The Value of Content-Area Literacy in Mathematics for Students with Learning Disabilities*"
2005 – 2009	Georgetown University, B.S. in Chemistry with Honors

TEACHING INTERESTS

Educational data mining
Immersive virtual environments
Authentic scientific inquiry
Multi-modal learning analytics
Stealth assessment of student understanding
Automated dynamic scaffolding
Augmented and virtual reality
Design-based research

HONORS AND AWARDS

2019 Graduate School of Arts & Sciences Dissertation Completion Fellowship
2019 Harvard Graduate School of Education Doctoral Travel Grant
2017 Data Consortium Fellowship, National Science Foundation
2017 Graduate Research Fellowship, National Science Foundation (Honorable Mention)

RESEARCH GRANTS

Reilly, J. & Dede, C. (2017). EcoLENS: Automated Guidance on Students' Performance in an Immersive Authentic Simulation to Support Engagement, Learning and Metacognition in Ecosystems Science, Cheng Yu Tung Research Innovation Fund, $87,000.

JOURNAL ARTICLES & BOOK CHAPTERS

Reilly, J., Dede, C. & Grotzer, T. (In revision). Learning from Log Files: Novel Assessment and Feedback Strategies for Immersive Virtual Environments. *Journal of Science Education and Technology*.

Reilly, J., & Schneider, B. (In revision). Evaluating Dyad Collaboration Using Motion Sensors and Multi-Modal Learning Analytics. *Educational Technology Research and Development*.

Metcalf, S., **Reilly, J.**, Jeon, S., Wang, A., Pyers, A., Brennan, K., & Dede, C. (In revision). Assessing Student Learning about Computational Thinking through the Lenses of Functionality and Computational Fluency. *Computer Science Education*.

Gonzales, E., Grotzer, T., McGiveny, E., & **Reilly, J.** (In revision). Details Matter: How Contrasting Design Features in Two MUVEs Impact Learning Outcomes. *Technology, Knowledge and Learning*.

Reilly, J., McGivney, E., Dede, C. & Grotzer, T. (2020). Assessing Science Identity Exploration in Immersive Virtual Environments: A Mixed Methods Approach. *Journal of Experimental Education*.

Schneider, B., **Reilly, J.**, & Radu, I. (2020). Lowering Barriers for Accessing Sensor Data in Education: Lessons Learned from Teaching Multimodal Learning Analytics to Educators. *Journal for STEM Education Research, 3*, 91 – 124.

Reilly, J. & Dede, C. (2019). Augmented Reality in Education. In Zhang, A. & Cristol, D. (Eds.), *Handbook of Mobile Teaching and Learning*, 1337 – 1351. Springer, Singapore.

Metcalf, S., **Reilly, J.**, Kamarainen, A., Dede, C., & Grotzer, T. (2018). Supports for Deeper Learning of Inquiry-Based Ecosystem Science in Virtual Environments - Comparing Virtual and Physical Concept Mapping. *Computers in Human Behavior*, *87*, 459 – 469.

Kamarainen, A., **Reilly, J.**, Metcalf, S., Grotzer, T., & Dede, C. (2018). Using Mobile Location-Based Augmented Reality to Support Outdoor Learning in Undergraduate Ecology and Environmental Science Courses. *The Bulletin of the Ecological Society of America*, *99*(2), 259 – 276.

REFEREED CONFERENCE PROCEEDINGS

Reilly, J. & Dede, C. (2019). Stealth Assessment via Deep Learning in an Open-Ended Virtual Environment. In *Proceedings of the 12th International Conference on Educational Data Mining*, 643 – 646.

Reilly, J. & Schneider, B. (2019). Predicting the Quality of Collaborative Problem Solving Through Linguistic Analysis of Discourse. In *Proceedings of the 12th International*

Conference on Educational Data Mining, 149 – 157.

Reilly, J. & Dede, C. (2019). Differences in Student Trajectories via Filtered Time Series Analysis in an Immersive Virtual World. In *Proceedings of the 9th International Conference on Learning Analytics & Knowledge*, 130 – 134.

Reilly, J., Kumar, V., Berland, M., & Dede, C. (2018). Learning Analytics in a Teacher Dashboard to Facilitate Inquiry-Based Instruction. In *Proceedings of the 2018 Connected Learning Summit*, 377 – 378.

Dickes, A., Metcalf, S., Kamarainen, A., **Reilly, J.**, Brennan, K., Grotzer, T., & Dede, C. (2018). EcoMOD: Integrating Computational Thinking into Ecosystems Science Education via Modeling in Immersive Virtual Worlds. In *Proceedings of the 2018 Connected Learning Summit*, 387 – 388.

Reilly, J., Ravenell, M., & Schneider, B. (2018). Exploring Collaboration Using Motion Sensors and Multi-Modal Learning Analytics. In K.E. Boyer & M. Yudelson (Eds.), *Proceedings of the 11th International Conference on Educational Data Mining*, 247 – 257.

Dich, Y., **Reilly, J.**, & Schneider, B. (2018). Using Physiological Synchrony as an Indicator of Collaboration Quality, Task Performance and Learning. In *Proceedings of the 19th International Conference on Artificial Intelligence in Education*, 98 – 110.

Starr, E., **Reilly, J.**, & Schneider, B. (2018). Using Multi-Modal Learning Analytics to Support and Measure Collaboration in Co-Located Dyads. In *Proceedings of the 13th International Conference on the Learning Sciences*, 448 – 455.

Xie, B., Dich, Y., **Reilly, J.**, & Schneider, B. (2018) Augmenting Qualitative Analyses of Collaborative Learning Groups Through Multi-Modal Sensing. In *Proceedings of the 13th International Conference on the Learning Sciences*, 608 – 615.

INVITED PRESENTATIONS

Reilly, J. (2020, February). *Automated Assessment and Scaffolding to Support Learners and Teachers in Guided Authentic Scientific Inquiry Settings*. Talk presented at the Massachusetts Institute of Technology. Cambridge, MA.

Dede, C. & **Reilly, J.** (2019, January). *Scaffolding Sophisticated Performances: Interpreting Steams of Learner Behaviors in Open-Ended Complex Settings*. Keynote presented at the 13th IEEE International Conference on Semantic Computing. Long Beach, CA.

CONFERENCE AND OTHER PRESENTATIONS

Reilly, J., (2021, April). *Impact of a Blended Immersive and Computational Modeling Tool on Elementary Ecosystems Science Learning*. Paper to be presented at the annual meeting of the American Educational Research Association. Orlando, FL.

Reilly, J., (2021, April). *Automatic Assessment of Electronic Causal Maps for Authentic Scientific Inquiry*. Paper to be presented at the 93nd Annual International Conference of the National Association for Research in Science Teaching.

Metcalf, S., Dickes, A., **Reilly, J.**, Kamarainen, A., Jeon, S., Brennan, K., Grotzer, T. & Dede, C. J. (2020, April). *Impact of a Blended Immersive and Computational Modeling Tool on Elementary Ecosystems Science Learning*. Paper presented at the annual meeting of the American Educational Research Association. San Francisco, CA. (Conference Canceled)

McGivney, E. & **Reilly, J.** (2020, March). *Adolescents' Science Identity in an Immersive Virtual Environment*. Poster presented at the biennial meeting of the Society for Research on Adolescence. San Diego, CA.

Reilly, J., Metcalf, S., Studwell, J., Dede, C. & Grotzer, T. (2019, April). *Automatic Evaluation of Concept Maps from an Immersive Virtual World for Ecosystem Science Learning*. Paper presented at the annual meeting of the American Educational Research Association. Toronto, Canada.

Reilly, J., Kamarainen, A., Metcalf, S., Dede, C. & Grotzer, T. (2019, March). *The Importance of Time and Sequence on Learning in Mobile Augmented Reality*. Paper presented at the 92nd Annual International Conference of the National Association for Research in Science Teaching. Baltimore, MD.

Metcalf, S., **Reilly, J.**, Dede, C. & Grotzer, T. (2019, March). *Linking Evidence and Concept Maps in Virtual Environments for Ecosystems Science Learning*. Paper presented at the 92nd Annual International Conference of the National Association for Research in Science Teaching. Baltimore, MD.

Kamarainen, A., **Reilly, J.**, Bressler, D., Tutwiler, S., Thompson, M., Grotzer, T. & Dede, C. (2019, March). *Developing scientific explanations in the face of highly-variable real world data collection supported by augmented reality and environmental probeware*. Paper presented at the 92nd Annual International Conference of the National Association for Research in Science Teaching. Baltimore, MD.

Dede, C. & **Reilly, J.** (2018, November). *Cognitive Assistants as Coaches for Experience-based Learning*. Plenary session presented at the NSF Scalable Advanced Learning Ecosystems (SALE) Summit. Atlanta, GA.

Reilly, J. & Dede, C. (2018, October). *Filtered Time Series Analysis of Scientific Inquiry in an Immersive Virtual World*. Poster presented at the 2nd Education Technology and Computational Psychometrics Symposium. Iowa City, IA.

Reilly, J. & Dede, C. (2018, July). *Dynamic Feedback as Automated Scaffolding to Support Learners and Teachers in Guided Authentic Scientific Inquiry Settings*. Doctoral consortium paper presented at the 11th International Conference on Educational Data Mining. Buffalo, NY.

Dickes, A., Metcalf, S., Kamarainen, A., **Reilly, J.**, Brennan, K., Grotzer, T., & Dede, C. (2018, February). *EcoMOD: Integrating Computational Thinking into Ecosystems Science Education via Modeling in Immersive Virtual Worlds*. Poster presented at the 49th ACM Technical Symposium on Computer Science Education. Baltimore, MD.

Reilly, J., Kamarainen, A., Metcalf, S., Grotzer, T., Tutwiler, M.S., & Dede, C. (2017, May). *Evaluating Middle School Students' Integration of Variable Data in Scientific Explanations*. Paper presented at the annual meeting of the American Educational Research Association. San Antonio, TX.

Reilly, J. (2017, April). *Authentic Scientific Inquiry via a Tabletop Role-Playing Game*. Poster presented at the 22nd annual Student Research Conference at the Harvard Graduate School of Education. Cambridge, MA.

TEACHING EXPERIENCE

2015 – 2018	Teaching Fellow, Harvard Graduate School of Education *Transforming Education Through Emerging Technologies* *Multi-Modal Learning Analytics* *Motivation and Learning: Technologies that Invite and Immerse*
2012 – 2015	Chemistry Teacher, Blue Ridge School in St. George, VA
2009 – 2012	Science Teacher, Lab School of Washington in Washington, DC

RESEARCH AND PROFESSIONAL EXPERIENCE

2020 – Present	Data Scientist at Wayfair

Fall 2020	Postdoctoral Fellow in Education, Harvard Graduate School of Education
2015 – 2020	Doctoral Researcher, EcoLEARN at Harvard University Projects: EcoMOBILE, EcoXPT, EcoMOD Principal Investigators: Tina Grotzer, Chris Dede, & Karen Brennan
2017 – 2019	Collaborator, LIT Lab at Harvard University Principal Investigator: Bertrand Schneider

MEMBERSHIPS AND SERVICE

Member of American Educational Research Association, International Educational Data Mining Society, Society for Learning Analytics Research, Sigma Xi Scientific Research Society

Reviewer for Computers & Education, Journal of Science Education and Technology, AERA Annual Conference, NARST Annual Conference, ICLS Bi-annual Conference

Vice President of Operations for Harvard Big Data Club (2018 – 2019)