

Celeste R. Nicholas

Curriculum Vitae

Center for Research on Learning and Technology
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EDUCATION

Ph.D. Dept of Educator Preparation and Leadership, University of Missouri – St. Louis, 2017

B.A. Department of Psychology, Miami University, Oxford, 2008

Credentials: Middle School/Jr HS/HS Life Science Teaching License, Grades 5-12
Chemistry Teaching License, State of Indiana

PROFESSIONAL EXPERIENCE

2018-present Postdoctoral Research Associate in Science Education, Center for Research on Learning and Technology, Indiana University

2017-2018 Postdoctoral Research Associate in STEM Education, Center for P-16 Research and Collaboration, Indiana University

PUBLICATIONS

Peer Reviewed Journal Articles

Forthcoming McClain, J., **Nicholas, C.**, Pierce, E., Zimmermann, K., Danish, J.A., & Zhong, Q. (In press). Using multiple representations to shine light on unobservable Earth science phenomena. *Science and Children*.

Park Rogers, M., Hmelo-Silver, C., **Nicholas, C.**, and Danish, J. (In press). The POWER of Representations: Portraying Observations to Warrant Explanation and Reasoning in Science. *Science and Children*.

2020 **Nicholas, C.** & Eastman-Mueller, H. Supporting critical social analysis: Empowering processes in a reproductive justice youth program. *Urban Review*, 52(4), 708-729. <https://doi.org/10.1007/s11256-020-00548-0>

2019 Cross Francis, D., Tan, V. & **Nicholas, C.** Supporting disciplinary and interdisciplinary knowledge development and design thinking in an informal, pre-engineering program: A workplace simulation project. *School Science & Mathematics*, 119 (7), 382-395. <https://doi-org.proxyiub.uits.iu.edu/10.1111/ssm.12364>

2019 **Nicholas, C.**, Eastman-Mueller, H. & Barbich, N.. Empowering change agents: Youth organizing groups as sites for sociopolitical development. *American*

Journal of Community Psychology, 63 (1-2), 46-60. [https://doi-org.proxyiub.uits.iu.edu/10.1002/ajcp.12315](https://doi.org/proxyiub.uits.iu.edu/10.1002/ajcp.12315)

- 2019 Tan, V., **Nicholas, C.**, Scribner, A., & Cross Francis, D. Enhancing STEM learning through an interdisciplinary, industry-generated project. *Technology and Engineering Teacher*, 79 (1). Retrieved from <https://www.iteea.org/Publications/Journals/TET/TETSept2019.aspx>
- 2017 **Nicholas, C.** SciJourn is magic: Construction of a science journalism community of practice. *Cultural Studies of Science Education*, 12 (2), 275-298. <https://doi.org/10.1007/s11422-015-9724-2>
- 2015 **Nicholas, C.** & Peterson, J. Biomimicry: The "natural" intersection of biology and engineering. *Science Scope*, 38 (7), 18-24. Retrieved from <https://ngss.nsta.org/Resource.aspx?ResourceID=567>

Peer Reviewed Conference Proceedings

- 2020 **Nicholas, C.**, McClain, J., Park Rogers, M., & Danish, J.A. Elementary teachers' elicitation of students' funds of knowledge to support science learning with representations. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020*, 4 (2151-2158). Nashville, Tennessee: International Society of the Learning Sciences. Retrieved from <https://repository.isls.org/handle/1/6506>
- 2020 Danish, J., Stiso, C., **Nicholas, C.**, Hmelo-Silver, C. E., Rogers, M. P., & Cross Francis, D. What, how, and why do elementary teachers think about using representations in their science teaching?. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020*, 4 (1934-1941). Nashville, Tennessee: International Society of the Learning Sciences. Retrieved from <https://repository.isls.org/handle/1/6476>

Manuscripts In Submission

Nicholas, C. & Scribner, A. (second round review). Enhancing PBL authenticity by engaging STEM professional volunteers. *Interdisciplinary Journal of Problem-Based Learning*

Danish, J.A., Johnson, H., **Nicholas, C.**, Cross Francis, D. Hmelo-Silver, C., Park Rogers, M.,...Enyedy, N. (first round review). Video as context for learning how to mediate inquiry learning with representations *Learning, Culture and Social Interaction*.

Manuscripts in Preparation

Danish, J.A., **Nicholas, C.**, Stiso, C., Hmelo-Silver, C., Park Rogers, M., & Cross Francis, D. Teachers' evolving ideas about using representations to support science learning.

Nicholas, C., McClain, J., & Park Rogers, M. Preparing for equity-focused professional development: Elementary teachers' existing views and practices around students' science knowledge.

Park Rogers, M., **Nicholas, C.**, Danish, J., Gerber, A., McClain, J., Phillips, A., Stiso, C., and Zhong, Q. Elementary teachers' developing perceptions of the role of representations in teaching science.

Published Curricula

- 2015 Launius, C. & **Nicholas, C.** IdeaBuilder. Signature Programs, Springboard to Learning, St. Louis, MO. Retrieved from <http://www.springboardstl.org/causes/ideabuilder/>
- 2014 **Nicholas, C.** Project Health. Signature Programs, Springboard to Learning. St. Louis, MO. Retrieved from <http://www.springboardstl.org/causes/project-health/>

AWARDS AND FELLOWSHIPS

- 2014-2017 Recruitment Fellowship, University of Missouri-St. Louis, \$5000 annually
- 2013 New Science Teacher Academy Fellowship, National Science Teachers Association (NSTA)

INVITED TALKS

- 2013 Experience the SciJournal process: Sources and paraphrasing. Presentation at the Louisville Writing Project Conference, University of Louisville.

PEER REVIEWED CONFERENCE PARTICIPATION

Papers

- 2021 Zhong, Q., **Nicholas, C.**, Hmelo-Silver, C., Danish, A. Exploring an elementary teacher's knowledge and practices with science representations over two years of professional development. Presented at Association for Science Teacher Education (ASTE) International Conference. Virtual Conference.
- 2021 Philips, A., Park Rogers, M., Cross Francis, D., & **Nicholas, C.** The intersection of teacher orientations, efficacy and emotions in a coaching context. Presented at Association for Science Teacher Education (ASTE) International Conference.

- 2020 Danish, J., Stiso, C., **Nicholas, C.**, Hmelo-Silver, C., Park Rogers, M., and Cross Francis, D. (2020). What, how, and why do elementary teachers think about using representations in their science teaching? Presented at the International Conference on the Learning Sciences (ICLS). Nashville, TN.
- 2020 **Nicholas, C.**, Park Rogers, M., Danish, J., Hmelo-Silver, C., Zhong, Q., Stiso, C., Phillips, A., McClain, J., Gerber, A. Rural elementary teachers' perceptions about incorporating representations into their science teaching. Accepted at the National Association for Research in Science Teaching (NARST) International Conference. Portland, OR. (Conference canceled).
- 2020 Danish, J., **Nicholas, C.**, Hmelo-Silver, C., Park Rogers, M., Cross Francis, D., Enyedy, N., Keifert, D., and Stiso, S. What, how, and why do elementary teachers think about using representations in their science teaching? Accepted at American Educational Research Association (AERA) Annual Meeting. San Francisco, CA. (Conference canceled).
- 2020 Park Rogers, M., **Nicholas, C.**, Danish, J., Gerber, A., McClain, J., Phillips, A., Stiso, C., and Zhong, Q. Elementary teachers' developing perceptions of the role of representations in teaching science. Presented at the Association for Science Teacher Education (ASTE) International Conference. San Antonio, TX.
- 2018 Cross Francis, D. Tan, V. & **Nicholas, C.** Integrated STEM learning in a workplace simulation. Presented at Joint Seminar of Educational Research. University of Warsaw. Warsaw, Poland.
- 2018 **Nicholas, C.** Empowerment within and beyond a youth organizing group. Presented at the American Educational Research Association (AERA) Annual Meeting. New York, NY.
- 2018 **Nicholas, C.** Stepping out of the comfort zone: Reflections on social justice education experiences. Presented at the American Educational Research Association (AERA) Annual Meeting. New York, NY.
- 2017 **Nicholas, C.** Teen science journalists: Multiple modes of writer identity. Presented at the Literacy Research Association Annual Conference. Tampa, FL.
- 2017 **Nicholas, C.** Becoming change agents: Pathways from youth organizing groups to adult civic engagement. Presented at the Annual International Postgraduate Research Conference. Phranakhon Rajabhat University, Bangkok, Thailand
- 2015 **Nicholas, C.** Beyond tanks and tear gas: Combating the invisible enemy in St. Louis. Presented at the Society of Philosophy and History of Education (SOPHE) Annual Meeting, St. Louis, MO.

- 2015 **Nicholas, C.** “SciJournal is awesome”: Construction of a science journalism community of practice. Presented at the University of Missouri- St. Louis Graduate Research Fair.

Posters

- 2019 Park Rogers, M., Danish, J., **Nicholas, C.**, Cross Francis, D. Hmelo-Silver, C. Supporting teacher cognition and instruction of science representations in elementary classrooms: A peek into the first year of a multi-year program. Presented at the Association for Science Teacher Education (ASTE) International Conference. Savannah, GA.
- 2018 **Nicholas, C.** “You get treated like young adults:” The meaning of participation in a STEM camp involving industry professionals. Presented at the American Association for the Advancement of Science (AAAS) Annual Meeting. Austin, TX.
- 2016 **Nicholas, C.** What does it mean to be a sexual health youth organizer? Presented at The Center for Sex Education National Sex Ed Conference. Atlantic City, NJ.

Instructional Materials

- 2016 **Nicholas, C.** & Peterson, J. Biomimicry: The "natural" intersection of biology and engineering. Presented at National Science Teachers Association (NSTA) National Conference on Science Education. Nashville, TN.
- 2016 Launius, J.C. & **Nicholas, C.** IdeaBuilders: Infusing engineering practices and literature. Presented at the National Science Teachers Association (NSTA) National Conference on Science Education, Nashville, TN.
- 2015 **Nicholas, C.** Health education for empowerment across and beyond the curriculum. Presented at the Educators for Social Justice Conference, Maplewood, MO.

Discussant

- 2021 Park Rogers, M., **Nicholas C.**, Phillips, A., Zhong, Q., Gerber A., Danish, J., Cross Francis, D., and Hmelo-Silver, C. Learning to teach science through the use of representations: The role of professional development in supporting elementary teachers with this practice. Presented at Association for Science Teacher Education (ASTE) International Conference. Virtual Conference.

TEACHING EXPERIENCE

Higher Education

University of Missouri – St. Louis, Teaching Assistant
 Global Education and Leadership Ed.D. Program
 Learning Community of Practice (Fall 2016, Spring 2018)

P-12

Center Grove Middle School North, Classroom Teacher
 8th Grade Science (2011-2014)

RESEARCH EXPERIENCE

Education Research

2018-present Teacher Cognition and Learning about Incorporating Science Representations in Elementary Classrooms. PI: Joshua Danish

Use tools of design-based research to understand and support practices of elementary science teachers.

2017-2018 Workplace Simulation Project PLUS (WSP+): Developing Future Professionals with STEM+C Knowledge and 21st Century Skills and Dispositions. PI: Dionne Cross Francis

Directed implementation and study of interdisciplinary high school STEM unit modeled in partnership with local industry.

2017-2018 Baxter STEM Academy. PI: Dionne Cross Francis

Designed and implemented residential academy for underrepresented high school students involving volunteers from biopharma field. Interviewed students about meaningful experiences to inform program design.

2015-2016 Missouri STEM Literacy Project, PI: Amy Lannin

Instructional coach for secondary STEM teachers in St. Louis region on literacy integration within content areas.

2012-2013 Science Literacy Through Science Journalism. PI: E. Wendy Saul

Developed curricular materials to support secondary science teachers.

Health Services Research

2009-2010 Intervention for Stroke Improvement using Redesign Engineering, PI: Linda Williams.

Audited neurology charts of stroke patients to assess adherence to evidence-based practices.

2004-2005 Stepped Care for Affective Disorders and Musculoskeletal Pain, PI: Kurt Kroenke

Recruited and interviewed participants in a randomized control trial involving interventions for participants with musculoskeletal pain and depression.

PROFESSIONAL SERVICE

Peer Review

Abstract Reviewer, AERA Division G Social Context of Education, 2019-present

Abstract Reviewer, AERA Division C Science Education, 2017-Present

Abstract Reviewer, NSTA Area Conference, 2015

Ad hoc Manuscript Reviewer, *International Journal of STEM Education* (IJSTEM), 2019

Ad hoc Manuscript Reviewer, *School Science and Mathematics* (SSM), 2020

To Profession

Qualitative Data Analysis Software Trainer, Indiana University, Fall 2019-present

Science Fest Participant, Indiana University, 2018

Thailand Exchange Program Participant, University of Missouri-St. Louis, 2016-2017

Event Manager for Annual Meeting, NARST, 2016-2017

Graduate Education Committee, University of Missouri – St. Louis, 2015-2016

Board Member, Science Teachers of Missouri, 2015

Science Curriculum Alignment, Science Teachers of Missouri, 2015

To Community

Consultant, Baxter Biopharma Solutions Virtual Academy, November 2020-present

Invited Speaker, Baxter Biopharma Solutions Innovation day, 2017

Presenter / Developer, Ebola in West Africa Workshop, Wentzville Middle School, 2014

PROFESSIONAL ASSOCIATIONS

American Educational Research Association (AERA)

Special Interest Group memberships (SIGs): Science Education, Critical Educators for Social Justice, Improvement Science

Association for Science Teacher Education (ASTE)

International Society of the Learning Sciences (ISLS)

National Association for Research in Science Teaching (NARST)