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EDUCATIONAL BACKGROUND

PhD, Temple University, Philadelphia, PA, Science Education, December 2018

Dissertation Topic: *Towards a geoscience pedagogy: A socio-cognitive model*

Dissertation Advisor: Dr. Doug Lombardi, Associate Professor

ACADEMIC AND PROFESSIONAL APPOINTMENTS

Assistant Professor, Duquesne University School of Education, Pittsburgh, PA July 2019-present

Graduate Research Assistant, Temple University College of Education, Philadelphia, PA, Aug 2014-Aug 2018

NSF #1316057: *Developing Critical Evaluation as a Scientific Habit of Mind: Instructional Scaffolds for Secondary Earth and Space Sciences*, Doug Lombardi (PI)

NSF # 1721041: *Engaging Students in Scientific Practices: Evaluating Evidence and Explanation in Secondary Earth and Space Science*, Doug Lombardi (PI)

NSF# 1600233: *Career Paths for Urban Geoscientists: Recruitment, Retention, and Apprenticeship*, Laura Toran (PI)

Teacher Coach, Temple Teacher Residency (TTR), Temple University College of Education, 2017

Education Specialist, Ames Community College Education Development Program (ACCEDP), Universities Space Research Association, NASA Ames Research Center, CA. July 2011-July 2014

AWARDS AND HONORS

Graduate Commencement Speaker, Temple University College of Education, 2019

Faculty-First Look Scholar, New York University (NYU) Steinhardt, 2018-2019

Jhumki Basu Scholar, National Association for Research in Science Teaching (NARST), 2018

Community for Advancing Discovery Research in Education (CADRE) Fellow, 2017-2018

Richard C. Anderson Graduate Student Research Award for *Understanding the relationship between teacher use of epistemic operations and complexity of students' explanations*, National Consortium for Instruction and Cognition, 2017

CV current as of January 7, 2020

RESEARCH GRANTS (FUNDED)

INTERNAL FUNDING SOURCES

Doctoral Dissertation Completion Grant, Temple University, \$11,000 stipend and course tuition (awarded August 2018)

EXTERNAL FUNDING SOURCES

Understanding transformative learning and interest development in urban place-based Earth science education, funded by the National Science Foundation, EHR NSF 16-067 Improving Graduate Student Preparedness for Entering the Workforce, Opportunities for Supplemental Support, \$34,999, 1-year period [awarded June 2017; Doug Lombardi (PI)]

Towards an Urban Geoscience Pedagogy, Graduate Student Research Grant Proposal, funded by the Geological Society of America, \$2422, 1-year period, (awarded April 2017)

PUBLICATIONS

REFEREED JOURNAL ARTICLES

Lombardi, D., Bailey, J.M., Bickel, E.S., & **Burrell, S.** (2018). Scaffolding scientific thinking: Students' evaluations and judgments during Earth science knowledge construction. *Contemporary Educational Psychology*. doi: 10.1016/j.cedpsych.2018.06.008

Lombardi, D., Bickel, E. S., Bailey, J. M., & **Burrell, S.** (2018). High school students' evaluations, plausibility (re) appraisals, and knowledge about topics in Earth science. *Science Education*, 102(1), 153-177. doi: 10.1002/sce.21315

Hopkins, J.D., Crones, P., **Burrell, S.**, Bailey, J.M., & Lombardi, D. (2016). Evaluating connections between fracking and earthquakes [Special issue]. *The Earth Scientist*, 32(2), 23-30.

REFEREED PRESENTATIONS

Burrell, S. (2020). *Supporting student interest development and transformative learning in geoscience: The testing of a socio-cognitive pedagogical model*. Poster accepted for presentation at the Jhumki Basu Scholars Symposium of the 2020 National Association for Research in Science Teaching, Annual International Meeting, Portland, OR.

Burrell, S. (2019). Testing the efficacy of a place-based geoscience curriculum that embeds science content in a current environmental justice issue of water quality. *Abstracts with Programs-Geological Society of America*, 51(5), doi: 10.1130/abs/2019AM-3411009

Burrell, S. (2018). *Use of a water-quality themed place-based, transformative learning experience to support student interest, self-efficacy, and knowledge construction*. Poster presented at the Food-Energy-Water Nexus, NC-FEW Conference, May 22-23, Washington, DC

Burrell, S. (2018). *Towards a geoscience pedagogy: a socio-cognitive model*. Poster presented at the Graduate Student Symposium of the 2018 National Association for

Research in Science Teaching, Annual International Meeting, Atlanta, GA.

Burrell, S., Lombardi, D., Bickel, E., & Bailey, J.M. (2018). *Development of a model describing scientific thinking in Earth science students*. Poster presented at the 2018 National Association for Research in Science Teaching, Annual International Meeting, Atlanta, GA.

Burrell, S., & Lombardi, D. (2017). *Understanding the relationship between teacher use of epistemic operations and complexity of students' explanations*. Poster presented at the 2017 National Consortium for Instruction and Cognition Annual Meeting, San Antonio, TX.

Note: This paper received the 2017 Richard C. Anderson Graduate Student Research Award, given to the outstanding paper submitted by a graduate student who was first author for a paper accepted to the 2017 American Education Research Association Conference or the 2017 National Consortium for Instruction and Cognition Conference.

Bailey, J.M., Lombardi, D., Bickel, E.S., & **Burrell, S.** (2017). *Deepening high school students' knowledge about Earth science topics through scientific evaluation and plausibility reappraisal*. Paper presented at the 2017 National Association for Research in Science Teaching, Annual International Meeting, San Antonio, TX.

Burrell, S., & Lombardi, D. (2017). *Democracy and Earth science education: Instructional scaffolds that promote evidence-based reasoning and critical evaluation*. Paper presented at the 8th New DEEL [Democratic Ethical Educational Leadership] Conference, Philadelphia, PA.

Burrell, S. (2017). Towards a geoscience pedagogy: a socio-cognitive model. *Abstracts with Programs-Geological Society of America*, 49(6), doi: 10.1130/abs/2017AM-308592

Nyquist, J., Kanaley, C., **Burrell, S.**, Toran, L., Davatzes, A., & Brandt, C., (2017). A geopath-funded math mentoring initiative for retention. *Abstracts with Programs-Geological Society of America*, 49(6), doi: 10.1130/abs/2017AM-303857

Burrell, S. & Lombardi, D. (2016). The Critical Evaluation Task (CET) as an instructional scaffold to support evidence-based reasoning: analysis of student learning outcomes. *Abstracts with Programs-Geological Society of America*, 48(7)

Lombardi, D., Bickel, E.S., **Burrell, S.**, & Bailey, J.M. (2016). *Students' evaluations of pro and con arguments*. Poster presented at the 26th Annual Meeting of the Society of Text & Discourse, Kassel, Germany.

Burrell, S., Lombardi, D., & Bailey, J.M. (2016). *MEL diagrams: An instructional strategy that promotes scientific thinking and practice in Earth science students*. Poster presented at the National Association for Research in Science Teaching 2016 Annual International Meeting, Baltimore, MD.

Burrell, S., Lombardi, D., Bailey, J. M., & Bickel, E. S., (2015). Implementation of the Model-Evidence Link (MEL) diagram in high school Earth science classrooms: An educational strategy that promotes critical evaluation and evidence-based reasoning. *Abstracts with Programs-Geological Society of America*, 47(7), 554

Burrell, S., Bailey, J. M., & Lombardi, D., (2015). The effect of a student-centered academic

intervention on teacher practice in high school Earth science classrooms: A mixed methods study. *Abstracts with Programs-Geological Society of America*, 47(7), 253.

- Burrell, S.**, Lombardi, D., & Bailey, J. M. (2015). *The impact of implementation of model-evidence link (MEL) diagrams in high school science classrooms on critical evaluation and knowledge gains: A comparative study*. Poster presented at the 2015 National Consortium for Instruction and Cognition Annual Meeting, Chicago, IL.
- Burrell, S.** (2014). Engaging the next generation of geoscientists: effective educational strategies that increase access to Earth science careers, improves geo-consciousness in global citizens, and prepares pre-service teachers for the science classroom. *Abstracts with Programs-Geological Society of America*, 46(6), 801.
- Burrell, S.** (2014). *Educating the next generation of geoscientists: engaging undergraduates in the study of climate science*. American Meteorological Society 94th Annual Meeting 2014, Atlanta, GA.
- Burrell, S.** (2013). Educating the next generation of geoscientists by providing learning opportunities in geology for pre-college and college students in formal and informal settings. *Abstracts with Programs-Geological Society of America*, 45(7), 282.
- Burrell, S.**, (2012). Increasing participation in the Earth sciences through engagement of K-12 educators in Earth system science analysis, inquiry and problem-based learning and teaching. Abstract ED43A-0722 presented at 2012 Fall Meeting, American Geophysical Union, San Francisco, CA.
- Burrell, S.** (2012). Project ENGAGE (Educating the Next Generation of Geoscientists): building academic pathways that increase access and broaden participation in the Earth sciences. *Abstracts with Programs-Geological Society of America*, 44(7), 103.
- Burrell, S.**, & White, L.D., (2012). SF ROCKS to METALS: The evolution of an informal science education program to broaden participation of under-represented groups in the Earth sciences. *Abstracts with Programs-Geological Society of America* 44(7), 447.
- Burrell, S.** & *Nnoka, C. (2012). Educating the next generation of geoscientists (ENGAGE): plans, perspectives, and preliminary results. Paper presented at the National Association of Black Geoscientists Annual Technology Conference, Arlington, VA.
- *Note: Asterisk indicates that the co-author was an undergraduate student during presentation development and delivery.*

SERVICE ACTIVITIES

AD-HOC REVIEWER OF CONFERENCE AND GRANT APPLICATION SUBMISSIONS

Division C Learning and Instruction, Section 1d: Science, Section 3a: Learning Environments, American Educational Research Association, August 2015, 2018.

National Association for Research in Science Teaching (NARST), September 2017.

Review Panel, National Science Foundation grant proposals, 2016.

TECHNICAL SESSION ORGANIZER

CV current as of January 7, 2020

Session Advocate and Co-chair, T81. Increasing Engagement and Improving Learning Outcomes for Geology Students: Using Cognitive Science to Inform Geoscience Teaching and Learning, 2016 Annual Meeting Geological Society of America, Denver, CO. Session co-chair: A. Jaegar, Temple University

Session Advocate and Co-chair, T78: Engaging the Next Generation of Geoscientists: Effective Educational Strategies that Broaden Participation and Prepare Diverse Learners for Advanced Study and Careers in the Earth Sciences, 2014 Annual Meeting Geological Society of America, Denver, CO. Session co-chair: L. Teruya, San Jose State University

Session Advocate and Co-chair, T121 Educating the Next Generation of Geoscientists: Effective Strategies That Engage Students, Invest in the Future Geoscience Workforce, and Increase Participation of Members of Historically Underrepresented Communities in the Geosciences, 2013 Annual Meeting Geological Society of America, Vancouver, BC. Session co-chairs: L.D. White, UC Berkeley, and D. Maygarden, Univ New Orleans

MENTOR

On to the Future, Geological Society of America, 2017

SPECIAL ACADEMIC PROJECTS

DRK-12 Broadening Participation Topical Group

Contributor to the broadening participation paper:

Powell, A., Nielsen, N., Butler, M., Buxton, C., Johnson, O., Ketterlin-Geller, L., Stiles, J., McCulloch, C. (2018). *The use of theory in research on broadening participation in PreK–12 STEM education: Information and guidance for prospective DRK–12 grantees*. Waltham, MA: Education Development Center, Inc.

**Note:* Not listed as a co-author but contributed research content for the development of the paper as a CADRE Fellow (see acknowledgment on p.18 of document).

PROFESSIONAL ASSOCIATIONS

American Educational Research Association (AERA), Division C

Geological Society of America (GSA)

National Association for Research in Science Teaching (NARST)

National Consortium for Cognition and Instruction (NCIC)