

# James Smith

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University of Arizona

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## EDUCATION

Ph.D. Teaching, Learning, and Sociocultural Studies, 2022

University of Arizona, Department of Teaching, Learning, and Sociocultural Studies, Tucson, AZ

Minor focus in Cognitive Science

Dissertation Title: "Continuous response measures as a measure of teaching practice: A validation study"

Advisor: Dr. Nicole Kersting

M.S. Data Science and Statistics, 2022

University of Arizona, Department of Mathematics, Tucson, AZ

M.A.T. Elementary Education, 2015

University of South Carolina, College of Education, Columbia, SC

M.A. Curriculum and Instruction: English as Second Language, 2013

Arizona State University, College of Education, Tempe, AZ

B.A. English Rhetoric and Composition, 2007

University of South Carolina, Department of English Language and Literature, Columbia, SC

## RESEARCH INTERESTS

Mathematics teacher education; Measurement and study design; psychometrics and quantitative methods; cognitive neuroscience; mixed methods; teacher knowledge; decision-making; validity theory and validation; learning analytics.

## PUBLICATIONS

### Manuscripts in Preparation

Kersting, N. B., Wilson, R., **Smith, J. E.**, ..., & Stigler, J. W. Relating findings from the Cognitive Sciences and education to specify a theory of change for an intervention designed to improve classroom communication in mathematics.

**Smith, J.E.** & VMED Teacher Test subgroup. Initial findings from an examination of validity evidence in mathematics teacher tests: Brief report. Targeted journal: Journal for Research in Mathematics Education (JRME).

**Smith, J.E.** Continuous Response Measures: A new direction for indirect measures in education research (AERA)

**Smith, J.E.**, Xiong, R., Kersting, N.B., Vezino, B., & Mercier, N. Automated scoring using Neural Networks (Measurement)

### Journal Publications

Kersting, N. B., **Smith, J. E.**, Xiong, R, Vezino, B., & Mercier, N. (Submitted). Measuring, modeling, and conceptualizing usable teacher knowledge in mathematics: Theoretical and methodological advances. *Science*.

Turner, E., ..., & **Smith, J. E.** (2021). Designing an assessment for elementary mathematics modeling. *International Journal of Science and Mathematics education*.  
<https://link.springer.com/article/10.1007/s10763-021-10195-w>

Turner, E., Chen, M., Roth-McDuffie, A., **Smith, J. E.**, & Aguirre, J. (2021). Validating a student assessment of mathematical modeling at elementary school level. *School Science and Mathematics*, 121(7), 408-421  
<https://doi.org/10.1111/ssm.12494>

Kersting, N. B., **Smith, J. E.**, Wood, M.B., Vezino, B., Chen, M.K., & Stigler, J. W. (2021). Using Authentic Video Clips of Classroom Instruction to Capture Teachers' Moment-to-Moment Perceiving as Knowledge-filtered Noticing. *ZDM*, 74. <https://link.springer.com/article/10.1007/s11858-020-01201-6>

Kersting, N.B., **Smith, J. E.**, Vezino, B., Chen, M., Wood, M. B. & Stigler, J. W. (2020). Exploring the affordances of Bayesian networks for modeling usable knowledge and knowledge use in teaching. *ZDM*, 52, 207–218. <https://doi.org/10.1007/s11858-020-01135-z>

### Conference Presentations

Kersting, N. B., **Smith, J. E.**, Xiong, R, Vezino, B., & Mercier, N. (2022) Capturing, modeling, and conceptualizing usable teacher knowledge in mathematics. *AERA 2022*.

**Smith, J. E.**, Turner, E., Roth-McDuffie, A., Chen, M., & Aguirre, J. (2021). Capturing mathematical modeling competency in upper-elementary: Validity evidence(s) at the item level. *PME-NA 2021*

Kersting, N. B., **Smith, J. E.**, Vezino, B., Chen, M. & Stigler, J. W. (2021, Apr 9 - 12) CVA-M Measure. *AERA Annual Meeting Orlando, FL (Online only)*

**Smith, J. E.**, Kersting, N. B., Vezino, B., Chen, M. & Stigler, J. W. (2020, Apr 17 - 21) Modeling Mathematical Teaching Knowledge Relationships for Different Teaching Practice Using Bayesian Networks [Roundtable Session]. *AERA Annual Meeting San Francisco, CA* <http://tinyurl.com/uahfhhc>(Conference Canceled)

Kersting, N. B., Vezino, B., **Smith, J. E.**, Chen, M., Wood, M. B. & Stigler, J. W. (2020, Apr 17 - 21) Using Bayesian Networks to Model Teachers' Usable Knowledge and Knowledge Use in Teaching [Roundtable Session]. *AERA Annual*

Kersting, N. B., **Smith, J. E.**, Wood, M.B., Vezino, B., Chen, M.K., & Stigler, J. W. (2020). Teacher Understanding of the Mathematical Practices: A Lay of the Land. *AMTE 2020*

**Smith, J. E.**, Kersting, N. B., Udun, Y., & Vezino, B. (2019). Identifying activated knowledge: Capturing complex knowledge in use. *PME-NA 2019*  
<https://www.pmena.org/pmenaproceedings/PMENA%2041%202019%20Proceedings.pdf>

Kersting, N. B., Wood, M. B., Vezino, B., **Smith, J. E.**, Chen, M.K., & Stigler, J. W. (2019). Developing measures of usable, Common Core-aligned mathematics teaching knowledge (CVA-M): Link between knowledge and performance. *AERA*.

Carter, K., **Smith, J. E.**, & Sugimoto, A. (2019). Hegemony trumped up and trickling down: Stories of sadness and stasis for LGBTQ+ individuals in school and society. *AERA*

### Workshops

Erbarcher, M., **Smith, J. E.**, & Castro, S. N. (2021). *Plot your data, plot your data, plot your data: Basic and advanced data visualization in R Workshop* presented at the meeting of the Northeastern Educational Research Association, Online.

Kersting, N. B. & **Smith, J. E.** (2021) *Usable knowledge and new approaches to improve mathematics coaching* presented at the meeting of the Research into Practice Series at the University of Delaware.

### RESEARCH EXPERIENCE

Research Assistant, 2021 - Present

Teachers as Learners – Teachers as Thinkers: Improving Classroom Communication in Mathematics

Coauthor on the initial pre-proposal, final proposal, and IRB application. Collaborated for instrument development and planning meetings. Collaborating for recruitment and enrollment. PI: Dr. Nicole Kersting

Research Assistant, 2018 – Present

Developing and Validating a Scalable, Classroom-focused Measure of Usable Knowledge for Teaching Mathematics: The Classroom Video Analysis Instrument

Collaborated for item development, rubric creation, and data collection. Led team with an undergraduate student and other graduate students for scoring, coding, and data analysis using IRT, SEM, and HLM. Led development of rubric and analysis of usable knowledge networks using Bayesian networks. Authored and coauthored articles and conference presentations. PI: Dr. Nicole Kersting

Research Volunteer, 2020 – Present

Validity of Evidence for Measurement in Mathematics Education (V-M2Ed) - Teacher Knowledge Team  
Developed automated method for pulling and screening articles containing teacher tests. Coauthoring publication of initial results, workshops and panels, and articles describing methods used. Advisor: Dr. Michelle Carney

Research Assistant, 2020

Mathematical Modeling with Cultural and Community Contexts

Gave statistical and psychometric advice during final data analysis. Conducted analyses as for validation studies and final report on the effects of their professional development. I authored reports and relevant sections of three publications. Co-PI: Dr. Erin Turner

Research Assistant, 2020

Understanding and Improving Learning from Online Mathematics Classroom Videos

Automated data collection and processing and helped with user technical issues. Analyzed output of the Teaching Practice measure. Research Advisor: Dr. Nicole Kersting

Research Assistant, 2018

National Mindset Study

Co-created CVA-M rubric and scored results from over 100 participants. Authored project report. Research advisor: Dr. Nicole Kersting

## **FELLOWSHIPS & AWARDS**

CADRE Fellowship 2019-2020

University of Arizona College of Education Scholarship 2021-2022

University of Arizona Graduate College Professional Development Award 2020

University of Arizona Graduate College Fellowship 2019-2020

University of Arizona Graduate College Fellowship 2018-2019

University of Arizona Graduate College Fellowship 2017-2018

## **TEACHING EXPERIENCE**

NSCS 200: Fundamentals of Neuroscience & Cognitive Science (Online), University of Arizona – Open Campus

Instructor, 2022

Co-developed 7.5 week, asynchronous accelerated course on the fundamental of cognitive neuroscience.

Fundamentals of Neuroscience & Cognitive Science (Online), Department of Cognitive Neuroscience, University of Arizona

Teacher Assistant, 2021

Created tests, graded discussion assignments and held office hours for this 120 student course.

EDP 646A: Multivariate Methods (Online), Department of Educational Psychology, University of Arizona  
Teaching Assistant, 2020

Supported instructor, graded homeworks and projects, and held office hours for this graduate seminar.

Preceptor, 2020

TLS 336: Mathematical Methods (Online), College of Education, University of Arizona

Preceptor, 2020

Observed and supported instructor for this 30 preservice teacher preparation course.

TTE 300: Classroom Process and Instruction, College of Education, University of Arizona

Instructor & Teaching Assistant, 2017

Instructor of record for a section and supported professor in main section.

### ***ELEMENTARY TEACHING***

Teacher, 3<sup>rd</sup> grade, 2016-2017

Saxe Gotha Elementary, Lexington, South Carolina

Student Teaching, 2<sup>nd</sup>/5<sup>th</sup> grades, 2015 – 2016

Center for Inquiry Elementary School, Columbia, SC

English Immersion Teacher & Head Teacher, 4<sup>th</sup> and 6<sup>th</sup> grades , 2011 – 2015

Sangmyeong Elementary School, Seoul, South Korea

English as a Foreign Language Instructor & Head Teacher, 2008 – 2010

Chungdahm Learning, Seoul, South Korea

### **PROFESSIONAL AFFILIATIONS**

American Educational Research Association (AERA) Divisions D

Society for Research on Educational Effectiveness (SREE)

Psychology of Mathematics Education: North American Chapter (PME-NA)

National Council of Teachers of Mathematics (NCTM)

### **SERVICE**

Division D Graduate Student Committee, American Educational Research Association

In-progress Research Gala Chair, 2019-2020

Coordinated 120+ proposal submissions and reviews. Gala canceled due to COVID.

Graduate Student Professional Council (GSPC), University of Arizona

Travel Award Reviewer, 2018-2019

University of Arizona College of Education Dean's Working Group

Advancing Knowledge, Research, & Innovation Committee Member, 2018-2019

TLS Graduate Student Colloquy, College of Education, University of Arizona

Co-Chair, 2018-2019

2019 Graduate Student Colloquy

TLS Graduate Student Association, University of Arizona  
Creator & Co-Chair, 2018-2019

Focus on the Future: A Workshop on Employability, College of Education, University of Arizona  
Chair, 2018

Talking Like Scholars: Graduate Student Research Brown Bag Presentation, College of Education,  
University of Arizona  
Chair Co-chair & Co-creator, 2018

2018 Graduate Student Colloquy, College of Education, University of Arizona  
Funding Committee Chair