

## **Matthew J. Kloser**

Faculty and Fellow, Institute for Educational Initiatives  
Director, University of Notre Dame Center for STEM Education  
University of Notre Dame

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Notre Dame, IN 46556  
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### **EDUCATIONAL BACKGROUND**

- 2011 – 2012      Post-Doctoral Scholar  
Stanford University, Center to Support Excellence in Teaching  
Pam Grossman, Advisor
- 2011              Doctorate of Philosophy in Education, Science Education  
Stanford University, Stanford, CA
- Dissertation: “The Impact of Traditional Textbook and Epistemologically  
Transparent Text Accounts on High School Biology Students’ Interest,  
Comprehension, and Learning”  
Committee: Bryan Brown (Advisor), Jonathan Osborne, Rich Shavelson
- 2010              Master of Science, Biology  
Stanford University, Stanford, CA
- 2004              Master of Education  
University of Notre Dame, Notre Dame, IN
- 2002              Bachelor of Arts, History and Pre-Professional (Pre-Medicine) Studies  
University of Notre Dame, Notre Dame, IN

### **RESEARCH PROJECTS & GRANTS**

- 2015 – Present      Illuminating the Black Box: Using Consensus in Student Survey Reports as  
Advisory Board      an Indicator of Instructional Microclimates in Mathematics and Science  
PI, Jonathan Schweig, Co-PI, Jose Felipe Martinez, UCLA  
National Science Foundation PRIME, \$300,000
- 2015 - Present      Attention-Aware Cyberlearning to Detect and Combat Wandering Minds  
Research Faculty      PI, Sydney D’Mello, University of Notre Dame  
National Science Foundation CYBERLEARNING, \$565,000
- 2015 – Present      Investigating the Impact of Longitudinal Professional Development on  
PI                      STEM Teaching Practice  
Trustey Family/Sweeney Family, \$2,500,000

- 2014 – Present  
Co-PI      Measuring Next Generation Science Instruction Using Tablet-Based Teacher Portfolios  
PI, Jose Felipe Martinez, UCLA; Co-PI, Brian Stecher, RAND  
National Science Foundation, REAL; \$1,800,000
- 2014 – Present  
Research Faculty      Investigating Core Teaching Practices Across Disciplines  
PI, Pam Grossman, University of Pennsylvania; Co-PI, Megan Franke, UCLA  
Sponsor: Bill and Melinda Gates Family Foundation; \$400,000
- 2014 – 2017  
PI      Improving Teachers' Use of Data for Instructional Decisions: Using Assessment Portfolios for Professional Development  
Co-PI, Hilda Borko, Stanford University  
Spencer Foundation; \$300,000
- 2013 – 2016  
PI      Investigating the Impact of an Organizational Change from a K-8 Catholic School to a STEM Academy  
IEI (Notre Dame) mini-grant; \$5,000
- 2010 – 2011  
PI      Impact of Text Type on High School Biology Learning  
Stanford Dissertation Support Grant; \$6,000
- 2009 – 2012  
Research Assistant      Quality Assessment in Science  
PI, Jose Felipe Martinez, UCLA; Co-PIs, Hilda Borko, Stanford; Brian Stecher, RAND  
WT Grant & Spencer Foundations; \$600,000
- 2009 – 2012  
Research Assistant      Biology Laboratory Redesign Project  
PI, Robert Simoni, Stanford University  
National Science Foundation
- 2009 – 2010  
Research Assistant      Global Climate Change Education  
PI, Pamela Matson, Stanford University; Co-PI, Rachel Lotan, Stanford University  
NASA
- 2009  
Research Assistant      Student Mental Models of Climate Change  
PI, Rich Shavelson, Stanford University  
National Science Foundation

## **PROFESSIONAL EXPERIENCE – TEACHING & SUPERVISION**

### **University Teaching Experience**

- 2012 – Present      Faculty, Institute for Educational Initiatives  
Science Education Policy, Values, and Practices (ESS 30623)

Education, Schooling, & Society Capstone/Methods (ESS 43640)

2006 – Present    Instructor, Science Teaching Methods (EDU 60685 - Graduate Level)  
University of Notre Dame, Notre Dame, IN

2006 – Present    Instructor, Assessment in Science Education (EDU 60785 - Graduate Level)  
University of Notre Dame, Notre Dame, IN

2004 – 2007        Instructor, Introduction to Teaching (EDU 60020 - Graduate Level)  
University of Notre Dame, Notre Dame, IN

### **Teaching Assistantships**

2008 – 2009        Curriculum & Instruction in Science (EDUC 267B&C)  
STEP Program, Stanford University, Stanford, CA

2008                 Communicating Science (GES 218)  
Stanford University, Stanford, CA

### **Mentoring and Supervision of Teaching**

2011 – 2012        Beginning Teacher Support and Assessment (BTSA) Mentor  
Silicon Valley/Stanford University New Teacher Project

2007 – 2008        Field Supervisor for High School Science Teachers  
STEP Program, Stanford University, Stanford, CA

### **High School Teaching Experience**

2005 – 2007        Advanced Placement, Physics C  
St. Joseph's High School, South Bend, IN

2002 – 2004        Physics, Geometry, Algebra II, ACT Preparation  
Holy Family Catholic High School, Birmingham, AL

## PUBLICATIONS

### Peer Reviewed Journals

- Kloser, M., Wilsey, M., Madkins, T., Davis, E., Windschitl, M., Wells, A., Carlson, J. (accepted). Connecting the dots: Linking frameworks for facilitating discussion to novice teacher practice. *Teaching and Teacher Education*.
- Kloser, M., Wilsey, M., Hopkins, D., Dallavis, J. W., Lavin, E., and Comuniello, M. (in press). Dual identities: Organizational negotiation in STEM-focused Catholic schools. *Cultural Studies in Science Education*.
- Davis, E., Kloser, M., Windschitl, M., Wells, A., Carlson, J. (2017). Teaching the practice of leading sense-making discussions in science: Using rehearsals, *Journal of Science Teacher Education*, 1-19.
- Kloser, M., Borko, H., Martinez, F., Stecher, B., Luskin, R. (2017). Evidence of middle school science assessment practice from classroom-based portfolios, *Science Education*, 101(2), 209-231.
- Kloser, M. (2016). Alternate text types and student outcomes: An experiment comparing traditional textbooks and more epistemologically considerate texts, *International Journal of Science Education*, 38(16), 2477-2499.
- Kloser, M. and Wilsey, M. (2015). No blue ribbon: Reforming science fairs in middle and high school science education, *The Science Teacher*, 82(8).
- Kloser, M. J. and Brownell, S. E. (2015). Toward a conceptual framework for measuring the effectiveness of course-based undergraduate research experiences in undergraduate biology. *Studies in Higher Education*, 1 – 20.
- Kloser, M. (2014). Identifying a core set of science teaching practices: A Delphi expert panel approach. *Journal of Research in Science Teaching*, 51(9), 1185 – 1217.
- Kloser, M. & Bofferding, L. (2014). Middle and high school students' conceptions of climate change mitigation and adaptation strategies. *Environmental Education Research*.
- Brownell, S., Kloser, M., Fukami, T., Shavelson, R. (2013). Context matters: Volunteer bias, small sample size, and the value of comparison groups in the assessment of research-based undergraduate introductory biology lab courses. *Journal of Microbiology and Biology Education*, 14(2), 176 – 182.
- Kloser, M. (2013). Exploring high school biology students' engagement with more and less epistemologically considerate texts. *Journal of Research in Science Teaching*, 50(10), 1232 – 1257.

- Kloser, M., Brownell, S., Fukami, T., Shavelson, R. (2013). Effects of a research-based ecology lab course: A study of non-volunteer achievement, self-confidence and perception of lab course purpose. *Journal of College Science Teaching*, 42(3), 72 – 81.
- Kloser, M. (2012). A place for the nature of biology in biology education. *Electronic Journal of Science Education*, 16(2), 1-21.
- Martinez, J. F., Borko, H., Stecher, B., Luskin, R., Kloser, M. (2012). Measuring quality assessment in science classrooms through artifacts and self-report. *Educational Assessment*, 17(2-3), 107-131.
- Kloser, M. & Brownell, S., Shavelson, R., Fukami, T. (2012). *Journal of College Science Teaching*. Undergraduate biology lab courses: Comparing the impact of traditionally-based ‘cookbook’ and authentic research-based courses on student lab experiences, 41(4), 36-45.
- Kloser, M., Brownell, S., Chiariello, N., Fukami, T. (15 November 2011). *PLOS Community Pages*. Integrating teaching and research in undergraduate biology laboratory education, 9(11).
- Brown, B. & Kloser, M. (2009). Conceptual continuity and accessing everyday scientific understandings. *Cultural Studies in Science Education*, 4, 875-897.
- Brown, B. & Kloser, M. (2009) A view of the tip of the iceberg: revisiting conceptual continuities and their implications for science teaching. *Cultural Studies in Science Education*, 4, 921-928.
- Books and Book Chapters**
- Kloser, M. and Troy, S. (in press). *A different kind of science textbook: Evidentiary-based biology accounts for high school classrooms*. Arlington, VA: NSTA Press.
- Rafanelli, S., Borko, H., Kloser, M., Wilsey, M. (accepted). From focusing on grades to exploring student thinking: A case study of change in assessment practice. In Fives, H. and Barnes, N. (Eds) *Data use*. London: Routledge.
- Brown, B., Henderson, B., & Kloser, M. (2012). Bridging cultures: The role of culturally-relevant pedagogy, discursive identity, and conceptual continuities in the promotion of scientific literacy. In Moore, J. L. III and Lewis, C. W. (Eds.) *Urban school contexts for African American students: Crisis and prospects for improvement*. New York: Peter Lang Publishers.
- Kloser, M. (2007). From Warsaw to Birmingham: The making of a teacher. In J. Watzke (Ed.), *Beyond Alternative Education*. Notre Dame, Indiana: ACE Press.

## PRESENTATIONS

- Rafanelli, S., Borko, H., Kloser, M., Wilsey, M. (2017). From focusing on grades to exploring student thinking: A case study of change in assessment practice. *A Paper for the American Association of Educational Research*. San Antonio, TX.
- Kloser, M., Gottlieb, J., Wilsey, M., Svarovsky, G. N., Kirkland, P., Puricelli, J. (2017). Exploring the relationship among middle grade teacher's conceptions of STEM and equity. *A Paper for the Annual Meeting of the National Association of Research on Science Teaching*. San Antonio, TX.
- Kloser, M., Gottlieb, J., Wilsey, M., Svarovsky, G. N., Kirkland, P., Puricelli, J. (2017). Exploring the relationship among middle grade teacher's conceptions of STEM and equity. *A Paper for the Annual Meeting of the National Association of Research on Science Teaching*. San Antonio, TX.
- Martinez, F., Riedell, K., Rocchio, R., Srinivasan, J., Kloser, M., Wilsey, M., Stecher, B. (2016). Next generation tablet e-portfolio tool for documenting and reflecting on instructional practice: Possibilities for teacher evaluation and development. *A Paper for the Annual Meeting of the European Association for Research on Learning and Instruction*. Oslo, Norway.
- Kloser, M., Borko, H., Wilsey, M., Rafanelli, S. (2016). Science teachers' use of data for instructional decisions: Mental models of middle school science assessment practice. *A Paper for the Annual Meeting of the National Association of Research for Science Teaching*. Baltimore, MD.
- Kloser, M., Wilsey, M., Hopkins, D., Dallavis, J., Lavin, E., Comuniello, M. (2016). Dual identities: Toward a framework for STEM-focused Catholic schools. *A Paper for the Annual Meeting of the National Association of Research for Science Teaching*. Baltimore, MD.
- Davis, B., Kloser, M., Windschitl, M., Wells, A., Carlson, J. (2016). Teaching the practice of leading sensemaking discussions in science: Using rehearsals. *A Paper for the Annual Meeting of the American Education Research Association*. Washington DC.
- Martinez, J. F., Kloser, M., Srinivasan, J., Riedell, K., Stecher, B., Rocchio, R., Wilsey, M., Tangmunarunkit, H. (2016). A tablet-based teacher e-portfolio tool for documenting and reflecting on next generation science instruction. *A Paper for the Annual Meeting of the American Education Research Association*. Washington DC.
- Kloser, M., Borko, H., Martinez J. F., Stecher, B., Luskin, R. (2014). Portraits of assessments: The intended and enacted assessments in middle school science classrooms. *A Paper for the Annual Meeting of the National Association of Research for Science Teaching*. Pittsburgh, PA.

- Core Practice Consortium. (2014). Enriching research and innovation through the specification of professional practice: The Core Practice Consortium. Presidential Session. *A Paper for the Annual Meeting of the American Educational Research Association*. Philadelphia, PA.
- Kloser, M. (2013). A Different Common Core: An Expert Delphi Study on Core Science Teaching Practices. *A Paper for the Annual Meeting of the National Association of Research for Science Teaching*. Puerto Rico.
- Kloser, M. and Bofferding, L. (2013). Middle and High School Students' Responses to Climate Change: The Conflation of Mitigation and Adaptation. *A Paper for the Annual Meeting of the National Association of Research for Science Teaching*. Puerto Rico.
- Kloser, M. (2013). A Different Common Core: An Expert Delphi Study on Core Science Teaching Practices. *A Paper for the Annual Meeting of the American Educational Research Association*. San Francisco, CA.
- Kloser, M. and Bofferding, L. (2013). Middle and High School Students' Responses to Climate Change: The Conflation of Mitigation and Adaptation. *A Paper for the Annual Meeting of the American Educational Research Association*. San Francisco, CA.
- Martinez, J. F., Borko, H., Stecher, B., Luskin, R., Kloser, M. (2013). Measuring the Classroom Environment through Student Surveys: Methodological, Conceptual and Policy Issues. *A Paper for the Annual Meeting of the American Educational Research Association*. San Francisco, CA.
- Kloser, M. (2012). Formative assessment in science and math classrooms. *Invited Presenter for the Notre Dame Forum on K-20 STEM Education*.
- Kloser, M. (2012). Performance assessments and science education. *Invited Presenter for the Spring Knowles Science Teaching Fellows Meeting*. Los Angeles, CA.
- Kloser, M. (2012). Comparative interactions of high school biology students engaging textbook accounts and narratives of historical experiments. *A Paper for the Annual Meeting of the National Association of Research for Science Teaching*. Indianapolis, IN.
- Martinez, J. F., Borko, H., Stecher, B., Luskin, R., Kloser, M. (2011). Measuring quality assessment in science classrooms through artifacts and self-report. *A Paper for the Annual Meeting of the American Educational Research Association*. New Orleans, LA.
- Kloser, M. & Brownell, S. (2011). Comparing outcomes of traditional 'cookbook' versus single-question, open-ended undergraduate biology labs. *A Poster Presentation for the Annual Meeting of the National Association for Research in Science Teaching*. Orlando, FL.
- Kloser, M. (2010). The unique nature of biology and its implications for biology education. *A Paper for the Annual Meeting of the National Association for Research in Science Teaching*. Philadelphia, PA.

Kloser, M. (2010). I earned an “A” in Spanish, but got lost in Spain: Why performance assessments matter for student learning. *A Presentation for the Annual GEOTech Conference*. Dallas, TX.

Kloser, M. (2009). Teaching evolution. *A Presentation for the Annual Meeting of the National Catholic Education Association*. Anaheim, CA.

## SERVICE AND AWARDS

### Service

- 2014 – Present     Orthoworx Education Council Board Member
- 2012 – Present     Indiana STEM Education Advisory Board
- 2012 – Present     Committee Member, NARST Early Career in Research Award
- 2012 – Present     NARST Strand 1 & 4 Conference Proposal Reviewer
- 2010 – 2011        Committee Member, Stanford School of Education Dean Search Committee  
Stanford Office of the Provost
- 2008 – 2011        Stanford University School of Education (SUSE) Student Guild President  
Stanford University School of Education, Stanford, CA

### Ad Hoc Journal/Grant Reviewer

AERJ  
Education Evaluation and Policy Analysis  
Educational Researcher  
International Journal of Science Education  
Journal of Research in Science Teaching  
Science Education  
Spencer Foundation

### Conference Reviewer

AERA 2011 – Present  
JRST 2011 - Present

### Awards

- 2015                JRST Outstanding Paper Award  
National Association for Research in Science Teaching  
*Annual award given for the paper that has been identified as having the greatest impact in the field from all peer-reviewed articles published in JRST in the previous year.*



- 2014 'Research Worth Reading' Selection  
National Association of Research in Science Teaching  
*One of five papers selected annually by the NARST Publications Advisory Committee identified as research worth reading for practicing teachers.*
- 2011 NARST Outstanding Dissertation Research Award Finalist  
National Association for Research in Science Teaching  
*Annual award given for the doctoral dissertation that is deemed to have the most significant contribution to the field of science education*
- 2011 NARST Conference Outstanding Paper Award  
National Association for Research in Science Teaching  
*Annual award for the paper or research report presented at the Annual International Conference that is judged to have the greatest significance and potential in the field of science education*
- 2010 Gerald J. Lieberman Fellowship  
*Nine fellowships awarded to Stanford graduate students based on their research accomplishments, teaching experience, and service*
- 2004 Master of Education Commencement Speaker  
University of Notre Dame
- 2004 Theodore Ryken Award for Teaching and Service  
Holy Family High School, Birmingham, AL
- 2002 Summa cum Laude  
University of Notre Dame
- 2002 Phi Alpha Theta, History Honor Society  
University of Notre Dame
- 1998 – 2002 Lilly Scholar  
Full-tuition scholarship to the University of Notre Dame

### **Professional Organizations**

- 2009 – Present National Association for Research in Science Teaching  
2008 – Present American Educational Research Association  
2012 – Present National Science Teachers Association  
2005 – 2006 Association for Supervision and Curriculum Development