

Molly A.M. Stuhlsatz
BSCS Science Learning
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Appointments

2019 – present	Assistant Director, BSCS Science Learning
2005 – present	Research Scientist, BSCS Science Learning
2003 – 2005	Research Assistant, BSCS
2001 – 2003	Research Assistant, Sociology Department, University of Colorado at Colorado Springs

Professional Preparation

University of Colorado at Colorado Springs	Sociology	M.A, 2005
University of Colorado at Colorado Springs	Sociology	B.A., 2003

Professional Summary

Chair of the BSCS Science Learning internal Institutional Review Board (IRB) ensuring adherence to protections of human subjects.

Co-Chair of the BSCS Science Learning Equity and Social Justice working group.

Principal Investigator NSF DRK-12 Award (#150300): Collaborative Research: Scientific Data in Schools: Measuring the efficacy of an innovative approach to integrating quantitative reasoning in secondary science. BSCS is the research partner on this grant studying the efficacy of the Data Nuggets intervention in secondary science classrooms.

Co-Principal Investigator NSF DRK-12 Award (#18135380): Collaborative Research: Extending and Investigating the Impact of the High School Model-Based Educational Resource (MBER). This collaboration between BSCS Science Learning and the University of California, Davis aims to investigate the efficacy of the MBER materials in high school biology classrooms in California.

Co-Principal Investigator NSF ECR-EHR Core Research Award (#1561150): ArguLex – Applying Automated Analysis to a Learning Progression for Argumentation. This project is a collaboration between BSCS, Stanford University, and Michigan State University investigating the applicability of machine learning technologies to measuring students' abilities to engage in scientific argumentation.

Co-Principal Investigator NSF DRK-12 Award (1316202): Testing a Professional Development Model for High School Science Reform and the Relationship of Key Variables to Student Achievement. We use a retrospective, quasi-experiment and propensity score matching to investigate the impact of a leadership development program in the state of Washington on district-level student outcomes.

Co-Principal Investigator NSF DRK-12 Award (1220635): Videocases for Science Teaching Analysis Plus (ViSTA Plus): Efficacy of a Videocase-based, Analysis-of-Practice Teacher Preparation Program. This quasi-experiment investigates the impact of a videocase-based

approach to teacher development by following future teachers from their methods course through their student teaching year and into their first year of teaching to look at the impact of ViSTA Plus on teacher and student outcomes.

Co-Principal Investigator on NSF PRIME Award (#1437173): Collaborative Research: Applying Computerized Lexical Analysis to Develop a Cost-Effective Measure of Science Teacher Pedagogical Content Knowledge. In this study we are investigating the use of computer-based lexical and machine learning technologies to score teacher open-ended responses for an assessment of pedagogical content knowledge (PCK) in science.

Recent Publications and Presentations

Roth, K. J., Wilson, C. D., Taylor, J. A., Stuhlsatz, M. A., & Hvidsten, C. (2019). Comparing the effects of analysis-of-practice and content-based professional development on teacher and student outcomes in science. *American Educational Research Journal*, 56 (4), 1217-1253.

Donovan, B.M., Stuhlsatz, M.A., Edelson, D.C., Buck Bracey, Z. (2019). Gendered Genetics: How reading about the genetic basis of sex differences in biology textbooks could affect beliefs associated with science gender disparities. *Science Education*.

Taylor, J. A., Stuhlsatz, M.A., Bintz, J. (2019) The effect of a leadership development program for high school science reform on student achievement in Science: A Retrospective Quasi-Experiment. *Science Educator*, 27(1).

Stuhlsatz, M., Buck Bracey, Z., Donovan, B.M., Wilson, C. D., Gardner, A.L., Urban-Lurain, M., Merrill, J., Haudek, K.C., (2019). Applying Automated Analysis Measuring Science Teacher Pedagogical Content Knowledge. Paper presented at the meeting of the National Association for Research in Science Teaching, Baltimore, MD.

Buck Bracey, Z., Stuhlsatz, M., Santiago, M.M., Cheuk, T., Wilson, C. D., Urban-Lurain, M., Osborne, J.F. (2019). Applying Automated Analysis Measuring Science Teacher Pedagogical Content Knowledge. Paper presented at the meeting of the National Association for Research in Science Teaching, Baltimore, MD.

Taylor, J. A., Kowalski, S. M., Polanin, J. R., Askinas, K., Stuhlsatz, M. A., Wilson, C. D., & Wilson, S. J. (2018). Investigating Science Education Effect Sizes: Implications for Power Analyses and Programmatic Decisions. *AERA Open*, 4(3), 2332858418791991.

Wilson, C., Stuhlsatz, M., Hvidsten, C., & Stennett, B. (2017, April). Examining the Impact of Lesson-analysis Based Teacher Education across Methods Courses, Student Teaching, and Induction. Paper presented at the annual meeting of NARST, San Antonio, TX.

Wilson, C. D., Stuhlsatz, M., Hvidsten, C., Stennett, B. (2017). Videocases for Science Teaching Analysis Plus: Initial findings from a 3-year program preparing elementary teachers to teach science. Paper presented at the meeting of the Association for Science Teacher Education, Des Moines, IA.

Gess-Newsome, J., Taylor, J. A., Carlson, J., Gardner, A. L., Wilson, C. D., & Stuhlsatz, M. A. (2016). Teacher pedagogical content knowledge, practice, and student achievement. *International Journal of Science Education*, 1-20.

- Taylor, J., Roth, K., Wilson, C., Stuhlsatz, M., & Tipton (2016). The Effect of an Analysis-of-Practice, Videocase-Based Teacher Professional Development Program on Elementary Students' Science Achievement. Published online in the Journal of Research on Educational Effectiveness, 2 February 2016, 10.1080/19345747.2016.1147628.
- Taylor, J., Furtak, E., Kowalski, S., Martinez, A., Slavin, R., Stuhlsatz, M., & Wilson, C. (2016). Emergent Themes From Recent Research Syntheses in Science Education and Their Implications for Research Design, Replication, and Reporting Practices. Published online in the Journal of Research in Science Teaching, 27 April 2016.
- Wilson, C. D., Taylor, J. A., Roth, K., Stuhlsatz, M., Hvidsten, C. (2016). The Effect of an Analysis-of-Practice, Videocase-Based, Teacher Professional Development Program on Teacher and Student Outcomes. Paper presented at the meeting of the National Association for Research in Science Teaching, Baltimore, MD.
- Stuhlsatz, M., Wilson, C. D., Buck Bracey, Z. (2016). Applying Automated Analysis to Develop a Cost-Effective Measure of Science Teacher Pedagogical Content Knowledge. Paper presented at the meeting of the National Association for Research in Science Teaching, Baltimore, MD.
- Stuhlsatz, M.A., Wilson, C., Taylor, J., Roth, K. (2015, April) Studying the Effects of Interventions Across Multiple Content Areas: Solving Measurement Challenges. Paper presented at the annual meeting for the National Association for Research in Science Teaching, Chicago, IL.
- Hemingway C, Adams C and Stuhlsatz M. Digital collaborative learning: identifying what students value [v1; ref status: indexed, <http://f1000r.es/55h>] F1000Research 2015, 4:74 (doi: 10.12688/f1000research.6223.1)
- Stuhlsatz, M.A., Berbeco, M., White, L.D., McCafferey, M.S., Mohan, A., Wilson, C. (2014, April) Toward the Development of an Internet-based Resource for Teaching about Global Change: Results from the Needs Assessment Survey. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.
- Stuhlsatz, M. A., Gardner, A. L., Roth, K. J. (2013, April) Video analysis of science teaching: Developing a shared "Words-To-Images" analytical tool. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Rio Grande, Puerto Rico.
- Getty, S., Hulleman, C., Barron K. E., Stuhlsatz, M. A., Marks, J. C., (2013, April) Factors that affect learning in high school science: Measuring motivation, achievement, and interest in science. Paper presented at the annual meeting of the National Association for Research on Science Teaching, Rio Grande, Puerto Rico.
- Taylor, J. A., Kowalski, S. M., Stuhlsatz, M. A. M., & Wilson, C. D. (2013, April). Investigating Publication Bias for Recent Causal Effects Studies in Science Education. Paper presented at the meeting of the National Association for Research in Science Teaching, Rio Grande, Puerto Rico.

- Beardsley, P., Stuhlsatz, M.A.M., Kruse, R., Eckstrand, I., Gordan, S., & Odenwald, W. (2011) Evolution and Medicine: An Inquiry-Based High School Curriculum Supplement. *Evolution: Education and Outreach*, 4, 603-612.
- Stuhlsatz, M. A., Thanukos, A., & Scotchmoor, J. (2011, April). Understanding Science: Improving instruction on the nature and process of science. Paper presented at the annual meeting of the National Association for Research on Science Teaching, Orlando, FL.
- Kowalski, S. M., Stuhlsatz, M. A. M., & Taylor, J. A. (2009, April). Using curriculum to close achievement gaps. Paper presented at the meeting of the National Association for Research in Science Teaching, Garden Grove, CA.
- Taylor, J. A., Stuhlsatz, M. A. M, & Bybee, R. (2009, April). Windows into high-achieving science classrooms. Paper presented at the meeting of the National Association for Research in Science Teaching, Garden Grove, CA.
- Taylor, J., Stuhlsatz, M. A. M., & Bybee, R. (2009). Windows into high-achieving science classrooms. In R. Bybee & B. McCrae (Eds.), *PISA science 2006: Implications for science teachers and science teaching*. Arlington, VA: National Science Teachers Association.
- Taylor, J. A., Van Scotter, P., Coulson, D., Bloom, M. V., Kowalski, S. M., & Stuhlsatz, M. A. M. (2008). Assessing the impact of research-based instructional materials on student achievement. In R. W. Bybee (Ed.), *BSCS: Measuring our success, the first 50 years* (pp. 95–111). Dubuque, IA: Kendall Hunt Publishing.

Affiliations

NARST (formerly National Association for Research in Science Teaching)
American Educational Research Association
American Evaluation Association
Society for Research in Educational Effectiveness