

# SARAH KOEBLEY, Ph.D.

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## EDUCATION

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### **Ph.D., Curriculum and Instruction**

Kent State University, Kent, Ohio

*Concentration: Mathematics Education, STEM Professional Learning, Systems Change and Design*

### **M.Ed., Educational Foundations**

The University of Cincinnati, Cincinnati, Ohio

*Thesis Focus: Student and Parent Motivation and Beliefs about Success in Mathematics*

### **B.S., Mathematics**

The University of the South, Sewanee, Tennessee

## PROGRAM DESIGN, EVALUATION, AND PROFESSIONAL LEARNING LEADERSHIP

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**Learning Maps Researcher Senior**, University of Kansas, 2023 - present.

- Lead and support Dynamic Learning Maps™ research team initiatives including design of learning map models, adapting national standards, and support of quality large-scale assessments for students with significant cognitive disabilities
- Support research projects, dissemination of research findings and technical documentation of ATLAS Center products and projects
- Serve as co-principal investigator on DOE OSEP-funded research project (SETTT for Success) which supports trainers of teachers who work with students with significant cognitive disabilities; project focuses on teacher trainer learning and professional development design support through self-directed modules, curated online resources, virtual coaching, and an online community of practice
- Served as co-principal investigator on IES-funded research project (5E-SESE) aimed at developing inquiry-based science teaching knowledge and skills for educators using adapted Next Generation Science Standards with students who have extensive support needs; project focus includes implementation of Universal Design for Learning principles in a virtual learning and coaching environment

**Associate Director for Professional Learning**, ATLAS Center, University of Kansas, 2019 – 2023.

- Led the center's planning for professional learning initiatives; collaborated across teams to design effective professional development approaches related to the center's projects
- Designed and oversaw production and distribution of educator learning resources for ATLAS educators including virtual science professional development modules for hosting on DLMPD website

- Managed a professional learning support team that provides instructional design expertise for ATLAS projects, including Moodle programming and website design
- Collaborated on applied research and evaluation projects related to professional learning.

**STEM Evaluation Design Specialist, ParagonTEC, 2016 - 2019.**

- Developed evaluation design and instrument for performance evaluation of the NASA 21CCLC Engineering Design Challenge; co-authored final evaluation plan to align GLOBE and Engineering Design Challenge inquiry lessons with Next Generation Science Standards under the NASA STEM Engagement line of business
- Lead Facilitator for NASA Network of States working group meetings focused on increasing communication and collaboration between NASA Education Centers; co-authored final evaluation plan for Network of States multi-year initiative
- Conducted extensive literature review to analyze extent to which NASA summer internship program aligned to NASA core competencies; authored assessment rubric based on national Accreditation Board for Engineering and Technology (ABET) EC2000 criteria, to be used by NASA staff in assessing engineering interns' skills and knowledge acquisition

**STEM Technical Assistance Lead, Teaching Institute for Excellence in STEM (TIES), 2016-2018.**

- Supervised Technical Assistance team members; mentored community leads in designing localized STEM solutions; collaborated with team to design research measuring impact of technical assistance on STEM community assets
- Supported multiple cities engaged in national STEM Ecosystem initiative, connecting diverse and cross- sector STEM stakeholders; conducted design initiatives within STEM communities to facilitate identification of local STEM assets; coached teams in work focused on increasing STEM learning and workforce preparation, with particular emphasis on under-represented populations
- Led teams in whole school STEM reform process review; designed and conducted impact studies for STEM stakeholders; consulted with STEM teams focused on improving teaching and learning through analysis of mathematics curricula and pedagogical change
- Supported international Community of Practice through networking, topic-specific webinars and planning of bi-annual national conference

**Mathematics Instructional System Specialist and Acting Mathematics Branch Chief, Department of Defense Educational Activity, Alexandria, Virginia, 2014 - 2016.**

- Served as mathematics lead at DoDEA headquarters in the design and governance of policy for stakeholders; created and communicated vision for agency in area of mathematics curriculum development, professional expertise networks, professional development design and research design; applied research to innovate and design solutions to system-wide educational challenges
- Led and supervised design teams of DoDEA educators to create model curriculum units required for teacher use to promote new teaching approaches; adhered to principles of Universal Design for Learning in unit plans and assessments; wrote performance objectives and monitored progress of a Cooperative Agreement with Ohio State University to complete creation of additional model units

- Designed and delivered face-to-face, virtual, and blended professional development for system leadership, mathematics specialists, and teachers around research-based improvement in mathematics teaching and learning; applied core principles of adult learning theory in all aspects of professional development design
- Designed and delivered ongoing professional development (virtual and face-to-face) in creating and sustaining learning communities for system-wide mathematics specialists; used educational technology to create virtual professional networks and work groups encouraging sharing of expertise among teachers and mathematics specialists

**Mathematics and Science Consultant**, National Inventors' Hall of Fame STEM Middle School and High School, Akron Public Schools, Akron, Ohio, 2009 – 2014.

- Designed and implemented research-based professional development for administrators and teachers around mathematics content, pedagogy, curriculum design, learning maps, assessments, data analysis and inclusion of educational technology
- Led professional development in Problem-Based Learning process using Common Core Mathematics Standards and Next Generation Science Standards; led teacher groups in critically analyzing student thinking through the use of student work samples and "Looking at Student Work" protocols

**Mathematics Curriculum Specialist**, Summit County Educational Service Center, Cuyahoga Falls, Ohio, 2011 – 2012.

- Mathematics Lead for county agency supporting suburban and rural schools in Northeast Ohio in education service and reform; supported and facilitated teachers in learning and implementing mathematics content, pedagogy, and assessments using the Common Core Standards
- Created and implemented courses for K-12 teachers with a focus on interpreting the meaning, rigor and coherence of the mathematics in the Common Core Standards

**Mathematics and Science Curriculum Coordinator**, Hudson City School District, Hudson, Ohio, 1996 – 2008.

- District subject matter expert responsible for design, planning and implementation of district vision for high-quality mathematics and science teaching and learning; responsible for evaluation and synthesis of research, and generation and interpretation of local data to support curriculum and assessment policy
- Supervised teams and directed extensive processes of researching, piloting, and implementing inquiry-based curricula in Pre-Kindergarten – 12 Mathematics and Science; included implementation of professional learning communities, inclusion of educational technology, assessment design, and inclusion of special education quality instructional approaches
- Designed and developed mathematics and science curricula in grades PK – 12 supported by research, NSF-funded curricula and local expertise; created learning maps with teacher teams to support teacher and administrator content learning; worked closely with Special Education and Gifted teachers for inclusion strategies and support in mathematics for students with disabilities

## RESEARCH AND EVALUATION

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**Researcher, Warren/Kent State Mathematics Partnership**, Kent State University, Kent, Ohio, 2010 – 2013.

- Collected and analyzed data for a federal Math/Science Partnership grant focused on increasing content knowledge and improved collaboration as a professional community among urban high school mathematics teachers; prepared reports of findings for state and federal agencies
- Planned and directed professional learning experiences for grades 6-12 mathematics teachers in the implementation of Common Core Standards for Mathematics

**Bridging the Gap Project Co-Facilitator, Mathematics Group Facilitator**, Kent State University, 2011 – 2012.

- Planned and facilitated sessions with mathematics teachers, mathematics professors, and mathematics education professors to map similarities and differences between teaching and learning mathematics in high school and in higher education settings
- Designed and facilitated teacher observations in high school and college classrooms

**Steering Committee Member, KEEP STEM Partnership**, Kent State University, Kent, Ohio, 2010 – 2011.

- Assisted with planning and implementation of a five-district K-12 STEM partnership professional development opportunity, including facilitating teacher learning and collaboration around the mathematics expected in the Common Core Standards
- Gathered, analyzed and reported data on teacher learning because of the designed professional development

**Researcher**, Ohio Mathematics Assessment Project, Kent State University, Kent, Ohio, 2008 – 2010.

- Collected and analyzed data on a Math/Science Partnership Grant focused on the mathematical thinking of grades 3 – 6 teachers and their students
- Examined the impact on student mathematical thinking after teacher experimental and control groups participated in professional development around high leverage instructional practices (e.g., effective questioning and meaningful classroom discourse)
- Assisted in preparation of reports and data analysis of student understanding of rational numbers and statistics

## SELECTED PUBLICATIONS

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Koebley, S., Wakeman, S., Ruhter, L., Pugalee, D., & Karvonen, M. (2024). Making Science-Inquiry Learning Accessible for Students With Complex Support Needs. *Journal of Science Education for Students with Disabilities*, 27(1), 1-26.

Karvonen, M., Ruhter, L., Koebley, S., Wakeman, S., & Pugalee, D. (2025). Universally designed, inquiry-based professional development. Submitted to *Journal of Science Education for Students with Disabilities*.

Ruhter, L., Swinburne Romine, R., Karvonen, M., & Koebley, S. (2020). *5E-SESE Phase 1 Research Report* (Project Brief). University of Kansas, Accessible Teaching, Learning, and Assessment Systems.

Koebley, S., Swinburne Romine, R., McCann, M., & Glore, C. (2020). *Interim report on development and revision of essential elements in science for the Dynamic Learning Maps Alternate Assessment System* (Technical Report No. 20-04). University of Kansas, Accessible Teaching, Learning, and Assessment Systems.

Koebley, S. *How TIES is using the Engineering Design Process to Increase Local STEM Access for All Learners*. (2018). Ecosystem Spotlight Feature Article, Stemecosystems.org.

Arhar, J., Niesz, T., Brossman, J., Koebley, S., O'Brien, K, Black, F. & Loe, D. (2012). *Supporting Teacher Action Research and the Research Preparation of Doctoral Students in the Context of a University-School Partnership*. Educational Action Research Journal.

## SELECTED PRESENTATIONS

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**American Educational Research Association**, Philadelphia, Pennsylvania, 2024.

- "Professional Learning for Teacher Trainers that Supports Academic Learning for Students with Complex Support Needs"

**American Educational Research Association**, Chicago, Illinois, 2023.

- "Professional Development in Science Education for Special Educators Incorporating the 5E Model and Three-Dimensional Learning"

**Council for Exception Children**, 2023.

- "Universally-designed, inquiry-based science instruction for students with extensive support needs"

**Council for Exception Children**, 2021.

- "Towards effective science teaching and learning for students with significant cognitive disabilities"

**CAST UDL Symposium**, Virtual Conference, 2020.

- "Science for all: Integrating UDL with inquiry-based instruction"

**Workforce 2025: Educators and Industry Leaders Working Together to Prepare NY's Workforce of the Future**, Saratoga Springs, NY, 2018

- "National Leaders Share Successful Strategies for Strengthening the STEM Pipeline and Preparing People for 21<sup>st</sup> Century Careers"

**U.S. News and World Report/TIES STEM Solutions Workforce of Tomorrow**, Washington, D.C., 2018

- "Technical Assistance in a STEM Learning Network Context"

**Co-STEM Federal Inter-Agency Working Group**, Washington, D.C., 2013

- "Determinants of Quality in Teacher Professional Development"

**National Council of Teachers of Mathematics**, Indianapolis, Indiana, 2011

- "Teachers as Generators of Knowledge in Transformational Learning Communities"

**American Educational Research Association**, New Orleans, Louisiana, 2011

- "Supporting Teacher Action Research and the Research Preparation of Doctoral Students in the Context of a University-School Partnership"

**Ethnography in Education Research Forum**, Philadelphia, Pennsylvania, 2011

- “Turning Points in Developing a Practitioner Inquiry Network: Lessons in Communication, Voice, Trust, and Partnership”