Aaron Wenger

Kalamazoo, Michigan

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Professional Profile

I am a post-doctoral fellow with the Science and Mathematics Program Improvement unit which is associated with the Mallinson Institute of Science Education at Western Michigan University. I am also a recent graduate of the Mallinson Institute, and I am currently preparing several manuscripts for publication from my dissertation and associated work.

Research Interests

- 1) Role of evidence in educational policy and practice
- 2) Meta-research methods, especially meta-analysis and bibliometrics
- 3) Computational reproducibility and open science practices

Teaching and Public Engagement Interests

- 1) Scientific methods, experimental design, causal inference, and philosophy of science
- 2) Introductory and advanced biology subjects, particularly microbiology and molecular biology
- 3) History of educational psychology and science education
- 4) Statistical and computational research methods using R, esecially computational reproducibility

Projects/Manuscripts in Progress (WORKNG TITLES)

- Explaining Heterogeneity in Science Education Research: Comparing machine learning model with *a priori* meta-regression models (Dissertation Paper)
- Challenges and Solutions for Knowledge Accumulation in Science Education Research (Dissertation Paper)
- Mapping the Homeschooling Literature: A Scoping Review and Source Analysis
- Impact of Different Literature Search Approaches on Informal Literature Reviews: Recommendations for consumers of education research

Education

Western Michigan University — *Kalamazoo, Michigan*

Ph.D. in Science Eduation: Biological Sciences — *2017-2024*

- Dissertation: Beyond Average Effects in Education Research: *Explaining heterogeneity of concept mapping research in science education through meta-regression modeling*. A three-paper dissertation composed of two independent systematic reviews and meta-analyses - third paper is a position paper arguing for the particular uses of meta-analytic methods exemplified by my work
- Comittee chaired by Dr. William Cobern, with Dr. Betty Adams and Dr. Ya Zhang
- Concurrently enrolled in M.A. Biology program until spring 2021

Western Michigan University — *Kalamazoo, Michigan*

M.A. in Biological Sciences — *2017-2021*

- Master's Thesis Project: Engineered Flagellin Disulfide Variants in Salmonella typhimurium. Advised by Dr. Brian Tripp

Cornerstone University — *Grand Rapids, Michigan*

B.S. in Biology-Health Sciences - minors in Chemistry, Ancient (History) Studies — *2011-2015*

- Senior Thesis Project: a meta-study of the neural crest as a mechanism for vertebrate phenotypic diversity
- Internship: Hesse Memorial Archaelogical Laboratory, learned and applied zooarcheological techniques with animal bone remains

Research Experience and Certifications

In addition to research experience obtained in the completion of undergraduate, masters, and doctoral degree programs, I have held (or continue to hold) the following notable certifications and research positions.

Science And Mathematics Program Improvement
Kalamazoo, Michigan

Post-Doctoral Fellow — *2025-*

- Conducting evaluation work for MiSTEM Michigan Department of Education project
- Collecting and managing various sources of data
- Analyzing and making useful visualizations and other resources for data-driven decision-making

What Works Clearinghouse (WWC)

Certified Reviewer — *2025*

- Certified under v5.0 group design standards

Science And Mathematics Program Improvement
Kalamazoo, Michigan

Graduate Research Assistant — *2021-2023*

- Assisted in program evaluation for clients including NSF-funded Professional development for Emerging Education Researchers (PEER) field school, Kalamazoo Scholars Program, and the Michigan STEM Network (MiSTEM
- Created protocols and evaluation tools (e.g., Qualtric surveys and interview questions)
- Conducted quantitative and qualitative analysis of numerical, ordinal, and textual data
- Wrote internal and external reports summarizing findings

Teaching and Service

AERA Annual Meeting

Graduate Student Panel Reviewer — *2024*

- Served as graduate student reviewer for Division D (Measurement & Research Methodologies) and SIG-SRMA (Systematic Review and Meta-Analysis special interest group)

Western Michigan University
Kalamazoo, Michigan

Biology Lecturer for Pre-Med Initiative — *2018*

- A student-led program for MCAT exam preparation at WMU

Western Michigan University
Kalamazoo, Michigan

Teaching Assistant — *2017-2021*

- Served as instructor of record, teaching science courses for primary education majors
- CHEM 2800 - Physical Science for Elementary Educators: a inquiry-based, activity-centered course covering basic chemical and physical science principles
- BIOS 1700 - Life Science for Non-Majors: a laboratory-lecture-based content course covering major topics in the life sciences; taught first as an in-person course then independently adapted to a virtual, partially synchronous implementation for 2020-21 fall/spring semesters
- GEOG 1900 - Exploring Earth Science, the Atmosphere: A laboratory-based course covering basic earth science principles with an emphasis on the atmosphere; taught as a virtual, partially synchronous course

Friday Addition (FA) and Homeschool Ancillary Program (HsAP)
Michigan

Teacher — *2015-2017*

- Developed and taught 9th grade biology and 7th grade general science classes at FA and HsAP as well as 10th grade chemistry at HsAP

Grants and Awards

2023-2024	**Department Graduate Research and Creative Scholar** Given in recognition of excellence in research and creative scholarship	*Western Michigan University*
2021	**Graduate Student Research Grant** WMU grant Secured for science education research project	*Western Michigan University*
2019	**Graduate Student Research Grant** WMU grant secured for biology master thesis project	*Western Michigan University*
2014	**Ronald Meyer Academic Scholar** Granted to a student who demonstrates the qualities necessary to become a successful scientist	*Cornerstone University*

Publications

1. Wenger, A., & Cobern, W. (2025). *Concept Mapping in Biology Education: A Systematic Review and Meta-Analysis*. https://osf.io/48q3g/
2. Wenger, A. (2024). *Beyond Average Effects in Education Research: Explaining Heterogeneity of Concept Mapping Research in Science Education Through Meta-Regression Modeling* [PhD thesis]. Western Michigan University.

Presentations

1. Wenger, A., & Cobern, W. (2023, March). *Replication of concept mapping research in biology education: A systematic review and meta-analysis.* [Concurrent Session]. Michigan Academy of Science Arts and Letters Annual Conference, Berrien Springs, Michigan. https://ace-wenger.quarto.pub/masal23-concept-mapping/
2. Wenger, A. (2024, July). *Beyond Average Effects in Education Research* [Dissertation Defense]. https://ace-wenger.quarto.pub/beyond-average-effects/
3. Wenger, A. (2025, February). *Impact of Different Literature Search Approaches on Informal Literature Reviews* [Concurrent Session]. Michigan Academy of Science Arts and Letters Annual Conference, Alma College.
4. Williams, C., & Wenger, A. (2023, March). *Evaluating the effects of field schools on emerging STEM education researchers.* [Concurrent Session]. Michigan Academy of Science Arts and Letters Annual Conference, Berrien Springs, Michigan.