Aaron Wenger

Graduate Student

Kalamazoo, Michigan

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I am a PhD student in the Mallinson Institute of Science Education program. I have a passion for 1) teaching and learning at all levels and subjects, particularly biology in higher education and 2) the role and nature of evidence for decisions in education. Example work can be found on my Github page in the 'Portfolio' repository.

Professional Profile

Research Interests

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

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, science education
- 4) Statistical and computational research methods using R

Western Michigan University *Kalamazoo, Michigan*

Ph.D. Student in Science Education *2017-present*

- Will have completed coursework as of spring 2023 and have Ph.D. candidacy. Currently writing dissertation proposal

Projects/Manuscripts in Progress (WORKNG TITLES)

- Concept Mapping in Biology Education: A Meta-Analysis
- Assessing and Explaining Heterogeneity in Concept Mapping Studies in Science Education: A Meta-Analysis

Graduate Research Assistant in Science And Mathematics Program Improvement (SAMPI) *2021-present*

- Assist 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
- Create protocols and evaluation tools (e.g., Qualtric surveys and interview questions)
- Conduct quantitative and qualitative analysis of numeric, ordinal, and textual data
- Write internal and external reports summarizing findings

Education

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*

- Recipient of the Ronald Meyer Academic Scholar, Dean's list (6 of 7 semesters), and President's Scholarship
- 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

Further Education and Portfolio

Software for Statistics and Data Science

R: substantial programming experience with base R, Rstudio, and common packages (See ConceptMapping-inBioEd/scripts)

Git and GitHub: substantial experience creating and mangaging projects using Git version control and the GitHub collaboration platform (See my GitHub account for several public projects)

SPSS and SAS: minor programming experience (See Portfolio/sas)

Excel VBA: minor programming experience (See Portfolio/vba)

Software for Documentation and Reporting

Quarto: substantial experience creating reports and presentations (See portfolio, '— — — (research project)')
Rmarkdown: substantial experience creating data analysis notebooks, reports, and other documents such as this CV (See portfolio, '— — —')
LaTeX: minor working experience such as in this CV (See portfolio, '— — —')

Workshops and Online Courses

2023	**The Turing Way**: online community-sourced course supported by the Alan Turing Institute
2023	**Instats: Confirmatory factor analysis and structural equation modeling in R**: Taught by Michael Zyphur and with certificate of completion
2023	**Instats: Meta-analytic structural equation modeling**: Taught by Mike Cheung and with certificate of completion
2023	**Evidence Synthesis and Meta-Analysis in R (ESMAR) Conference**: participated in several workshops including: Advanced GitHub, Screening studies for eligibility in evidence syntheses
2022	**Excel VBA Programming**: video course introducing VBA programming and various applications such as macro implementation, userforms, and webscraping
2022	**Hands-on Programming in R**: online book course by Hadley Wickham of Posit
2022	**Happy Git and GitHub for the userR**: online book course introducing basic and more advanced applications of GitHub version control
2022	**Data Science in R**: online book course by Hadley Wickham of Posit
2022	**Research Transparency Online Course**: put on by the Berkeley Initiative for Transparency in the Social Sciences (BITSS)
2022	**Reproducible Research Tutorial Series**: online course by Dr. Schloss of the University of Michigan, supported by NIH
2022	**Instats: Path analysis with interactions and indirect effects in R**: Taught by Michael Zyphur
2021	**Bibliometrics Training Series**: put on by the NIH Library
2021	**Getting Started with SAS Programming**: a SAS course hosted by Coursera
2020-21	**AERA-ICPSR PEERS**: attended several in this workshop series including: Modern Meta-analysis, Cutting-edge Quatitative and Computational Methods for STEM Education, and Introduction to qualitative meta-synthesis methods
2020	**Introduction to Systematic Reivew and Meta-Analysis**: a John Hopkins University course hosted by Coursera

Teaching Experience

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 I **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

Lecturer for Pre-Med Intiative — *2018*

- A student-led program for MCAT exam preparation

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

Cornerstone University — *Grand Rapids, Michigan*

College Tutor — *2012-2015*

- Tutored college undergraduates for courses in genetics, chemistry, physics, math, and history with 480 hours of experience

Laboratory Assistant — *2014-2015*

- Assisted in stockroom, ordering materials, organizing activities, and grading laboratory reports

Grants and Professional Experience

Presentations and Publications

1. Wenger, A., & Cobern, W. (2023). *Replication of concept mapping research in biology education: A systematic review and meta-analysis.* [Conference]. Michigan Academy of Science Arts and Letters Annual Conference, Berrien Springs, Michigan. `https://ace-wenger.quarto.pub/masal23-concept-mapping/`
2. Williams, C., & Wenger, A. (2023). *Evaluating the effects of field schools on emerging STEM education researchers.* [Conference]. Michigan Academy of Science Arts and Letters Annual Conference, Berrien Springs, Michigan.