Aaron Wenger

Kalamazoo, Michigan

✉ aaron.wenger@protonmail.com | ⊙ 000-0002-1972-3001 | ⌨ ace-wenger | in aaron-wenger-a6b7b724a

Professional Profile

I am a post-doctoral fellow with Science and Mathematics Program Improvement (SAMPI), a 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.

Research Interests
- 1) Role and application of evidence in educational policy and practice
- 2) Quasi-experimental study designs and their statistical analysis
- 3) Computational reproducibility and leveraging open source tools/data

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*
- Committee chaired by Dr. William Cobern, with Dr. Betty Adams and Dr. Ya Zhang

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
- Concurrently enrolled with Ph.D. Science Education program

Cornerstone University   *Grand Rapids, Michigan*
B.S. in Biology-Health Sciences - minors in Chemistry, Ancient (History) Studies   *2011-2015*
- Senior Thesis Project: Meta-study of the neural crest as a mechanism for vertebrate phenotypic diversity
- Internship: Hesse Memorial Archaelogical Laboratory, learned and applied zooarcheological techniques with ancient animal bone remains

Academic Appointments

Science And Mathematics Program Improvement   *Kalamazoo, Michigan*
Post-Doctoral Fellow   *2025-*
- Post-Doctoral Fellow

Publications

1. Daspan, T., Wenger, A., & Pleasants, B. (n.d.). A Bibliometric and Descriptive Analysis of Research on Students with Disabilities in College Level Science Education. *Journal of Science Education for Students with Disabilities*.

Manuscripts in Preparation

1. Wenger, A., & Cobern, W. (2025). *Concept Mapping in Biology Education: A Systematic Review and Meta-Analysis*. EdArXiv.

2. Wenger, A. C. (n.d.). *Challenges for the Advancement and Application of Research in Science Education* [Project in Progress].

3. Williams, C. T., Wenger, A. C., Sterenberg Mahon, A., & Everett, K. (n.d.). *Evaluating Diverse Professional Development Experiences in the MiSTEM Network: Developing a Teacher Self-Efficacy Instrument* [Report in Progress].

Presentations

1. Wenger, A., & Cobern, W. (2023). *Replication of concept mapping research in biology education: A systematic review and meta-analysis.* [Concurrent Session].

2. Wenger, A. (2024). *Beyond Average Effects in Education Research* [Dissertation Defense].

3. Wenger, A. (2025). *Impact of Different Literature Search Approaches on Informal Literature Reviews* [Concurrent Session].

4. Williams, C., & Wenger, A. (2023). *Evaluating the effects of field schools on emerging STEM education researchers.* [Concurrent Session].

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*

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
BIOLOGY LECTURER FOR PRE-MED INITIATIVE *Kalamazoo, Michigan* *2018*
- A student-led program for MCAT exam preparation at WMU

Western Michigan University
TEACHING ASSISTANT *Kalamazoo, Michigan* *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)
TEACHER *Michigan* *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

Research Experience and Certifications

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

What Works Clearinghouse (WWC)
CERTIFIED REVIEWER *2025*
- Certified under v5.0 group design standards to conduct reviews of experimental and quasi-experimental studies for the WWC

Science And Mathematics Program Improvement
GRADUATE RESEARCH ASSISTANT *Kalamazoo, Michigan* *2021-2023*
- Assisted in program evaluation for clients including:
  NSF-funded Professional development for Emerging Education Researchers (PEER) field school,
  Kalamazoo Scholars Program,
  The MiSTEM Network
  1. Created protocols and evaluation tools (e.g., Qualtric surveys and interview questions)
  2. Conducted quantitative and qualitative analysis of numerical, ordinal, and textual data
  3. Wrote internal and external reports summarizing findings

Professional Development and Skills

I value the continous development of my skills and areas of expertise. The following describes these skills especially

with regards to my proficiency with programming languagues, software for statistical analysis, and tools for open and accessible scientific reports.

SOFTWARE FOR STATISTICS AND DATA SCIENCE

R: extensive programming experience with base R and many packages (See *ConceptMapping-inBioEd*)

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)

Analysis Pipeline Tools: substantial experience implementing data analysis pipelines with the 'targets' and 'renv' R packages (See *ConceptMapping-inBioEd*)

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

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

SOFTWARE FOR DOCUMENTATION AND REPORTING

Microsoft Office Suite: extensive collaborative experience, including use of advanced Word features, formulas and VBA macro programs in Excel ()

Google Workspaces: extensive collaborative experience, including use of the API in Drive, Docs, and sheets to integrate R scripts ()

Quarto and Rmarkdown: substantial experience creating reports and presentations that integrate R scripts and render to MS Word, PDF, HTML webpages and dashboards, entire websites, and Google Docs ()

LaTeX: minor experience working with Tex files such as in editing this CV ()

OTHER SOFTWARE

Qualtrics: substantial experience in creating survey forms, customizing those forms with javascript and html, distributing to program participants, and processing results

Google Forms: substantial experience in creating survey forms and processing results

Abstrackr and MetaReviewer: substantial experience in these platforms for meta-research studies

WORKSHOPS AND ONLINE COURSES

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**: several workshops including: Advanced GitHub, Screening studies for eligibility in evidence syntheses
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
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

Professional Profile

I am a post-doctoral fellow with Science and Mathematics Program Improvement (SAMPI), a 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.

RESEARCH INTERESTS

- 1) Role and application of evidence in educational policy and practice
- 2) Quasi-experimental study designs and their statistical analysis
- 3) Computational reproducibility and leveraging open source tools/data

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*
- Committee chaired by Dr. William Cobern, with Dr. Betty Adams and Dr. Ya Zhang

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
- Concurrently enrolled with Ph.D. Science Education program

Cornerstone University   *Grand Rapids, Michigan*
B.S. in Biology-Health Sciences - minors in Chemistry, Ancient (History) Studies   *2011-2015*
- Senior Thesis Project: Meta-study of the neural crest as a mechanism for vertebrate phenotypic diversity
- Internship: Hesse Memorial Archaelogical Laboratory, learned and applied zooarcheological techniques with ancient animal bone remains

Academic Appointments

Science And Mathematics Program Improvement   *Kalamazoo, Michigan*
Post-Doctoral Fellow   *2025-*
- Post-Doctoral Fellow

Publications

1. Daspan, T., Wenger, A., & Pleasants, B. (n.d.). A Bibliometric and Descriptive Analysis of Research on Students with Disabilities in College Level Science Education. *Journal of Science Education for Students with Disabilities*.

Manuscripts in Preparation

1. Wenger, A., & Cobern, W. (2025). *Concept Mapping in Biology Education: A Systematic Review and Meta-Analysis*. EdArXiv.

2. Wenger, A. C. (n.d.). *Challenges for the Advancement and Application of Research in Science Education* [Project in Progress].

3. Williams, C. T., Wenger, A. C., Sterenberg Mahon, A., & Everett, K. (n.d.). *Evaluating Diverse Professional Development Experiences in the MiSTEM Network: Developing a Teacher Self-Efficacy Instrument* [Report in Progress].

Presentations

1. Wenger, A., & Cobern, W. (2023). *Replication of concept mapping research in biology education: A systematic review and meta-analysis.* [Concurrent Session].

2. Wenger, A. (2024). *Beyond Average Effects in Education Research* [Dissertation Defense].

3. Wenger, A. (2025). *Impact of Different Literature Search Approaches on Informal Literature Reviews* [Concurrent Session].

4. Williams, C., & Wenger, A. (2023). *Evaluating the effects of field schools on emerging STEM education researchers.* [Concurrent Session].

Grants and Awards

2023-2024	**Department Graduate Research and Creative Scholar**	*Western Michigan University*
	Given in recognition of excellence in research and creative scholarship	
2021	**Graduate Student Research Grant**	*Western Michigan University*
	WMU grant Secured for science education research project	
2019	**Graduate Student Research Grant**	*Western Michigan University*
	WMU grant secured for biology master thesis project	

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

Research Experience and Certifications

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

What Works Clearinghouse (WWC)

CERTIFIED REVIEWER *2025*

- Certified under v5.0 group design standards to conduct reviews of experimental and quasi-experimental studies for the WWC

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,
  The MiSTEM Network
  1. Created protocols and evaluation tools (e.g., Qualtric surveys and interview questions)
  2. Conducted quantitative and qualitative analysis of numerical, ordinal, and textual data
  3. Wrote internal and external reports summarizing findings

Professional Development and Skills

I value the continous development of my skills and areas of expertise. The following describes these skills especially with regards to my proficiency with programming languagues, software for statistical analysis, and tools for open and accessible scientific reports.

SOFTWARE FOR STATISTICS AND DATA SCIENCE

R: extensive programming experience with base R and many packages (See *ConceptMapping-inBioEd*)

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)

Analysis Pipeline Tools: substantial experience implementing data analysis pipelines with the 'targets' and 'renv' R packages (See *ConceptMapping-inBioEd*)

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

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

SOFTWARE FOR DOCUMENTATION AND REPORTING

Microsoft Office Suite: extensive collaborative experience, including use of advanced Word features, formulas and VBA macro programs in Excel ()

Google Workspaces: extensive collaborative experience, including use of the API in Drive, Docs, and sheets to integrate R scripts ()

Quarto and Rmarkdown: substantial experience creating reports and presentations that integrate R scripts and render to MS Word, PDF, HTML webpages and dashboards, entire websites, and Google Docs ()

LaTeX: minor experience working with Tex files such as in editing this CV ()

OTHER SOFTWARE

Qualtrics: substantial experience in creating survey forms, customizing those forms with javascript and html, distributing to program participants, and processing results

Google Forms: substantial experience in creating survey forms and processing results

Abstrackr and MetaReviewer: substantial experience in these platforms for meta-research studies

WORKSHOPS AND ONLINE COURSES

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**: several workshops including: Advanced GitHub, Screening studies for eligibility in evidence syntheses
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
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