

Timothy E. Muhich

tmuhich at umich dot edu

Education

- Certification in Secondary Education, Biology and Chemistry May 2014
College of Education, Michigan State University, East Lansing, MI
- B.S. in Biology, Chemistry Minor May 2012
Lyman Briggs College, Michigan State University, East Lansing, MI
- B.S. in Zoology, Marine Biology Concentration May 2012
Lyman Briggs College, Michigan State University, East Lansing, MI

Publications

1. Muhich, T. and, R. Rood (2022). CCE for Me: Students Demand High-Quality Climate Change Course Offerings, *The Science Teacher* 90:1 (36-40).
2. Hill, R.W., M. Grezlik, T. Muhich, and M. Humphries (2021). City-Scale Energetics: Window on Adaptive Thermal Insulation in North American Cities, *Journal of Comparative Physiology B*. 192:6 (643-658).
3. Hill, R. W., T. Muhich, and M. Humphries (2013). City-Scale Expansion of Human Thermoregulatory Costs, *PlosOne* 8:10 (e76238).

Conference Presentations and Seminars

1. Muhich, T. & S. Hanson. *SageModeler: Using computational modeling to increase student discourse in science*. National Consortium of Secondary STEM Schools Conference (2023, November 14).
2. Muhich, T. *Opportunities elective courses provide high schools for the implementation of interdisciplinary climate change education*. Climate Literacy and Energy Awareness Network Teleconference (2023, November 7).
3. Muhich, T. *Providing Meaningful Climate Change Education to Secondary Students*. Seminar to School of Education and School of Environment and Sustainability at the University of Michigan (2022, December 9).
4. Muhich, T. *Teaching Climate Change as a High School Class*. Michigan Science Teachers Association 68th Annual Conference (2021, February 27 - March 6).

Research Experience

- Teacher Collaborator, Multilevel Computational Modeling 10/2019-12/2022
Create for STEM at Michigan State University, East Lansing, MI and the Concord Consortium
- Piloted units in SageModeler, providing feedback on the programing and materials while participating in Multilevel Computational Modeling discussions
- Field Assistant, Protection by Aposematic Coloration 7/2013-8/2013
Department of Biology, University of Mississippi in French Guiana
- Investigated the protection provided by and evolution of aposematic coloration in *Dendrobates timctorius*

Student, Kluane Red Squirrel Project 7/2012-4/2013
University of Alberta, Edmonton, AB in Yukon, Canada

- Collected and analyzed data on behavior, energy, and resource use in free-ranging red squirrels

Undergraduate Research Experience, Forest and Road Relations: Amphibians 6/2011-7/2011
Lyman Briggs College, Michigan State University, East Lansing, MI in Nicaragua

- Co-designed and independently carried out a study to determine effects of road building on amphibian communities through auditory sampling of ponds

Research Assistant, Richard Hill Lab 9/2010-5/2012
College of Natural Science, Michigan State University, East Lansing, MI

- Collected and analyzed data on city energy use and reviewed literature of vertebrate mortality

Field Assistant, Conservation of a Polymorphic Frog and Herpetology Survey 5/2010-7/2010
Lyman Briggs College, Michigan State University, East Lansing, MI in Panama and Nicaragua

- Determined limiting resource of *Oophaga pumilio*, and investigated appropriateness of auditory sampling for determining population size
- Installed and then collected data from pitfall traps as well as visual sampling within community ponds

Teaching Experience

Classroom Teacher 8/2014-7/2016 & 8/2018-6/2023
Battle Creek Area Math & Science Center, Battle Creek Public Schools, Battle Creek, MI

- Created and implemented curriculum for inquiry-based class on Global Climate Change in partnership with the University of Michigan
- Created and lead the High School Climate Change Symposium, an international conference featuring speakers such as Prof. James Hansen
- Improved curriculum of SageModeler through collaboration with Create for STEM at Michigan State University and Concord Consortium
- Implemented and taught a modeling-based approach to Sophomore Chemistry
- Taught Advanced Chemistry, Organic Chemistry, Forensic Science, Freshman Technology, Food Science, Research Methods, Ornithology: Birds of Michigan, and Honors Global Climate Change courses
- Advised student Horticulture Club
- Received “Highly Effective” in all evaluations, the highest possible teaching rating

Classroom Teacher and Biology Team Lead 8/2016-6/2018
Northwest High School, Montgomery County Public Schools, Montgomery County, MD

- Developed Next Generation Science Standard aligned assessment clusters for county wide implementation
- Managed seven biology teachers as Team Lead to ensure county curriculum and Next Generation Science standards were met in all 24 course sections
- Taught Honors Biology, Honors Chemistry, and Environmental Chemistry courses
- Received “Met Standard” in all evaluations, the highest possible teaching rating

Student Teacher and Intern 8/2013-5/2014
Holt High School, Holt Public Schools, Delhi Township, MI

- Lead taught case-study-centered and inquiry-based Biology and Chemistry classes
- Assistant Coach of Science Olympiad team

Teaching Assistant 7/2011-8/2011
College of Natural Science, Michigan State University, East Lansing, MI
Study Abroad Wild Borneo: Malaysia

Learning Assistant

8/2010-12/2011

Lyman Briggs College, Michigan State University, East Lansing, MI
Calculus I

Camp Counselor

6/2005-8/2009

Cole Canoe Base Scout Camp, Detroit Area Council, MI
Small Boat Sailing, Wilderness Survival, Camping

Impactful Professional Development Participation

2021

Grading for Equity, by Joe Feldman

- Recreated grading philosophy and procedures at BCAMSC through teacher led book study and discussions to increase bias resistance, student motivation, and increased accuracy in grades
- Transitioned classes to standards-based grading.

2017-2018

Research for Scientific Understanding in Students

- Demonstrating the process of science to students through conducting novel research applicable to class content
- Conducted lab experiment exploring the impacts of Ocean Acidification of non-calcium secreting corals

2015

American Modeling Teachers Association Training

- Modeling philosophy and methodology instruction.
- Restructured school chemistry curriculum to be inquiry based and student driven

2014-2015

Visible Learning, by John Hattie

- Identifying practices in teaching that can be focused for better instructional outcomes

Study Abroad:

5/2011-6/2011

Biology in the Galapagos Islands, Ecuador

7/2010-8/2010

Wild Borneo: Biodiversity of Southeast Asia, Malaysia

3/2010

Rainforests and Reality, Nicaragua

Service/Leadership

Advisor, High School Climate Change Symposium 2021-present.

Battle Creek Area Mathematics and Science Center, Battle Creek, MI

- Oversee student organization of annual climate symposium for students from around the world. The conference focuses on climate science, action and justice.

Student Leader, Advancing Climate Education conference March 2023.

University of Michigan, Ann Arbor, MI

- Played key role in conceptualizing, planning, implementing and evaluating first ever event at the University of Michigan in which faculty, students, staff from all of its 19 schools and colleges participated. Conducted research to compile best climate education practices guide for faculty disseminated during the event.

Awards and Scholarships:

2023	Excellence in Education Award, Lakeview High School
2023	Influential Educator Award, Pennfield High School
2012	Fulbright Canada, Science Technology Engineering and Math Award
2008-2012	Michigan State University Dean's List
2011	Lyman Briggs College Summer Research Scholarship
2011	Study Abroad Merit Scholarship
2007	Eagle Scout