Application Info

Spring 2025 MothEd Implementation - EARN $600!

DESCRIPTION: We are looking for new dedicated educators who are interested in piloting our **MothEd Teacher Guide** and curricular materials this spring**.** This opportunity is intended for teachers:
  (1) Who are are new to MothEd and have not attended MothEd summer PD sessions
  (2) Located in warmer climates where spring night temperatures will often be above ~55ºF
  (3) Who are able to dedicate at least 8 class days to facilitating moth research with their students before the end of the 2025 school year.

WHAT IS MothEd?
MothEd is an engaging, hands-on science unit designed for grade-school students (grades 4-8), that introduces them to authentic science. Students build traps, decide on their own research question, collect their own data, sort and catalogue their moths, and form evidence-based conclusions.This helps students develop critical scientific skills, including hypothesis formation and systematic data collection. More than just a lesson in science, MothEd fosters a lasting connection to local ecosystems, inspiring the next generation of scientists.

OVERVIEW:
Selected participants will implement 8-classroom modules, designed to be completed over approximately eight-to-ten instructional days. These modules and their lesson plans will be fully outlined in the MothEd Teacher Guide, which will be provided to participating teachers. For an overview, see: [MothEd at a Glance](.).

Participating teachers will be responsible for obtaining their own materials for implementation. MothEd will provide $100 for materials cost (at the end of the implementation), which is included as part of the $600 honorarium. Please refer to the [Needed Materials](.) list for more information.

WHAT'S INVOLVED?
The Teacher Guide will take you through the process of:
  ● **Introducing students to moths, and basic moth ecology.**
  ● **Building and deploying moth traps with your students.**
  ● **Developing and exploring research questions with your students.**
  ● **Operating with your students in a technology-supported interface.**

Participating teachers will also be asked to:
  1. **Record classroom sessions** using a secure laptop/smartphone app called *GoReact*. These will be used by the MothEd team to refine our teacher guide and to help us better understand how teachers and students are engaging with the process of science.
  2. **Share progress updates** with the MothEd team by responding regularly to emails.

3. **Provide classroom photos and/or artifacts** that you may have invented or adapted to help your facilitation of the materials.
4. **Complete a ZOOM Exit Interview** with a MothEd team member after implementation concludes.

PROGRAM TIMELINE
- **APPLICATIONS** **ARE DUE BY FRIDAY, MARCH 14TH 2025.**
- Applicants will be notified by March 21st, 2025.
  - *Upon acceptance, participants will be required to obtain consent forms for all students participating in the research study.*
  - *A sample of a student consent form is linked here: Student Consent Form*
- Participants will be required to begin MothEd classroom implementation on, or shortly after, May 1st, 2025.

COMPENSATION
Once the program is complete, as outlined above, participants will receive a **$500** honorarium to recognize the time and effort spent on implementation activities, and an additional **$100** to compensate for material costs (**$600** in total).

If you have any questions, contact the MothEd program director, Pete White: pwhite@msu.edu
Additionally, feel free to check out our website: www.motheducation.org

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LINK TO APPLICATION SURVEY: MothEd Spring 2025 Application

Materials Needed

Materials Needed

Trap Building Materials

- UV Keychain Lights (100 pc.) - Amazon ($39.99)
- Plastic Twist Ties (1000 pc.) - Amazon ($7.99)
    - Pipe cleaners are an effective alternative to twist ties.
- Hotshot Pesticide Strip (1 pc.) - Amazon ($9.34 each)
    - 1 strip can supply ~12 traps.
- Binder Clips (144 pc.) - Amazon ($9.26)

Pinning Materials

- Insect Pins (size #2) (100 pc.) - Amazon ($6.99)
    - Sewing pins, found at most local craft stores, are also an effective alternative to insect pins for students.
- Broad-Tipped Forceps (10 pc.) - Amazon ($9.51)
- Foam boards (for Pinning Boards)
    - Let your custodians know that you're looking for styrofoam, they can catch styrofoam before it leaves your buildings.
    - In situations where free foam cannot be sourced, foam insulation from any big hardware store (like this) works really well in a pinch.

Total Cost: ~$82.08

You may also need:
- A hole punch.
- Packaging tape.
- 2 liter bottles (2 per trap; historically teachers have had students bring these in from home.)

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MothEd at a Glance

MothEd at a Glance

Module 1: All About Moths!
Estimated Time: 1-2 class periods (30-90 minutes)
Learning Outcomes:

By the end of this modules, students will be able to:
1) Describe the general anatomy of moths.
2) Outline the ways that moths impact humans as pollinators, pests, and components of the terrestrial food web.
3) Describe the life cycle of a moth.
4) Pose interesting questions about moths and their local neighborhoods.

Description:

The purpose of this module is for students to develop foundational knowledge about the biology and ecology of moths. Through this module, students will explore moth anatomy, their life cycle stages, and their vital ecological role as pollinators.

Module 2: Build-A-Trap!
Estimated Time: ~2 class periods (120 minutes)
Learning Outcomes:

By the end of this modules, students will be able to:
1) Understand and describe trap components and function, applying scientific knowledge to design.
2) Explain how moth behavior influences trap design and effectiveness.
3) Plan and construct a functional moth trap.

Description:

This module provides hands-on experience for students to construct a functional moth trap to conduct their own trapping, guiding students through a step-by-step construction process.

Module 3: Designing Experiments and Forming Hypotheses
Estimated Time: 1-2 class periods (60-90 minutes)
Learning Outcomes:

By the end of this module, students will be able to:
1) Understand and identify key elements of a scientific experiment (research question, variables, and hypothesis).
2) Develop a testable research question and formulate a hypothesis based on scientific reasoning.
3) Apply knowledge of moth behavior, feeding, and habitats to predict effective trap locations.

Description:

Students will learn about the key elements of a scientific experiment: the research question, the dependent and independent variables, and the hypothesis. Students will develop their own research questions related to moth trapping.

Module 4: Trapping!
Estimated Time: Varies
Learning Outcomes:

By the end of this module, students will be able to:
1) Prepare and place traps according to their experimental design.
2) Apply understanding of effective trap deployment to monitor trap placement.

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3) Recognize and minimize potential sources of error or bias during trap placement.

Description:

Students will learn about effective deployment of light traps, and place their own traps to test their research questions, taking into consideration factors that may affect trapping.

Module 5: Sorting and Pinning

Estimated Time: depends on the number of moths collected

Learning Outcomes:

By the end of this modules, students will be able to:
1) Develop and apply sorting guidelines based on moth characteristics.
2) Record specimen data using CLUE platform or alternative data collection tools.
3) Demonstrate proper moth pinning techniques to preserve specimen.

Description:

Students will collect and sort moth specimens and enter their data into a data table. Students will also learn how to pin specimen and the importance of preserving their moths.

Module 6: Graph It!

Estimated Time: ~1 class period (60 minutes)

Learning Outcomes:

By the end of this module, students will be able to:
1) Generate and interpret summary statistics to describe patterns in collected data.
2) Utilize graphing programs to create visual representations of their trapping data.

Description:

Students will use their data to generate summary statistics, and create graphs either through CLUE or on paper.

Module 7: Return of the Hypothesis

Estimated Time: 1 class period (60-90 minutes)

Learning Outcomes:

By the end of this module, students will be able to:
1) Use visualized data to draw conclusions and to accept or reject their original hypothesis.
2) Reflect on their experimental process to identify factors that influenced their results.

Description:

Students will use their collected and analyzed data to draw conclusions, and either accept or reject their initial hypotheses, using visualized data and summary statistics.

Module 8: Present It!

Estimated Time: 2 class sessions (90-120 minutes)

Learning Outcomes:

By the end of this module, students will be able to:
1) Effectively communicate their scientific findings using appropriate visual, oral, or written formats.
2) Engage in peer-to-peer learning by sharing and discussing experimental results.

Description:

This module involves students presenting their experimental design, data, and conclusions to their peers.

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