

# Empowering Student Scientists Through Local Insect Ecology: The MothEd Teacher Guide

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## PLAN

**Everything you could need to prepare for implementing MothEd:**

- 67 page interactive digital unit guide features lesson plans, worksheets, templates, instructional resources, and tips from other teachers
- Comprised of 9 Lessons, ~12 classroom hours
- 45 resources including slideshows, warmups, instructions, handouts, formative assessments, and more.

## INTRODUCE

### Why Moths?

- Easy to trap
- Can be found almost anywhere
- Understudied → More for students to investigate
- Ecologically and economically important
- More than 10,000 species in North America

 All About Moths
  Insect Ethics

## DESIGN



Implementing teachers attended Summer Teacher Camps to help co-develop materials



- DIY traps require two 2L soda bottles, an inexpensive UV light, and other easily sourced materials
- Traps are reusable and easily replaced, repaired, and modified

Designing Experiments & Forming Hypotheses

Build-A-Trap!



## SHARE

**Here's what teachers had to say:**



Present It!

"Seeing the students so invested in something that they didn't even think they would want to learn about was, I think, really powerful for them too... being able to change their mind and see [that] when you learn about something, then sometimes it can change your perspective. I think [it] was a really positive experience for them."

"It built that initial engagement... They had to fulfill a hypothesis. They had to revisit that hypothesis. They had to present their findings... It went through those steps of the scientific method that I have to keep [repeatedly] teaching, and I really thought that, you know, [this time] it worked."

## The MothEd Curriculum...

- ✓ **SUPPORTS NGSS**
- ✓ **FITS YOUR CURRENT SCOPE AND SEQUENCE**
- ✓ **PRIORITIZES AUTHENTIC SCIENCE INQUIRY**
- ✓ **FOSTERS STUDENT ENGAGEMENT AND CREATIVITY**

"The Teacher Guide is easy to understand, it aligns well with my current curriculum, and will be helpful in teaching students the scientific method."

## SUMMARIZE



Return of the Hypothesis

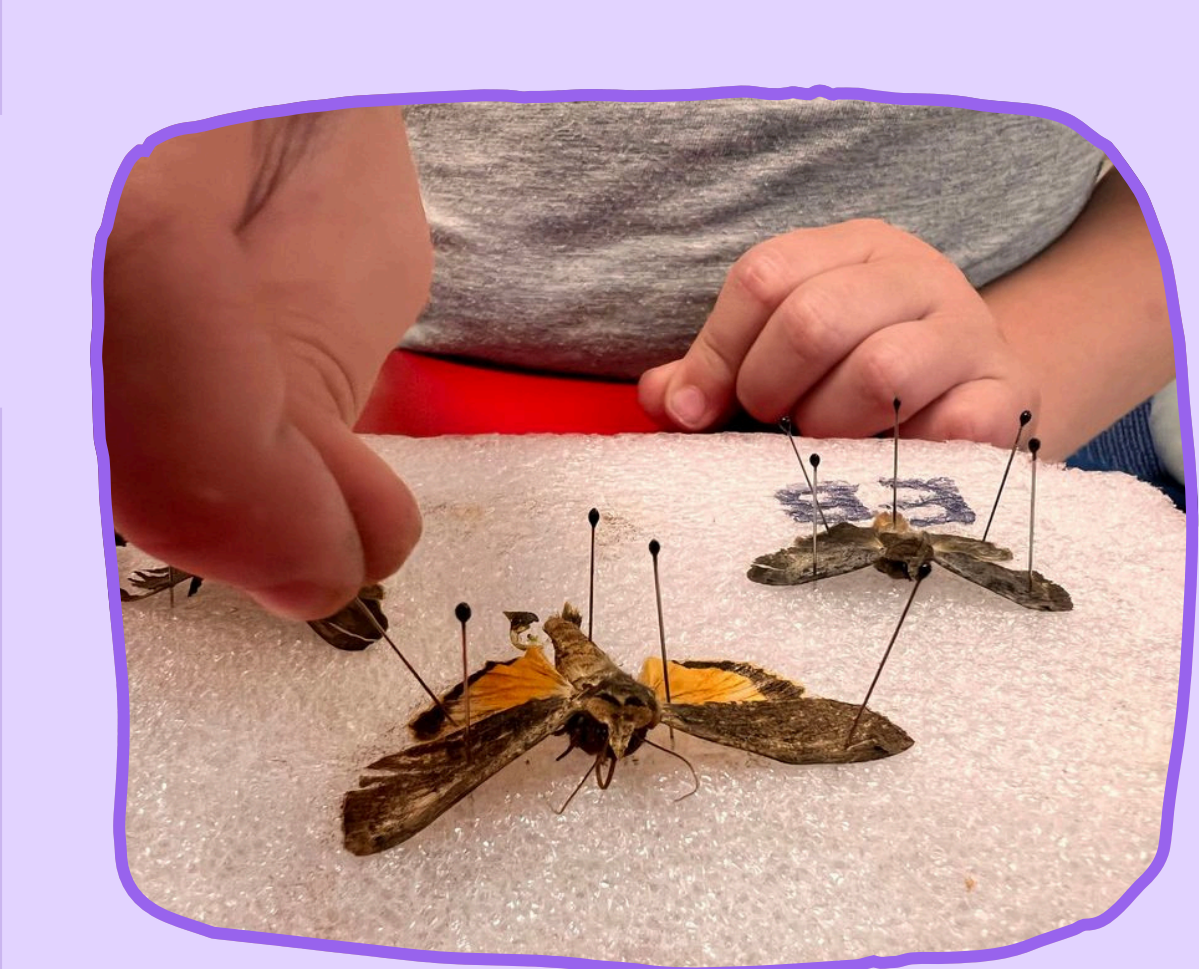
- Teachers encouraged to assess how they see fit
- Curriculum models a full cycle of scientific method
- Many opportunities for extension, modification, community building, and support:

|                        |                                  |                                         |
|------------------------|----------------------------------|-----------------------------------------|
| MothEd Facebook Group  | Moth Moments on TikTok & YouTube | Quantitative and Data Literacy Supports |
| 3D Printed Accessories | Alternative Ed Programs          | Collaboration with local scientists     |

## ANALYZE



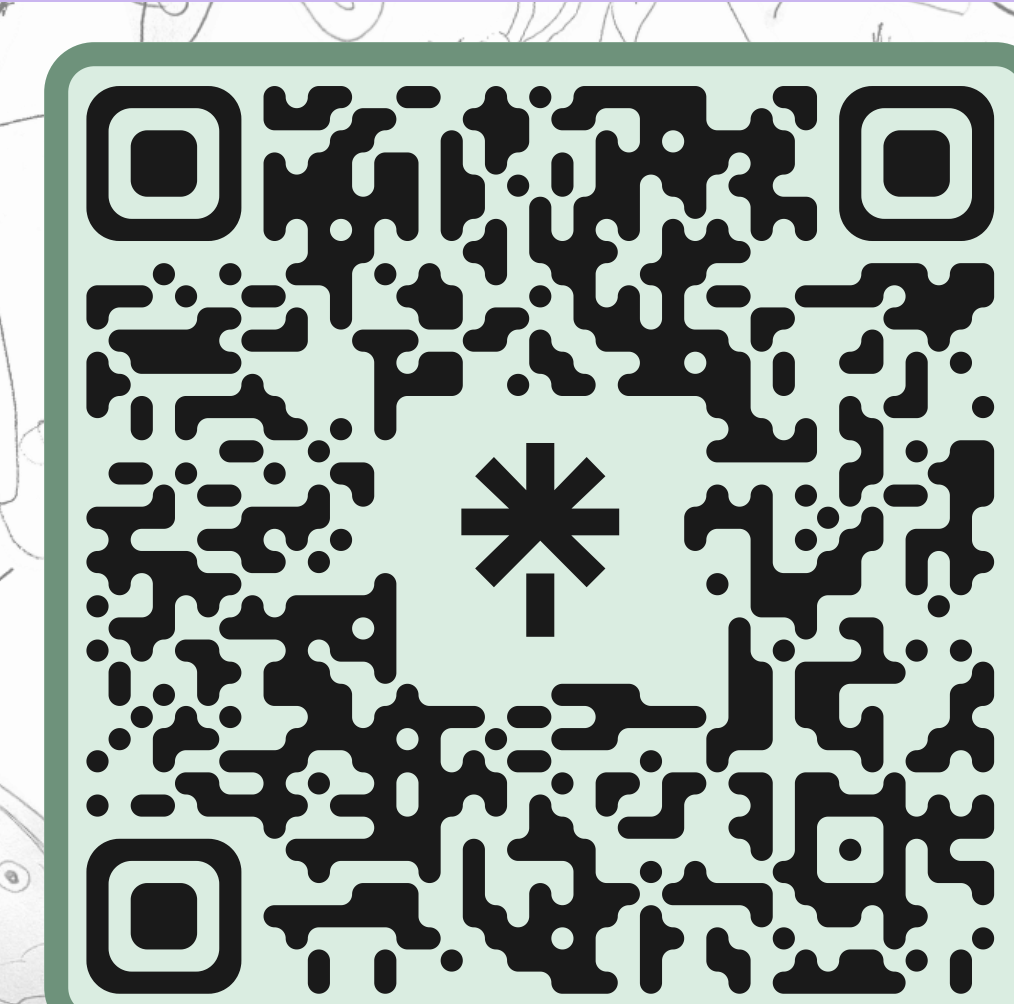
Graph It!



- Students decide how to sort and display their data, reinforcing data literacy skills

**Acknowledgements**  
This material is based upon work supported by the National Science Foundation under Grant No. 2100990. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

**LINKS HERE!**



## COLLECT

- Students decide what data is important to answer their questions
- Depending on experimental design, students can customize trap placement
- Teachers have sent traps home or set on campus



Trapping!

Sorting & Pinning