IOWA STATE UNIVERSITY
School of Education

SEPA SCIENCE EDUCATION PARTNERSHIP AWARD
SUPPORTED BY THE NATIONAL INSTITUTES OF HEALTH

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Urban Ecosystem Project: Mosquitoes & Me Summer Camp

ISU 4U PROMISE — IOWA STATE UNIVERSITY

Purpose

Urban Ecosystem Project: Young Scientists and Ambitious Teachers Improving Health in an Urban Ecosystem

Specific Aim #1 – Enhancing Science Learning of Youth
Achieved through youth participation in *Mosquitoes & Me* programming

Specific Aim #2 – Enhancing Science Teaching of Elementary Science Educators
Achieved through teachers learning and employing Ambitious Science Teaching (AST) and Diverse Pedagogy Theory (DPT)

Specific Aim #3 – Enhancing Mosquito-Related Community Public Health
Achieved through community residents gaining accurate understanding about controlling mosquito populations to improve public health.

Camp Context

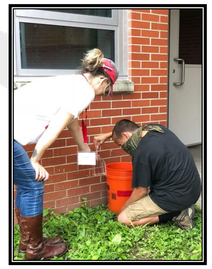
- The students served by this program attend schools served by a **university-school partnership called the ISU 4U Promise**. Through this partnership, students are eligible for tuition awards in **support of their future undergraduate studies**.
- This two-week summer camp builds on young learners' innate curiosity about the natural world. With its particular insect focus, *Mosquitoes & Me* **aims to nurture students' capacity to ask and answer big questions** and support this skill as an important **part of their college-going journey**.
- *Mosquitoes & Me* **participants learn authentic science practices** while applying ideas about mosquito ecology to their local environment.
- This unique program uses an **ambitious and culturally-responsive approach to science education** that emphasizes **student-centered intellectual engagement and creative thinking**.

Participants

Youth:
- Entering grades 5-6 at King and Moulton Elementary Schools, Des Moines, Iowa
- Race and Ethnicity: 63% Female, 43% Hispanic/Latino, 37% African American

Near-Peer, Youth Mentors:
- Returning youth with 1-2 years previous camp experience
- Entering grades 6-9; 40% of camp participants

Camp Educators:
- Preservice teachers: ISU undergraduates, majoring in Elementary Education enrolled in a special "Teaching and Learning with Insects" course.
- Inservice teachers: Recruited from the partner ISU 4U Promise schools and participating in our Professional Learning Community.



Key Evaluation Data

Project Participants

Data Sources	Youth	Preservice Teachers	Inservice Teachers	Families
Pre and Post Surveys	x	x	x	
Mosquito Drawings	x	x		
Public Health Surveys				x
Individual Interviews	x	x	x	
Focus Group Interviews		x	x	
"I Can" Self Reports	x			
Science Notebooks	x			
Lesson Plans		x	x	
Smart Pen Drawings	x			
Videotaped Observation	x	x		

Key Findings at the Three-Year Point

Participation in the summer camp positively impacts ...	
...youth's science skills	For example: "I can use my understanding of science to ask a question." "I can use the results of my investigation to answer the questions that I asked."
... youth's science attitudes	For example: "It is important to me to understand the work I do in science." "I would like a job that uses science."
...youth's mosquito science knowledge	For example: At the end of camp, the majority of youth report being "Skeeter Scientists" (as opposed to "Still Learners" when it comes to; basic mosquito anatomy, life cycle changes, male and female identification, biting behavior, disease transmission, breeding habitats, and preventative measures.
...youth's talking about mosquitoes at home	For example: At the end of camp, the majority or youth report sharing what they learned at summer camp with other people in their home.
... elementary educators' confidence in science teaching	For example: "I used to think it was the teacher spewing information. it is the group coming together and learning from one another...using real life situations. Students have so much more to offer."
...elementary educators' commitment to equity	For example: "The whole opportunity has change my career path. Before I didn't know I would be interested in social justice...This is life affirming. This is what I want to dedicate my life to."
... families' conversations about mosquitoes	For example: "Family members of youth participants discussed mosquitoes with others in the community, including the life cycles, what attracts mosquitoes, and disease."
... families' interest in the science education of their children	For example: "Now she wants to know more than 'what.' She wants to know 'how." "It is high level science that exposes them to thinking like scientists and puts them ahead when they get to high school."

Summer Camp Overview

MOSQUITOES & ME SUMMER CAMP 2018

WEEK 1 – MOSQUITO BIOLOGY & ECOSYSTEMS

Parents and Guardians! Would you like to join us for a camp activity? Just contact us at 515-294-8021.
Every day is an adventure at our camp!

	Monday, June 18	Tuesday, June 19	Wednesday, June 20	Thursday, June 21	Friday, June 22
8:15 AM	Arrival & Bus Pick-Up				
8:45 AM	**Breakfast**				
9:00 AM	Why is it great that you are here?	Greetings & Recognitions			Greetings & Recognitions
9:30 AM	**Camp Orientation**	What does it mean to do mosquito science?	Why are mosquitoes important?	How have mosquito environments changed over time?	What is so important about water?
10:00 AM	Can we live together? Mosquitoes or humans?	How do mosquitoes grow? **Park Trip**		**Living History Farms**	
11:30 AM	**Lunch**				
12:00 PM	Lunchtime Activities				
12:30 PM	Where do mosquitoes live in our environment? **Camp Tour**	What do mosquitoes eat?	**Pool Trip**	**Mosquito Ecosystem Model-Making**	Where do mosquitoes live in our environment? **Neighborhood Tour**
2:30 PM	**Snacks** & Team Check-Ins				
2:45 PM	Dismissal & Bus Drop-Off				

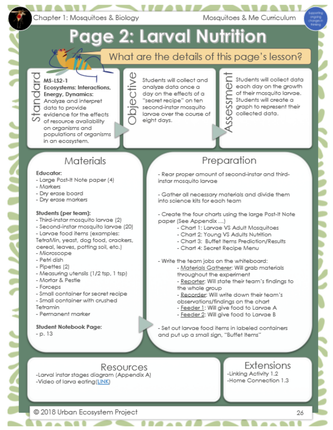
MOSQUITOES & ME SUMMER CAMP 2018

WEEK 2 – MOSQUITO ATTRACTORS & TRAPS

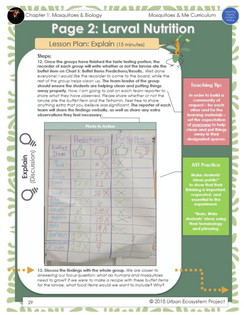
Parents and Guardians! Would you like to join us for a camp activity? Just contact us at 515-294-8021.
Every day is an adventure at our camp!

	Monday, June 25	Tuesday, June 26	Wednesday, June 27	Thursday, June 28	Friday, June 29
8:15 AM	Arrival & Bus Pick-Up				
8:45 AM	**Breakfast**				
9:00 AM	Greetings & Recognitions				
9:30 AM	Where do mosquitoes live with us?	How do mosquitoes buzz?	**Mosquito Inquiry Stations**	How would you build a better mosquito trap?	**Mosquito Trap Pickup/Redesign**
10:00 AM	How do mosquitoes bite?	How would you trap a mosquito?			Do all mosquitoes look the same?
11:30 AM	**Lunch**				
12:00 PM	Lunchtime Activities				
12:30 PM	How do mosquitoes spread disease?	**Mosquito Trap Design**	**Pool Trip**	**Mosquito Trap Setting**	**Pool Trip**
2:30 PM	**Snacks** & Team Check-Ins				
2:45 PM	Dismissal & Bus Drop-Off				

Curriculum Excerpt



We use an integrated Ambitious Science Teaching (Windschitl et al, 2018) and Diversity Pedagogy Theory (Rosa Hernandez Sheets, 2005) for our lesson plan framework.



Windschitl, Thompson and Braaten (2018) *Ambitous Science Teaching.* Cambridge, Massachusetts: Harvard Education Press

Hernandez Sheets (2005) *Diversity Pedagogy: examing the role of culture in the teaching-learning process.* Boston: Pearson Education, Inc.

Kid Quotes

"anyone can be a scientist.
A scientist studies a subject; even a little kid can ask about the stars"

"…**I love coming and I love being here** with the chance to interact with people and learn outside of school."

"if you don't ever ask questions you won't learn… learn by your mistakes until you get the correct answer."

"I learn more things here than at my school."

"more open to new things."

"I thought science was not fun and now I enjoy it"

International uptake: Mosquitos y Yo

In 2017, we started a collaboration with Walking Palms Global Health, a non-profit organization in Bahía de Caráquez, Ecuador and the Mosquitoes & Me curriculum was translated into the "Mosquitoes y Yo" youth program. This adapted program is serving elementary-age children at Sathya Sai School in Bahía de Caráquez, Ecuador. This program mirrors our goals to teach youth and their families and broader community about mosquitoes and the role they play in public health, particularly in the aftermath of the 7.8 magnitude earthquake in April 2016 that preceded a marked rise in mosquito-borne illnesses.

WALKING PALMS GLOBAL HEALTH
www.walkingpalms.org
Mission: "To connect and empower local communities promoting disaster recovery using education, research and medicine."

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The **Urban Ecosystem Project** is a supporting program of the **ISU 4U Promise** – a partnership between **Iowa State University** and **Des Moines Public Schools** – benefiting the youth and families of King and Moulton Elementary Schools. Learn more at www.ISU4U.org.