



Teens As Environmental Change Agents and Teachers: Young People Develop And Implement Innovative Educational Strategies To Address Issues of Plastics and Environmental Sustainability



Presented by: Anne Stevenson, Extension Educator and Professor, Dept. of Youth Development
2026 New Perspectives in Science Education International Conference
March 19-20, 2026 Florence, Italy

Our Minnesota Team



Anne Stevenson
Univ. of Minnesota



Amie Mondl
Heidi Wyatt



Teen
Teachers



Learning Objectives

1. Explore how teenagers and young people can be **change agents** to address critical environmental issues
2. Discover a **Science Education model** and curriculum that trains Teens as Teachers of peers and younger youth.
3. **Learn ways to implement** with all ages for schools, communities, or other groups.





About 4-H Youth Development



Largest Youth Development organization in the U.S.



Supported by the U.S. Dept. of Agriculture through over 100 universities and their Extension Outreach mission



Equipping over **6 million youth** ages 5-19 with life and leadership skills



Experiential learning, supported by volunteer adults and staff

We address the plastic pollution problem



Teens address plastics issues through education and civic engagement

Our work and curriculum support the UN Sustainable Development Goals



12 RESPONSIBLE CONSUMPTION AND PRODUCTION

A white icon of an infinity symbol with an arrow, representing a circular economy or recycling.

SUSTAINABLE DEVELOPMENT GOALS GOAL 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

A photograph showing several workers in blue uniforms and hard hats working with a wheelbarrow full of waste in an outdoor setting.

RECYCLE PAPER, PLASTIC, GLASS AND ALUMINIUM.
By 2050, the equivalent of almost three planets could be required to sustain current lifestyles.

14 LIFE BELOW WATER

A white icon of a fish swimming above three wavy lines representing water.

SUSTAINABLE DEVELOPMENT GOALS GOAL 14 LIFE BELOW WATER

A photograph of a woman in a patterned dress carrying several large fish on her back, standing near a body of water with mountains in the background.

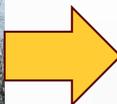
AVOID PLASTIC BAGS TO KEEP THE OCEANS CLEAN.
Over three billion people depend on marine and coastal biodiversity for their livelihoods.



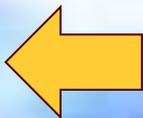
Teens studying water quality of a Minnesota lake.

Young people are innovators

and play a critical role in **developing solutions** to address the environmental challenges of plastic.



Mississippi River in Minnesota – to the Atlantic Ocean



4-H Sustainable Polymers Curriculum

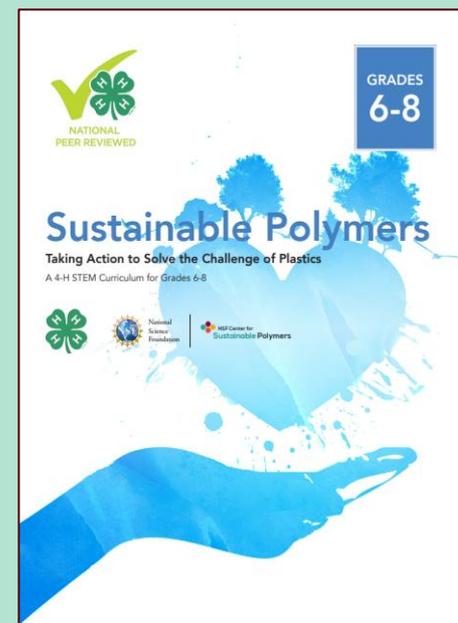
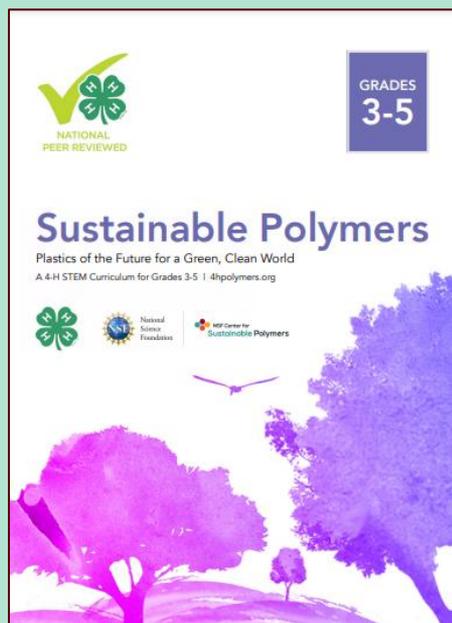
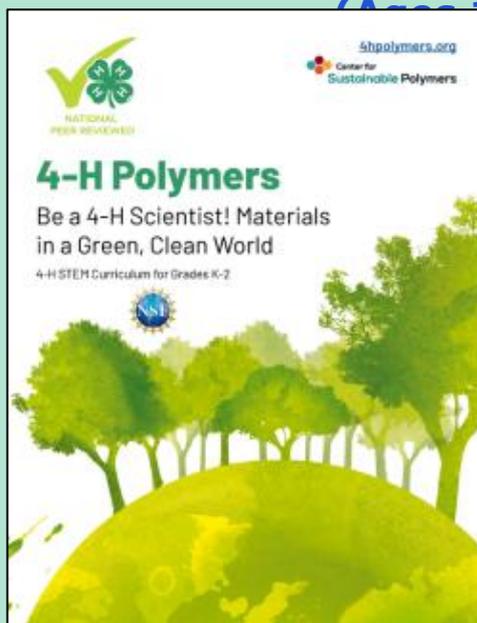
Grades K-2nd

(Ages 5-8)

Grades 3rd-5th

(Ages 8-11)

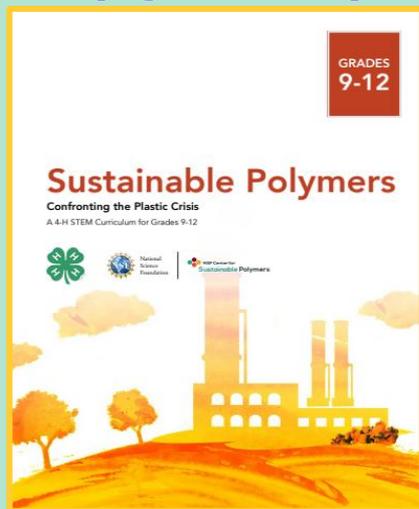
Grades 6-8th



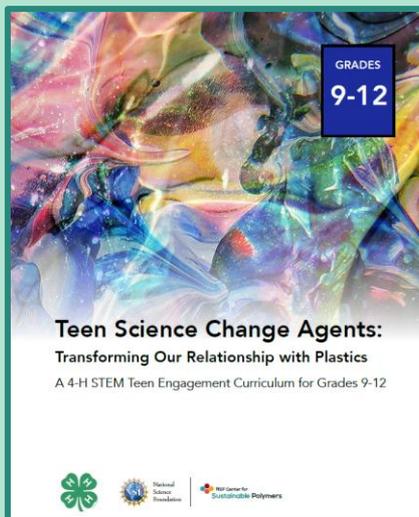
4-H Sustainable Polymers Curriculum

Integrate Environmental Education and Civic Engagement

Gr. 9-12
(Ages 14-18)



Gr. 6-12
(Ages 12-18)



Free to download
and print at:
4Hpolymers.org

OR

purchase print
copy on
shop4-h.org



Experiential Learning Model

All curricula:

- Use **Experiential Learning Cycle (Do-Reflect-Apply)** and embed **guided inquiry** activities
- **Engage youth as change agents** on the critical issue of plastic use
- **Emphasize Science and Engineering Practices** (Next Generation Science Standards, 2016).



Pedagogy



Experiential
Learning



Place-Based
Learning



Project-Based
Learning

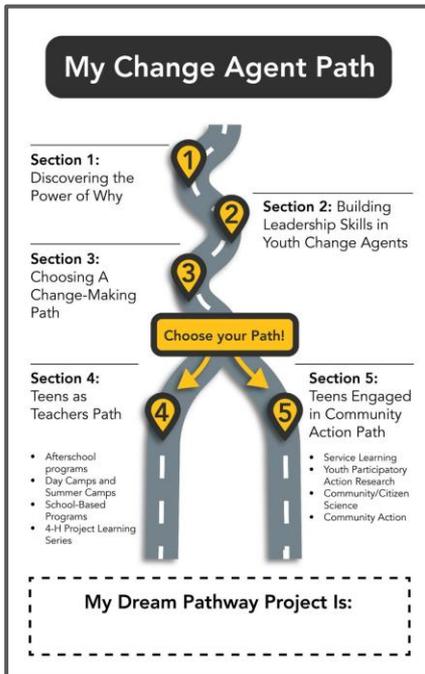
Environmental Education is intended to provide opportunities for youth to ... **“gain knowledge and skills that can be used to defend, protect, conserve, or restore the environment.”** (Monroe et al., 2007)



Change Agent Path: Teens as Teachers or Teens Engaged in Community Action



Teens as Teachers



Teens Engaged in Community Action

Building Leadership Skills in Youth Change Agents

Handout: My Learning and Leadership Self Reflection

Part 1: Exploring My Leadership Learning

What are the qualities you think are important in a leader?

Take a moment to reflect the leadership statements in the left column. Check the skills you are good at, skills you want to improve, and skills you want help in gaining in the column to the right.

Challenges and Discovery			
Skill Statement	I am pretty good at this skill	I have this skill, but want to improve	I don't have this skill yet and want help in gaining this skill
I take on different leadership experiences.	Expert	Some Knowledge	Still Learning
I like to try new leadership roles.	Expert	Some Knowledge	Still Learning
I can tackle and solve problems.	Expert	Some Knowledge	Still Learning
I can change my plan when I need to.	Expert	Some Knowledge	Still Learning
I can identify and respond to challenges in my community.	Expert	Some Knowledge	Still Learning



**GRADES
9-12**

**Teen Science Change Agents:
Transforming Our Relationship with Plastics**
A 4-H STEM Teen Engagement Curriculum for Grades 9-12




Building Youth-Adult Partnership Skills model

Youth-Adult Continuum



4-H Green Superheroes of Science



GSOS Website:
<http://z.umn.edu/GSOS>



Teens Teach in classrooms & summer school & academic support programs



In Person and Virtual Delivery Models



Teen-created “How to Videos” to teach children



Minnesota 4-H YouTube Channel:

<https://www.youtube.com/watch?v=f9luvBwR5-s>

Teens Train other Adult and Teen Teachers



Civic Engagement and Impact

Educating about plastic issue through plastic art contest and exhibit at MN State Fair



Art is viewed by more than 175,000 people who visit the building during the State Fair.



Plastic Sculpture Challenge-using art to engage others in the issue of plastic use and disposal



Evaluation and Impact

In post-training evaluations, teen teachers reported

- strong environmental action outcomes
- growth in leadership and teaching skills
- increased public speaking confidence.



As a result of my involvement as a teen teacher in the 4-H GSOS program:

I want to keep learning about ways I can help the environment	3.62
I know one or more actions I can take to address the issues of plastic use and plastic pollution	3.46
4 point Likert scale: 1= not at all, 2= to a small extent , 3=to some extent, 4=to a large extent	



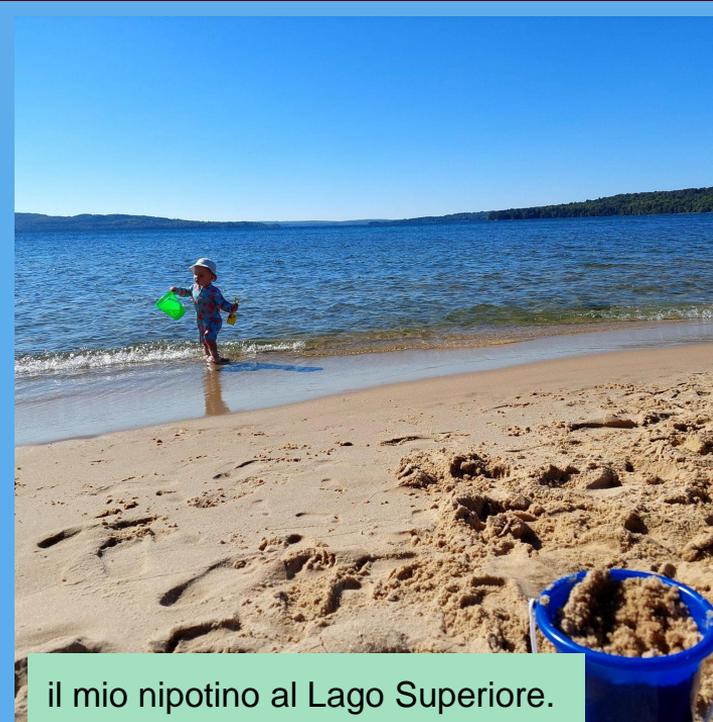
Retrospective pre/post

Scale: 1= not at all 2= to a small extent 3=to some extent 4=to a large extent			
Indicators	Before the program	After the program	Change
I knew how to work with younger youth.	2.85	3.62	.77
I had leadership skills.	3.00	3.46	.46
I was confident in public speaking.	2.46	3.08	.62
I knew how to lead a group discussion with younger youth.	2.23	3.31	1.08
I felt confident teaching younger youth in a virtual setting.	2.77	3.77	1.00



Summary

1. Explored how young people can be **change agents** to address critical environmental issues of plastics or other issues
1. Learned about our model and curriculum to train Teens as Teachers of peers and younger youth or adults.
1. **Be inspired** to download the curriculum and use the resources.



il mio nipotino al Lago Superiore.

Please contact me
with questions.

Thank You



Anne Stevenson
steve020@umn.edu



A national partnership supported by the National Science Foundation (NSF) under the Center for Sustainable Polymers CHE-1901635.



Curriculum-free to download at: 4hpolymers.org