

# New Jersey Leaves No Bite Behind: A Climate Change and Food Waste Curriculum Intervention for Fifth Grade Students

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## Background

Food waste accounts for 24 percent of all landfill inputs, where it emits methane, a harmful greenhouse gas.<sup>1</sup> In a recent assessment of a variety of climate change mitigation approaches, reducing food waste was the highest impact solution.<sup>2</sup> Schools offer a unique opportunity to reduce food waste generation, as it has been estimated that that U.S. schools may generate nearly 530,000 tons of food waste annually with 1.9 million metric tons of CO<sub>2</sub>e of greenhouse gases and 20.9 billion gallons of wasted water.<sup>3</sup> K-12 schools play a special role in food waste reduction while educating the next generation on food conservation and food recovery.<sup>4</sup> Providing adolescents with education on the impact food waste has on the environment may potentially decrease waste generation.<sup>5</sup>

NJ was the first state to require public schools to include climate change education in the K-12 curriculum.<sup>6</sup> The Rutgers Cooperative Extension Food Waste (RCE-FW) team received grant funding from the New Jersey Department of Environmental Protection (NJDEP) to create an Environmental Education program centered on food waste reduction targeted towards 5th graders. This program consisted of lessons focused on food systems, food waste, and sustainable behaviors. Two NJ schools were used as intervention schools and two NJ schools were used as control schools.

## References

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- World Wildlife Fund. (2019). A deep dive into food waste in US schools. [https://c402277.ssi.cf1.rackcdn.com/publications/1271/files/original/FoodWasteWarrior\\_CS\\_1\\_21819.pdf?1576689275](https://c402277.ssi.cf1.rackcdn.com/publications/1271/files/original/FoodWasteWarrior_CS_1_21819.pdf?1576689275)
- United States Department of Agriculture. (2023). Reducing food waste at K-12 schools. <https://www.usda.gov/foodlossandwaste/schools>
- Centers for Disease Control and Prevention. (2021). Healthy eating learning opportunities and nutrition education. [https://www.cdc.gov/healthyschools/nutrition/school\\_nutrition\\_education.html](https://www.cdc.gov/healthyschools/nutrition/school_nutrition_education.html)
- State of New Jersey. Climate change education. <https://nj.gov/governor/admin/fi/climate.shtml>

## Methods and Materials

Six lessons developed with consultation for subject matter experts and teachers

Recruited 2 intervention schools and 2 control schools in NJ

Conducted pre-test surveys of students' climate change knowledge, attitudes, self-efficacy and behaviors

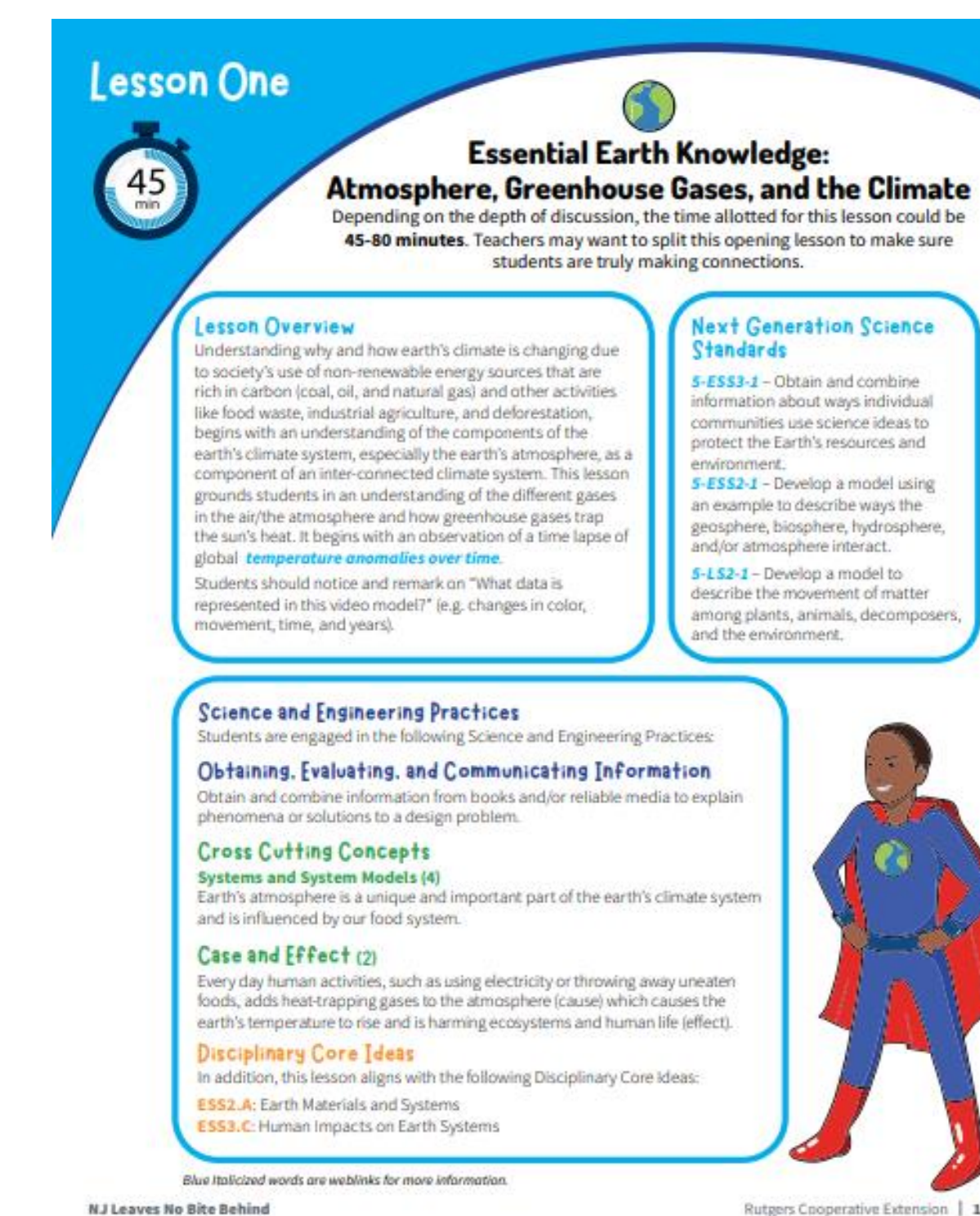
Conducted food waste audits in all 4 schools

Implemented NJLNBB curriculum in the 2 intervention schools

Conducted food waste audits in all 4 schools

Conducted post-test surveys of students' climate change knowledge, attitudes, self-efficacy and behaviors

[foodwastelessons.rutgers.edu](http://foodwastelessons.rutgers.edu)

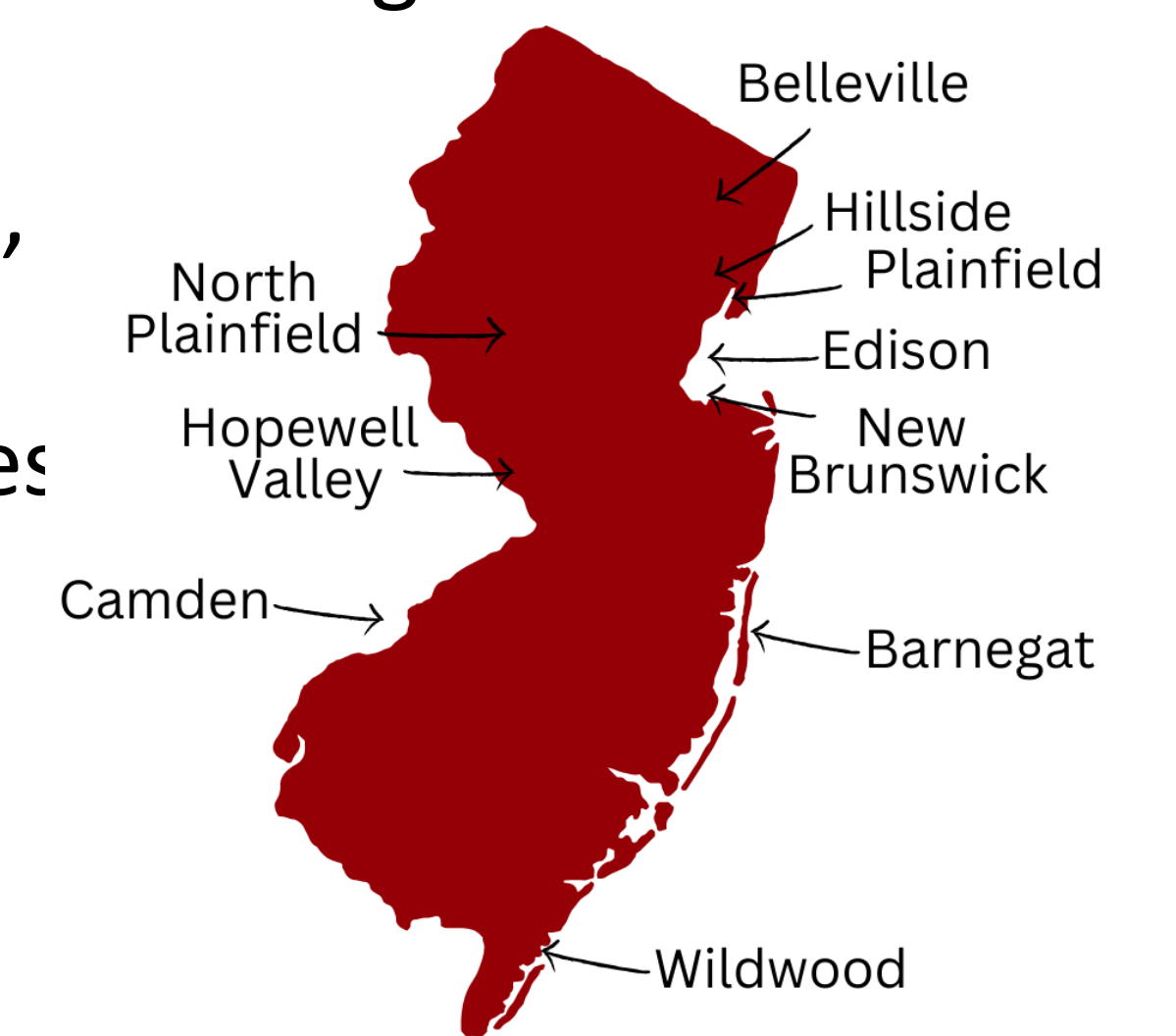


## Lesson Titles

- Essential Earth Knowledge: What's Happening to Earth's Climate
- Essential Earth Knowledge: The Greenhouse Effect
- Essential Earth Knowledge: What Impacts our Climate System?
- Getting to Know the Food System
- Food System Resources and Outputs
- Food Waste in the Food System
- Environmental Impacts of Food Waste
- Food Miles
- Composting, Decomposition, and Materials Cycle

## Future Direction

RCE-FW team received an AmeriCorps grant and created NJ School Climate Change Corps. This grant is funding 10 AmeriCorps members from October 2023 - June 2024. The AmeriCorps members are working with the schools to improve school administrations' and fifth grade students' knowledge, attitudes, and behaviors, toward adapting food waste reduction practices and, ultimately, to reduce the amount of food waste produced by the schools.



## Results

Analysis of Covariance, controlling for pre-test scores, revealed the intervention group (n=102) had significantly ( $p < 0.05$ ) greater climate change knowledge, social norms, behavioral intentions, and perceived behavioral control at post-test compared to the control group (n=60).

Post-Test Questions	% Agree or Strongly Agree
The NJLNBB lessons were fun.	75.5%
I liked the NJLNBB card games.	72.5%
I liked the NJLNBB online games.	63.8%
I learned a lot from participating in this program.	78.4%
I want to learn more about climate change.	65.6%