



New Jersey's 2020 Student Learning Standards Update:

A Case Study of Climate Change Education

*Lead Author: Julia Turner
Senior Research Associate, SubjectToClimate*

*Co-Authors:
Jingxin Bao, SubjectToClimate
Dr. Lauren Madden, The College of New Jersey
Margaret Wang, SubjectToClimate*

Editor: Nico Fernandez

CONTENTS

Summary	4
Introduction.....	6
Background.....	8
Initiation of the 2020 NJSLS Update.....	10
Implementation.....	13
Hub Launch and Maintenance.....	17
Lessons Learned.....	18
Conclusion.....	27
Bibliography.....	28
Annex.....	30

Acknowledgement

We thank our exceptional interviewees who provided invaluable information for this case study: Marc Rogoff, Lauren Madden, Randall Solomon, Renee Haider, Allison Mulch, Dale Rosselet, and Mary Reece.

In addition, we thank the New Jersey educators who contributed to our focus group discussion, contributed to this case study, and who are working to implement climate change education in their classrooms every day: Christina Overman, Carolyn McGrath, Christa Delaney, Kelly Stone, and Yen-Yen Chiu.

Suggested Citation:

Turner, Julia, Jingxin Bao, Lauren Madden, and Margaret Wang. "New Jersey's 2020 Student Learning Standards Update: A Case Study of Climate Change Education." Last modified February 2023. PDF.

Summary

This case study examines New Jersey, the first state in the U.S. to incorporate climate change education across its K-12 learning standards in its 2020 New Jersey Student Learning Standards update. We look primarily at implementation strategies and key takeaways for other states and groups interested in achieving a similar initiative.

Key takeaways include:



- Incremental additions of climate change education as part of a regularly occurring standards update seem to effectively encourage teachers to implement the change while minimizing the burden on teachers and schools.



- State leadership, broad collaboration, and community engagement are necessary components to initiate and implement this type of change.



- Teachers are our greatest assets in education, and successful integration of climate change education necessitates teacher involvement throughout the process.
- To effectively integrate climate change education, teachers need access to substantive professional learning and a variety of educational resources, as well as support from school administrators, curriculum supervisors, and school board members. Specific capacity constraints noted by teachers were time, lack of professional learning, and lack of institutional support.



- An effective communication strategy and recognition of successful efforts will be critical to sustain motivation as implementation continues.

We found that rather than a unified top-down approach, the conditions within New Jersey allowed for incremental and piecemeal changes that built upon themselves over the years via wide collaboration amongst nonprofit stakeholders, institutions of higher education, and government entities. Years of coalition building, advocacy, and collaboration between the government and communities¹ allowed for the natural spread of ideas such as climate change education into the classroom. This case study finds that these dedicated stakeholders formed a solid foundation of environmental education in New Jersey so that when First Lady Tammy Murphy adopted climate change education as a crucial part of her platform, these networks were activated. The updated standards, then, represent a legitimization of the process that had already taken root and developed. In addition, centering teacher voices has been and remains a critical piece of the puzzle in New Jersey.

This paper would be useful to stakeholders and/or organizations curious about the educational, political, and social context of New Jersey that paved the way for a coalition of educators, communities, businesses, and civil servants to come together and achieve the addition of climate change in all education standards.

¹ See Annex for an introduction of key organizations.

Introduction

Climate change education is one of the less-discussed climate change solutions, particularly in the U.S., but many international organizations have long recognized it as a priority. One of the keystones for this mobilization was when the 1992 UN Framework Convention on Climate Change included “[promoting] and [cooperating] in education related to climate change” as one of its commitments ([United Nations, 1992](#)). Evidence is mounting that there are real-world benefits to teaching our students about climate change. For example, a peer-reviewed study published in *PLOS One Journal* in February of 2020 found that a yearlong community college course about carbon emissions and climate change decreased the students’ yearly CO2 emissions by 2.86 tons, establishing that if similar education programs were applied at scale, their effects on carbon emissions could equal those of widespread rooftop solar technology or electric vehicle use ([Cordero, et. al, 2020](#)). Beyond impacting individual actions, climate change education is also useful to influence opinions, lending itself to a much wider reach; other studies show that children are extremely effective in influencing

their parents’ opinions, especially when it comes to climate change ([Lawson, et. al, 2019](#)). On a macro scale, climate change education contributes to mitigation by greening schools themselves and by increasing the resilience and adaptive capacity of the students; this is especially true for vulnerable groups ([Kwauk & Casey, 2021](#)). Despite this evidence that climate change education is a highly effective tool, little has been done to implement climate change education at scale, even as the IPCC’s latest [report](#) asserts that near-term actions to limit global warming would substantially reduce damages due to climate change (IPCC 2022, 13).

“The best time to plant
a tree was 20 years
ago. The second best
time is now.”

- Chinese Proverb

However, New Jersey has become a vanguard for developing and testing climate change education at scale, becoming the first state in the U.S. to include climate change education across grade levels and subject areas. This was implemented through their updated 2020 New Jersey Student Learning Standards (NJSLS), which are state government standards in nine content areas that standardize what students across grade levels and districts learn.

This case study details the process of including climate change education in the NJSLS update, identifies remaining needs and challenges regarding its implementation in New Jersey, and offers recommendations for both New Jersey and other states looking at similar initiatives.



We aim to answer the following questions:

- What events preceded the NJSLS update and how did this background help it come to pass?
- What were the key organizations involved in this process and how did their relationships make this update possible?
- What are the most important features of the implementation plan for the NJSLS update?
- What are the key takeaways from this process?

Background

Prior to the beginning of Governor Phil Murphy's administration in 2018, climate change was not a distinct focus. After Phil Murphy took office, First Lady Tammy Murphy took an active role in curating which issues she should tackle in her new role.² She eventually chose to focus on environmental issues and education, having extensive prior experience working with Al Gore's [Climate Reality Project](#) in the early 2000s.

With this context in mind, First Lady Murphy consulted the New Jersey Department of Environmental Protection (NJDEP) and the New Jersey Department of Education (NJDoE) and carefully followed their advice to adopt a communications strategy that was well-suited to garnering support to include climate change

education in the NJSLS that would be pending review in 2020.³ In September of 2019, First Lady Murphy published this [op-ed](#) imploring her New Jersey constituency to include education in the discussion about how to mitigate the effects of climate change, adapt to the realities of climate change, and create more resilient communities in the face of climate change.

Many teachers and nonprofit organizations were already committed to improving and promoting environmental and sustainability education. Projects like the U.S. DoE Green Ribbon Schools Award Program⁴ and the work of organizations like [New Jersey Audubon](#) with National Wildlife Federation's [Eco-Schools USA](#) program solidified a network of New Jersey organizations who

² Marc Rogoff (New Jersey's Department of Environmental Protection/NJDEP) in discussion with the author, July 2022.

³ Marc Rogoff (NJDEP) in discussion with the author, July 2022.

⁴ The Green Ribbon Schools Award Program (ED-GRS) rewards actions in schools that reduce environmental impact and costs; improve the health and wellness of schools, students, and staff; and provide environmental, sustainability, and climate change education through multiple disciplines. New Jersey opted into the program from its inception, where it is coordinated by New Jersey Audubon in collaboration with the NJ Department of Education. A nominating committee that reviews school applications includes representatives from the New Jersey School Boards Association, Sustainable Jersey, the New Jersey Board of Public Utilities, nonprofit organizations, NJDoE, the New Jersey School Buildings and Grounds Association, the Cloud Institute, and representatives from previously awarded ED-GRS schools. New Jersey Audubon officials cite this project and others like it that cut across organizations and get adequately funded (often by corporations) as helpful to build the mindset and support to accomplish something like the climate change education standards (Allison Mulch and Dale Rosselet in discussion with the author, July 2022).

supported climate change education. Support also came from the New Jersey Education Association, the New Jersey Association of School Administrators, the New Jersey Principals and Supervisors Association, and many others. Cooperation around promoting environmental education was evident in the 2014 launch of [Sustainable Jersey for Schools](#), a collaborative effort of Sustainable Jersey for Municipalities' certification program and New Jersey School Boards Association, which has a certification and rewards program for schools and districts that take exemplary action to support sustainability initiatives (see Annex). This broad support for Sustainable Jersey indicates that many educators in New Jersey were already aware that climate change is a major concern that should be addressed in schools.

Initiation of the 2020 NJSLS Update

New Jersey's education system is unique in that New Jersey is a home rule state, meaning that each district selects its curriculum, though the curriculum must follow the state's student learning standards.⁵ These standards are reviewed every five years. During the review process, the Standards Review Committee (which is comprised of teachers and school administrators, along with some academics from schools of education and schools of the specific disciplines being reviewed) decides to either readopt the current student learning standards, make some minor adjustments, or make significant changes to the NJSLS.

New Jersey's State Board of Education adopted the Next Generation Science Standards (NGSS) in 2014. The NGSS relate to K-12 science, and

content on climate change is included minimally in the middle school standards with a more pronounced focus on climate change in the high school standards.⁶ Thus, the NGSS had already integrated some climate change connections in the middle and high school science student learning standards, meaning that the challenge of updating the the 2020 NJSLS was producing climate change connections in non-science subjects (e.g., social studies, math, English, physical education, the arts, etc.).⁷ Moreover, since the NGSS update was relatively recent, typical challenges to implementing new standards (such as getting teachers on board, training teachers, and measuring implementation successes) were already top of mind when the 2020 NJSLS were being updated.⁸

⁵ Marc Rogoff (NJDEP) in discussion with the author, July 2022.

⁶ Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

⁷ Marc Rogoff (NJDEP) in discussion with the author, July 2022.

⁸ Allison Mulch and Dale Rosselet (New Jersey Audubon) in discussion with the author, July 2022.

The standards were due for an update in 2020, and the review process began in March 2019.

The NJDoE received input from rural, urban, and suburban districts; public, nonpublic, and charter schools; teachers; administrators; nonprofit organizations; and higher education while revising and reviewing the standards (Madden, 2022). Having input from different types of educators was particularly essential in the process. They also gathered feedback from the public via regional testimony sessions and written comments (Madden, 2022).

The 2020 NJSLS were adopted by the State Board of Education and published in June of that year.

The content and language of the standards update were relatively straightforward. *The 2020 update encompassed seven subject areas:*

- Visual and Performing Arts
- Comprehensive Health and Physical Education
- Science
- Social Studies
- World Languages
- Computer Science and Design Thinking
- Career Readiness, Life Literacies and Key Skills

Mathematics and Language Arts standards are being reviewed in 2022 as the most recent items on the rolling cycle of updates (Williams, 2020).

The NJSLS emphasizes that students should collect and/or examine data to draw conclusions about climate change, and most of the tweaks to include climate change are “common sense additions” that are developmentally appropriate, such as pointing out changing coastlines in a geography unit or discussing climate change in social studies or art classes.⁹ In this way, climate change standards were purposefully integrated into the 2020 NJSLS by examining the existing standards (all of which have gone through multiple rounds of review) and finding places to add references to and examples of climate change so that these additions are meaningful and make sense within the existing scope and sequence of the standards. Including climate change education standards within each content area that was up for review in 2020 (as opposed to having climate change education standards stand on their own) helps ensure that the content is delivered and decreases negative sentiments towards the updates (as detractors may not take issue with these small tweaks).¹⁰

⁹ Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

¹⁰ Mary Reece (New Jersey Principals and Supervisors Association/NJPSA) in discussion with the author, July 2022.

Highlights of climate change education in the 2020

NJSLS include:

- Visual and Performing Arts standards incorporate climate-related content into lessons on dance, media arts, theater, and visual arts.
- Comprehensive Health and Physical Education tie climate change in with community health.
- Science standards examine climate change and its interactions with Earth's systems, Earth and human activity, and engineering design. (The NJDoE had already adopted the NGSS in 2014, so science standards were by far the simplest to align with climate change education goals.)
- Social Studies standards emphasize using interdisciplinary skills to communicate solutions for climate change; using geospatial technologies to gather climate data; evaluating the impacts and policies of individuals, businesses, and governments on climate change; and participating in a community advocacy project relating to climate change.
- World Languages standards incorporate climate-related content into lessons about communication and examine how other countries handle climate change.
- Computer Science and Design Thinking standards stress collecting data and analysis of climate-related content, as well as looking at the effects of technology on the natural world.
- Career Readiness, Life Literacies, and Key Skills standards relate climate change to critical thinking and problem solving, digital citizenship, global and cultural awareness, and information and media literacy.

Initially, the 2020 NJSLS were to be implemented in staggered years. However, the COVID-19 pandemic delayed the requirement for implementation of 2020 NJSLS and climate change education until September 2022.

Implementation

After the 2020 NJSLS update was completed, Sustainable Jersey and New Jersey School Boards Association (NJSBA) convened the New Jersey Climate Change Education Thought Leader Committee to compose recommendations for implementing the updated learning standards. The committee was organized and co chaired by Randall Solomon (executive director of Sustainable Jersey) and John Henry (STEAM and sustainable schools senior manager at NJSBA).¹¹ The committee met every couple of weeks for about one year to discuss and share survey data to identify implementation needs and devise a 5-year plan.¹² Surveys asked respondents to identify the top three priorities for implementing the climate change updates in the 2020 NJSLS; surveys were sent to all Committee members, and

each member was asked to forward the survey to 2-3 professionals in the field.¹³ A key Committee member cites that at least 10-12 teachers who were already practicing climate change education were solicited to complete the survey and provide clarifying information throughout the process of writing the report.¹⁴ *The Report on K-12 Climate Change Education Needs in New Jersey was released in February of 2022, highlighting four key needs:*

1. Professional learning for teachers and school staff;
2. Access to high-quality curricular resources;
3. Community-based climate change education;
4. And effective leadership support from school boards and administrators.

¹¹ Representatives came from a wide range of organizations, including NJDEP, The College of New Jersey, Sustainable Jersey, NJSBA, New Jersey Audubon, Ramapo College, U.S. National Oceanic and Atmospheric Administration, National Wildlife Federation, New Jersey School Buildings and Grounds Association, New Jersey Parent Teachers Association, New Jersey Association of School Administrators, New Jersey Principals and Supervisors Association, New Jersey Education Association, The Ripple Center, The Cloud Institute, U.S. Green Building Council New Jersey, U.S. Green Building Council LEED, and local boards of education.

¹² Marc Rogoff (NJDEP) in discussion with the author, July 2022.

¹³ Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

¹⁴ Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

Needs are followed by more specific recommendations to provide further clarity to guide educators, nonprofits, and others who will implement the updated NJSLS.

Randall Solomon, Executive Director of Sustainable Jersey, took the lead to form the New Jersey Climate Change Education Initiative (NJCCEI) to implement high priority, short-term recommendations of the Thought Leader

Committee's report. The Initiative is a subset of the Thought Leader Committee and includes representatives from NJSBA, New Jersey Audubon, Sustainable Jersey, The College of New Jersey, National Wildlife Federation, and SubjectToClimate. NJCCEI came together to develop a website called the [New Jersey Climate Change Education Hub](#) to support educators in their effort to teach the new climate change education standards and integrate climate change into their curriculum. The resources on this hub include:

- A database of credible materials on climate change with teaching tips and alignment to NJSLS, reviewed by teachers and approved by a scientist
- Exemplar NJ-centric lesson plans developed by teachers and aligned to the updated NJSLS
- Professional learning opportunities including primers on climate change, professional learning courses, and teaching guides

- School board guidance materials
- Student-friendly news articles at different reading levels

Resource Database

The first task of the Initiative was to develop an online resource of vetted, specially curated teaching resources organized by subject, grade level, and corresponding NJSLS.

[SubjectToClimate](#) (StC), a nonprofit organization connecting K-12 educators of all subjects to credible, unbiased, interdisciplinary, and engaging materials on climate change at no cost, already had a variety of resources at its disposal. However, it was imperative that their existing resource database would not simply be repurposed but rather adapted to speak to local needs.

In January 2022, a rubric revision workshop was convened to establish the criteria for the resources in this database. Workshop attendees ranged from state government officials to teachers and administrators. The resulting [resource selection rubric](#) includes scientific credibility, relevancy to NJSLS, pedagogic effectiveness and ease of use with a priority in accessibility, reflection of historically marginalized communities, and environmental justice. After this rubric was established, StC worked with educators and scientists to review the resources, align them to NJSLS, and write

synopses, teaching tips, and scientist notes. Approximately 1700+ teaching resources were identified.

Exemplar Lesson Plans

In addition to teaching resources, NJCCEI aimed to work with educators to create exemplar lesson plans for all subject areas and grade levels. In order to ensure the New Jersey Climate Change Education Hub's lesson plans are well-aligned with the goals of the Report, a lesson plan rubric was developed by the StC team. This rubric represented a modification of their existing lesson plan rubric while also including alignment to NJSLS, the Climate Literacy and Energy Awareness Network's (CLEAN) review process (n.d.), and the North American Association for Environmental Education's Framework for K-12 Environmental Education (2004). A focus group discussion was held with a group of stakeholders critical to the conversation on climate change education in New Jersey, including NJCCEI members and colleagues from their respective partner organizations, informal educators, practicing teacher leaders, school administrators, and StC staff. Together, this group offered further suggestions for modifying the proposed rubric. These suggestions were incorporated into a [revised rubric for New Jersey specific lessons](#). Criteria includes alignment to NJ Student Learning Standards, student action, ease of use, depth, justice, social-emotional learning, and other key components of learning.

With the instruments established, NJCCEI recruited teachers to create the exemplar lesson plans that would be provided on the New Jersey Climate Change Education Hub to show other educators how they could teach to the updated NJSLS. All of the information on this Hub undergoes extensive scientific review, as well as evaluation by teachers who assess lesson plans based on a set rubric devised from input by a wide variety of stakeholders for the best practices in the classroom. Teachers who tested the rubric reported 80% inter-rater agreement, suggesting that the tool was used reliably across individual raters (Madden and Wang, 2022). The review process includes self-review, peer-review, and review by StC's Chief Learning Designer and Chief Content Officer. A climate scientist checks all the materials. As a result, approximately 48 exemplar lesson plans were created that covered all subject areas and grade levels.

Professional Learning Opportunities

In March 2022, a professional learning panel, which included representatives from New Jersey Principals and Supervisors Association, New Jersey Audubon, and Sustainable Jersey, met to strategize how to connect educators to professional learning opportunities. SubjectToClimate was represented as well. The panel developed a professional learning submission form to identify free opportunities for educators, ensuring that there would be a mixture of primers on climate change, professional

learning on how to access resources and integrate climate change into the curriculum, as well as guides on how to teach about climate change. To offer schools flexibility, these opportunities were categorized by format (asynchronous or synchronous), audiences, subjects, grade levels, length of time, and dates offered. Lastly, a climate scientist reviewed any materials provided by the organization. Approximately 24 professional learning opportunities were identified as a result.

Guidance for School Boards

According to the recommendations outlined by the NJ Thought Leader Committee, school boards of education will need to provide support for schools while they are implementing the climate change education standards. As a result, NJCCEI leveraged expertise from New Jersey School Boards Association to create an FAQ on the climate change education standards along with examples of sustainability policies and references to other supporting resources such as climate change primers, climate action plans for districts, and green career pathway maps.

Hub Launch and Maintenance

NJCCEI deliberately made the decision to launch the New Jersey Climate Change Education Hub (www.njclimateeducation.org) before the school year ended in order to build awareness before educators went on summer vacation. In June 2022, the Hub was publicly launched through a press conference organized by NJSBA. A [press release](#) was coordinated between all the organizations within NJCCEI and shared within their respective networks to amplify its reach. Additional outreach efforts will be made during the upcoming school year, including leveraging the networks from the Thought Leader Committee, attending educators' and administrator conferences, and contacting various subject-specific associations. The Hub's database of resources will continue to grow beyond its initial collection.

Monitoring and evaluation remains an important next step. Dr. Lauren Madden at The College of

New Jersey has sent out a survey (as of June 2022) to educators and will send a follow-up questionnaire in December 2022 to compare their comfort level integrating climate change education.

In addition, Sustainable Jersey notes that they will update the actions in their certification program to more accurately gain insight into the adoption of the NJSLS.¹⁵ The state will also monitor implementation via standardized testing, and Sustainable Jersey officials suggest that the [NJTRAx](#) survey, which was originally used to track digital progress in schools, may be expanded to monitor climate change education.¹⁶ In terms of sharing these results nationally, Sustainable Jersey suggests that the National School Boards Association, national associations of teachers unions, and the federal government could be key stakeholders in this effort.¹⁷

¹⁵ Renee Haider (Sustainable Jersey deputy director) in discussion with the author, July 2022.

¹⁶ Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

¹⁷ Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

Lessons Learned

Integrate climate change education into existing curricula and include it across content areas.

Incremental additions of climate change education as part of a regularly occurring standards update seem to effectively encourage teachers to implement the change while minimizing the burden on teachers and schools. Including effective examples of climate change education in each of the NJSLS makes it harder and less worthwhile for opponents to criticize.¹⁸ In addition, implementing it effectively and making it an easy lift for teachers will make it more likely that educators will permanently integrate climate change education into their work, meaning that even if the 2020 NJSLS were to be updated and the climate change education standards taken out, climate change education may remain a lasting change.¹⁹

State leadership, broad collaboration, and community engagement are necessary components to initiate and implement this type of change.

Our sources agree that having a champion in state government (in this case Tammy Murphy from the governor's office, but this figure could be involved with a different legislative body) was critical to ensure that this initiative came to fruition.²⁰ If there is an influential leader to spearhead an initiative such as this one, then between developing the standards and implementing them into classrooms, implementation will be the greater challenge.

18 Mary Reece (NJPSA) in discussion with the author, July 2022.

19 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

20 Mary Reece (NJPSA) in discussion with the author, July 2022.

Interpersonal and inter-organizational relationships contributed immensely to building and maintaining collaborative entities while reviewing and implementing the 2020 NJSLS. Notably, most of the key organizations had established working relationships before the announcement of the 2020 NJSLS updates. Collaboration made this effort possible and will continue to contribute to successful funding schemes.

Members of the Thought Leader Committee cite personal relationships as essential to building a coalition capable of supporting this effort to include comprehensive climate change education in the 2020 NJSLS. An intense game of phone tag created the eventual alliance. New Jersey Audubon worked with the First Lady's office to put together a student summit. New Jersey Audubon partnered with The College of New Jersey and called NJDEP, who was already in contact with Sustainable Jersey to spearhead the committee.²¹ This group made up the bulk of the Thought Leader Committee, which agreed that implementing the 2020 NJSLS necessitated a gap analysis and needs assessment; they also found that short-term findings of need may be more efficiently implemented via a broad coalition of committee members (which materialized into NJCCEI) as opposed to leaving these findings for the state to address.²² A Sustainable Jersey official observes that while

the joint effort was not a complete representation of key parties in climate change education in New Jersey, there were enough major organizations on board to make the Initiative credible and to complete meaningful work.²³ Initiative members noted some reluctance of government entities to have nonprofits headlining this work, and they emphasized that the coalition did extensive outreach to establish credibility with government agencies, build their trust, and recruit them to their team.²⁴ Sustainable Jersey was particularly helpful in gaining government trust, as it has an established history of successful partnerships with state agencies.²⁵

An important factor in the success of the collaboration in New Jersey is that most of the organizations involved in implementing the updated NJSLS, particularly NJCCEI members, had long-standing working relationships before

21 Marc Rogoff (NJDEP) in discussion with the author, July 2022.

22 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

23 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

24 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

25 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

beginning work on this process.²⁶ Almost all of the Thought Leader Committee members are on the [Alliance for New Jersey Environmental Education](#), and a majority of the members are also on the [New Jersey Commission on Environmental Education](#).²⁷ In addition, many people on the NJCCEI also helped implement NGSS in New Jersey in 2014.²⁸ Thus, we find that New Jersey has a uniquely high amount of cohesion amongst various stakeholders, and collaboration between nonprofit organizations and government entities was a key component of its success.

Along with educational challenges, funding and capacity challenges remain constant in the process of implementing the updated standards. Many sources cite the need to continue funding the New Jersey Climate Change Education Hub to ensure that resources continue to be added and the site remains current.²⁹ Ensuring that financial resources are distributed effectively is another critical piece of implementation; the Governor has allocated \$5 million in the 2023 fiscal year state budget to create an office within the NJDoE on climate change education, but nonprofit partners

note that financial resources may prove more effective if they are funneled directly into organizations who are currently providing professional learning.³⁰ Funding and employees in government agencies and nonprofits are generally stretched quite thin, and schools are particularly stressed following the pandemic and an abrupt shift in their modes of operation.³¹

Collaboration is instrumental to establish broad sources of funding. New Jersey Audubon cites that corporate partners, such as the PSEG Foundation and smaller family foundations, were instrumental financial supports for this process. Collaborating with StC made it possible for NJCCEI to produce the website with educator resources, which was the primary short-term need in the Thought Leader Committee's report. StC had existing digital infrastructure that made it easier to redesign their model and tailor it to New Jersey educators, as opposed to creating a new website from scratch.³² A leader at Sustainable Jersey asserts that this collaboration will also be essential to procure consistent funding to maintain the site, and, in a virtuous cycle, showing

26 New Jersey Audubon officials reiterate the U.S. Department of Education's Green Ribbon Schools Awards Program as an essential opportunity for many of these New Jersey organizations to consistently collaborate; the program rewards actions taken in schools to reduce environmental impact, and in New Jersey the program was implemented with a committee comprised of representatives from NJSBA, Sustainable Jersey, New Jersey Board of Public Utilities, nonprofit partners (including New Jersey Audubon), the Educational Information Resource Center, New Jersey DEP, New Jersey DoE, New Jersey School Buildings and Grounds Association, and the Cloud Institute. This committee has worked together for about two months out of the year since the program's inception 12 years ago, which helped build the collaborative infrastructure necessary to achieve a much larger initiative, like including climate change education in the 2020 NJSLS.

27 Marc Rogoff (NJDEP) in discussion with the author, July 2022.

28 Allison Mulch and Dale Rosselet (New Jersey Audubon) in discussion with the author, July 2022.

29 Renee Haider (Sustainable Jersey deputy director) in discussion with the author, July 2022.

30 Allison Mulch and Dale Rosselet (New Jersey Audubon) in discussion with the author, July 2022.

31 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

32 Renee Haider (Sustainable Jersey deputy director) in discussion with the author, July 2022.

the website to potential funders will illustrate its usefulness and benefit, making the initiative more likely to receive funds.³³ Not only is collaboration helpful for funding in terms of networking and diversifying support, but it also makes an initiative seem more credible when applying for state or other funds; a Sustainable Jersey representative asserts that major funders are always looking for collaboration when reviewing proposals.³⁴ Thus, the funding necessary to maintain the New Jersey Climate Change Education Hub might be possible to procure because of the collaboration that went into developing it.³⁵ Finally, Sustainable Jersey's quasi-government status³⁶ enables it to access many funding sources that state agencies cannot, so collaborating with this organization will make it more feasible for the Initiative to fulfill action items and ensure continued support.³⁷

Community engagement is another aspect of collaboration and is a remaining need in New Jersey. A stakeholder in higher education in New Jersey expresses that one element that is yet to receive concerted attention is community engagement (i.e., developing useful, specific

recommendations for working with PTAs/PTOs, Girl/Boy Scout troops, local businesses and nonprofits, etc.).³⁸ Similarly, continuing to curate more engagement with educators, and specifically using social media as a tool to do so, will be crucial.³⁹

Teachers are our greatest assets in education, and successful integration of climate change education necessitates teacher involvement throughout the process.

Teachers have always been included in reviewing and updating the NJSLS, and the 2020 update was no different in this regard.⁴⁰ Steps were also taken to involve teachers in the review conducted by the Thought Leader Committee; the process for gathering information to generate the Committee's report involved collecting multiple rounds of survey data, and at least 10-12 practicing teachers were involved throughout this process (including responding to surveys and providing clarifying information in follow-up meetings) to ensure that teacher voices were included in the report.⁴¹

33 Renee Haider (Sustainable Jersey deputy director) in discussion with the author, July 2022.

34 Renee Haider (Sustainable Jersey deputy director) in discussion with the author, July 2022.

35 Renee Haider (Sustainable Jersey deputy director) in discussion with the author, July 2022.

36 Notably, some of these organizations are structured uniquely in New Jersey. For example, New Jersey Audubon is not related to the National Audubon Society, and not all states have a school boards association like NJSBA. Many states have organizations that are similar to Sustainable Jersey for Municipalities, but few have anything like Sustainable Jersey for Schools; the organization's deputy director notes that schools are a "harder mountain to climb" given the disaggregated locus of control, especially when compared with municipalities.

37 Marc Rogoff (NJDEP) in discussion with the author, July 2022.

38 Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

39 Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

40 Lauren Madden (professor at TCNJ) in discussion with the author, July 2022. Dr. Madden notes that the educators who are involved in the SLS review process tend to be educators who are predisposed to be enthusiastic about initiatives like climate change education.

41 Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

While carrying out implementation strategies, teachers across grade levels and subjects were recruited to create exemplar lesson plans for the Hub. Teachers were also involved in creating the rubric that was used to evaluate lesson plans and other resources before they were put onto the Hub.⁴² As a result, a majority of teachers now note that resources on the Hub are incredibly relevant and useful for integrating climate change education into their classrooms.

Despite these instances of teacher involvement in New Jersey, there is room for more substantive integration of educators in other initiatives similar to the 2020 NJSLS update. New Jersey teachers express that many of their colleagues remain unaware of the changes in the 2020 NJSLS, and calls for greater professional learning amongst teachers in New Jersey could have been answered in a more efficient manner if teachers had been more involved.⁴³ Ultimately, involving teachers from the beginning stages of creating and implementing an educational initiative will generate buy-in from educators, making it much more likely that the initiative will be implemented in good faith.

Teachers need access to substantive professional learning and a variety of educational resources, as well as support from school administrators.

New Jersey teachers maintain that various capacity constraints – particularly time, lack of professional learning, and lack of institutional support – are challenging as they adopt the 2020 NJSLS.

Teachers are beholden to meeting standardized state testing requirements, which often requires them to focus on English and math skills and leaves them little time to incorporate climate change education into their lessons. Some teachers suggest that elements of climate change education (for example, including texts about climate change) be incorporated into standardized tests.⁴⁴ One teacher notes that climate change education is primarily viewed through a scientific lens and emphasizes that it would be helpful for educators if schools took a more organized approach to implement the new standards, wherein cross-departmental collaboration would ensure that each subject area has its unique role in teaching about climate change.⁴⁵ Disaggregated control of education (wherein each district writes its curriculum) makes successful implementation

42 Margaret Wang (StC COO) in discussion with the author, August 2022.

43 Focus group of New Jersey teachers held by the author, July 2022.

44 Allison Mulch and Dale Rosselet (New Jersey Audubon) in discussion with the author, July 2022.

45 Focus group of New Jersey teachers held by the author, July 2022.

of the updated standards more difficult in New Jersey than it would be in most other states, which manage curricula at the county or statewide levels.⁴⁶ Due to this disaggregated control in New Jersey's public school system, there will likely be a wide range of quality and robustness in efforts to implement these updated standards, but even in supportive districts, teachers cite few opportunities for professional learning related to climate change education.⁴⁷ Moreover, teachers are being given short time frames (generally about two months) to rewrite the curriculum based on these updated standards, and some districts did not allocate funds for curricular revisions in all subject areas.⁴⁸ On the other hand, this aspect of New Jersey's educational system allows organizers or experts in climate change education to tailor their messages and professional learning strategies to the needs of a particular district or school.⁴⁹ Teachers also note that the climate change education updates come on the heels of other curricular changes – one school happens to be adopting a new math program at the same time that they are implementing climate change education, and new educational guidance

regarding the LGBTQ+ community has resulted in heavy edits to English and social studies curricula (both of which are subjects in which most teachers already face a higher learning curve for carrying out climate change education).⁵⁰ The concern is that more New Jersey educators will leave the profession if they feel overwhelmed with all of the updated standards and requirements.

New Jersey teachers note that implementation of climate change education becomes much more manageable when educators are supported through mandatory and easily available professional learning. Professional learning resources need to offer a variety of entry points for educators who possess different levels of comfort discussing climate change.⁵¹ While some are comfortable discussing the subject, introductory level activities that are immediately actionable would be hugely helpful for teachers who do not know where to start with climate change education. Providing a few introductory activities in an initial professional learning session before the start of the school year would allow teachers to become familiar with the updates and offer feedback at subsequent professional learning sessions.⁵² In particular,

46 Allison Mulch and Dale Rosselet (New Jersey Audubon) in discussion with the author, July 2022.

47 Focus group of New Jersey teachers held by the author, July 2022.

48 Focus group of New Jersey teachers held by the author, July 2022.

49 Allison Mulch and Dale Rosselet (New Jersey Audubon) in discussion with the author, July 2022.

50 Focus group of New Jersey teachers held by the author, July 2022.

51 Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

52 Focus group of New Jersey teachers held by the author, July 2022.

professional learning surrounding climate change education needs to be available and prioritized by the district, and it must happen consistently throughout the school year; teachers also note a need for support finding substitutes if attending professional learning ever precludes them from teaching their classes.⁵³ Sustainable Jersey leadership adds that professional learning should include teaching educators about the resources that are available to them, likening it to undergraduate classes that teach students how to use search engines most effectively. With many digital resources at their disposal, even educators who have experience with climate change education will need support navigating them efficiently.⁵⁴ The New Jersey Climate Change Education Hub also provides links to professional learning opportunities and is continuously expanding and updating its listings.

Sustainable Jersey aims to prevent burnout by providing resources and setting realistic timelines when implementing any educational changes.⁵⁵ With regards to the climate change education standards, Sustainable Jersey and its partners in NJCCEI emphasize that many

teachers have already been teaching about climate change without expressly addressing it, and implementing the standards is simply a task of integrating climate change, explicitly, into the curricula they are already teaching.⁵⁶ Thus, the support educators need is help connecting what they teach to climate change, rather than rewriting entire units of study.⁵⁷

New Jersey teachers also responded that easily digestible educational resources are immensely helpful. Many teachers cite the New Jersey Climate Change Education Hub as incredibly useful, noting that lesson plans are written by current teachers and thus less verbose and focused on classroom action.⁵⁸ They also find the built-in opportunities for choice and differentiation for various student levels to be particularly useful aspects of the StC lesson plans.⁵⁹ Moreover, making these resources highly relevant to New Jersey (hence the focus on creating a digital hub specifically for New Jersey teachers) is essential to help educators develop the tools to consider how they want to integrate climate change education.⁶⁰ Sustainable Jersey notes that educator resources must contain a mix of “bite-

52 Focus group of New Jersey teachers held by the author, July 2022.

53 In a focus group of New Jersey educators (July 2022), one teacher cited an instance where a principal at a K-3 school, along with the gifted class teacher and the school librarian, chaperoned one grade level of students for three hours on Friday mornings so that those teachers could use the time to plan; meanwhile, the kids were engaging in problem-based learning (some of which tackled climate change problems). They did this for each of the four grade levels in the building.

54 Author’s interview with leaders at New Jersey Audubon.

55 Renee Haider (Sustainable Jersey deputy director) in discussion with the author, July 2022.

56 Renee Haider (Sustainable Jersey deputy director) in discussion with the author, July 2022.

57 Renee Haider (Sustainable Jersey deputy director) in discussion with the author, July 2022.

58 Focus group of New Jersey teachers held by the author, July 2022.

59 Focus group of New Jersey teachers held by the author, July 2022.

60 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

sized” content that’s easily integrated into the classroom and higher-level pieces on curriculum writing.⁶¹ Resources should also be tailored to specific regions, especially in areas with populations skeptical of climate change and the steps being taken to address it. Presentation is important, as organizations should partner with well-respected community members to disseminate information in a way that reflects the community’s values (i.e., discussing how sustainability initiatives such as installing solar panels can save money, the burgeoning green industry for stable employment, and other quality of life improvements).⁶² On the other hand, in areas where climate change education is already fairly standard, communications from nonprofits and institutions of higher education are more likely to be successful.⁶³

School administrators in New Jersey still lack guidance and leadership to fulfill their roles in implementing the updated NJSLS. Teachers assert that school administrators often do not feel a sense of urgency about climate change education and do not provide appropriate support or guidance for educators who are implementing these updated standards.⁶⁴

Officials who work with school supervisors and administrators concur with this sentiment and state that the main challenge facing administrators is a lack of leadership and overarching strategy at the NJDoE.⁶⁵ According to veterans of these educational processes, this lack of leadership is not the norm when new educational initiatives are being implemented, and while nonprofit organizations play an important and helpful supportive role, there needs to be a visible, vocal leader who gets people excited about doing this work to ensure that everything goes accordingly.⁶⁶ The NJDoE is currently hiring to construct a new Office of Climate Change Education that may fill this void and devise appropriate strategies.

An effective communication strategy and recognition of successes will be critical.

A Sustainable Jersey leader notes the need for an effective communications strategy to use with community members or educators who are reluctant to adopt these stipulations in the 2020 NJSLS.⁶⁷ These communications strategies will be useful for government officials, nonprofit leaders, activists, and teachers, though a remaining

61 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

62 Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

63 Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

64 Focus group of New Jersey teachers held by the author, July 2022.

65 Mary Reece (NJPSA) in discussion with the author, July 2022.

66 Mary Reece (NJPSA) in discussion with the author, July 2022.

67 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

challenge is alleviating teacher hesitation to discuss a controversial topic.⁶⁸ Sustainable Jersey suggests that this type of work would be well-suited to nonprofit organizations (there is a possibility that another report, similar to that published by the Thought Leader Committee, will be an effective way to determine and disseminate the strategy).⁶⁹ NJSBA is currently developing talking points for dealing with pushback from families.⁷⁰ It will be critical to share these communications strategies with grassroots activists and ensure that they are specifically tailored to the cultures and perspectives of different communities.⁷¹ Moreover, an effective communications strategy will be a critical component of solidifying climate change education as part of public education in general, as will successful implementation.⁷² The more confident educators feel about climate change education and the more clarity that is provided, the likelier it is that teachers will continue to incorporate climate change education, even if the NJSLS were to ever be updated to exclude it.⁷³

Recognition is another component of successful implementation, as celebrating success stories of incorporating climate change education will build momentum and create excitement amongst educators. Rewarding even minimal achievements will enhance the energy surrounding climate change education and will greatly improve the implementation of the NJSLS. There are numerous ways for schools, teachers, and students to get recognition for their efforts in addressing climate change through their curricula, classes, and activities. National Wildlife Federation's Eco-Schools USA in New Jersey, Sustainable Jersey for Schools, and the U.S. DoE Green Ribbon Schools program all provide appropriate ways to acknowledge efforts and celebrate successes. In addition, youth summits, climate change and sustainability conferences, and STEAM-related student competitions provide opportunities for students to explore and discover what other young people are doing to address climate change issues in their communities.⁷⁴ Sustainable Jersey leadership also notes that showing up and having a physical presence in different communities has proven essential to several initiatives in the past and continues to be crucial to gain traction and support for climate change education.⁷⁵

68 Marc Rogoff (NJDEP) outlines a strategy to present the science of climate first, then analyze the causes, as well as emphasizing that reducing environmental impact can save money.

69 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

70 Lauren Madden (professor at TCNJ) in discussion with the author, July 2022.

71 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

72 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

73 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

74 Dale Rosselet (New Jersey Audubon) in discussion with author, September 2022.

75 Randall Solomon (Sustainable Jersey executive director) in discussion with the author, July 2022.

Conclusion

We acknowledge the limitation of this case study's scope, as the implementation of the standards update in public schools is ongoing and there is no data available on these results. Nonetheless, through interviews and qualitative meta-analysis, we identified processes and events that have made New Jersey a bastion in environmental education. The groundwork that organizations had laid for environmental education slowly infiltrated common discourse and created an environment friendly to climate change education. This gradual, intentional work allows the state's commitment to climate change, particularly the First Lady's mission to spearhead climate change education, to fuel widespread change. From these data, it can be seen that this was a cooperative, symbiotic effort between public agencies and private organizations; each covered the others' blind spots to advance climate change education, and the success in New Jersey thus far would have been nearly impossible without the broad cooperation we document in this case study. Broad collaboration amongst state agencies, nonprofits, higher education, and private sector

partners ensures that diverse perspectives are present in implementation strategies, garners wide support for the initiative, and also has the potential to gather more diverse funding sources as this process carries forward. Importantly, the intentional inclusion of practicing teachers from the inception of this process ensures that the educational resources provided to educators are helpful and practical, and it also makes educators feel more invested in these efforts so that they will be more likely to adopt climate change education.

Bibliography

- Bose, Devna. "Everyone's talking about climate change. Now, New Jersey's first lady wants that conversation to happen in every class, too." Chalkbeat Newark, October 11, 2019. <https://newark.chalkbeat.org/2019/10/11/21108967/everyone-s-talking-about-climate-change-now-new-jersey-s-first-lady-wants-that-conversation-to-happe>.
- CLEAN. (n.d.). CLEAN Review Tool. https://cleanet.org/clean/about/review_tools.html. Accessed June 20, 2022.
- Cordero EC, Centeno D, Todd AM (2020) The role of climate change education on individual lifetime carbon emissions. PLoS ONE 15(2): e0206266. <https://doi.org/10.1371/journal.pone.0206266>
- IPCC, 2022: Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem (eds.)]. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3–33, doi:10.1017/9781009325844.001.
- Iyengar, Radhika. "All Eyes on New Jersey: The Future of Climate Education is Here." Mission 4.7, March 2022. <https://www.mission4point7.org/news/all-eyes-on-new-jersey>.
- Kwauk, Christina, and Rebecca Winthrop. "Unleashing the creativity of teachers and students to combat climate change: An opportunity for global leadership." Brookings, March 26, 2021. <https://www.brookings.edu/research/unleashing-the-creativity-of-teachers-and-students-to-combat-climate-change-an-opportunity-for-global-leadership/>.
- Lawson, D.F., Stevenson, K.T., Peterson, M.N., et al. "Children can foster climate change concern among their parents." Nat. Clim. Chang. 9, 458–462 (2019). <https://doi.org/10.1038/s41558-019-0463-3>.

- Lombardi, Patrick. "First Lady Tammy Murphy Talks Climate Change Education." Best of NJ, July 22, 2020. <https://bestofnj.com/features/entertainment/first-lady-tammy-murphy-talks-climate-change-education/>.
- Madden, Lauren and Margaret Wang. "Establishing Validity and Reliability: New Jersey Lesson Plan Rubric for the SubjectToClimate Website." 2022. <https://subjecttoclimate.org/storage/resources/whitepapers/0d5a1987-c682-4805-96ce-a8066df3bb2d.pdf>.
- Madden, Lauren, comp. "Report on K-12 Climate Change Education Needs in New Jersey." February 2022. <https://www.njsba.org/wp-content/uploads/2022/02/climate-change-ed-online-2-2.pdf>.
- Murphy, Phil (Governor). "Governor Murphy Unveils Energy Master Plan and Signs Executive Order Directing Sweeping Regulatory Reform to Reduce Emissions and Adapt to Climate Change." News release from the Office of Governor Murphy, January 27, 2020. <https://www.nj.gov/governor/news/news/562020/approved/20200127a.shtml>.
- Murphy, Tammy. "Education is our Greatest Weapon Against Climate Change." Conference session at K12 Climate Action Listening Session I: Why Should Schools Move Toward Climate Action? <https://www.k12climateaction.org/blog/education-is-our-greatest-weapon-against-climate-change>.
- "NJCCEI Overview." Unpublished manuscript, n.d. Accessed June 20, 2022. https://docs.google.com/presentation/d/1xaEq3vSf37HpsC19biRQ9Dor17Fz9kp_WfTd86ea7PM/edit#slide=id.g11f1e1737fb_0_801.
- North American Association for Environmental Education (NAAEE). "Guidelines for Excellence," EE Materials, 2004. https://naaee.org/sites/default/files/gl_ee_materials_complete.pdf
- Saperstein, Evan, and Daniel Saperstein. "New Jersey's Climate Change Curriculum: An Important First Step for Social Studies Education." NJCSS. Accessed June 21, 2022. <https://teachingsocialstudies.org/2022/01/26/new-jerseys-climate-change-curriculum-an-important-first-step-for-social-studies-education/>.
- "UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE." UNFCCC. Last modified 1992. Accessed August 28, 2022. <https://unfccc.int/resource/docs/convkp/conveng.pdf>.
- Vogt, Erin. "Al Gore congratulates NJ becoming first to teach climate change." New Jersey 101.5, June 4 2020. <https://nj1015.com/al-gore-congratulates-nj-becoming-first-to-teach-climate-change/>.
- Warren, Michael Sol. "N.J. schools will teach climate change education with the new curriculum." NJ.com news release, June 3, 2020. <https://www.nj.com/news/2020/06/nj-schools-will-teach-climate-change-education-with-new-curriculum.html>.
- Williams, David. "New Jersey is the first state to add climate change to its K-12 education standards." CNN, June 4 2020. <https://www.cnn.com/2020/06/04/us/new-jersey-climate-schools-scn-trnd/index.html>.

Annex

[Sustainable Jersey for Schools](#) is managed by The Sustainability Institute at The College of New Jersey, a public university. Thus, while Sustainable Jersey is a nonprofit organization, it maintains close ties with the state government, and state agencies often fund its work. Sustainable Jersey for Schools' main activity is its certification program, which gives awards and grants to teachers and schools that perform various sustainability activities listed in Sustainable Jersey's criteria. Schools and districts can advance to higher levels within the program, which allows them to access more grants. Sustainable Jersey's executive director expressed in an interview with the author that the organization also augments sustainability communications in areas where the state may not have the capacity to do so, translating "bureaucrat-ese" into information that's more easily digested by teachers and administrators. It also produces toolkits and guides and provides technical assistance. Sustainable Jersey's deputy director cites that 60% of districts in New Jersey participate in the program, and the organization has maintained broad support from the educational community since its inception. Their executive director asserts that participation in Sustainable Jersey's program builds momentum and support for sustainable policies by promoting the efforts of schools that go above and beyond mandatory standards. Sustainable Jersey's dual identity as a nonprofit that is closely connected to the state is unique, and its deputy director cites that while this identity can be difficult to manage, it allows Sustainable Jersey to access a broader array of funding opportunities than it could as a state entity or as a less connected nonprofit. Notably, Sustainable Jersey for Municipalities was founded through a partnership of state agencies – the NJ Department of Environmental Protection, NJ Bureau of Public Utilities, and the NJ League of Municipalities.

[New Jersey Audubon](#) has been working on climate change education through sustainability education/ecosystems education for years; officials cite that their area of expertise is teacher professional learning. Prior to the 2020 NJSL update, New Jersey Audubon's work focused on finding teachers, administrators, and other school employees who expressed interest in climate change education and fostering their development. Lead educators at New Jersey Audubon assert that anyone who expressed

interest in the program was given free training, ongoing support, and access to materials, but note that elementary teachers and middle and high school science teachers have made up a bulk of their participants. New Jersey Audubon has also done a lot of outreach in urban school districts, which are often under-resourced. By the estimate of leaders at New Jersey Audubon, over 300 schools were already participating in the same kinds of actions that would occur with the NJSLS update's inclusion of interdisciplinary climate change education, which organization officials assert as useful in terms of providing examples of climate change education in action and getting teachers to see connections between existing curricula and climate change. New Jersey Audubon leaders maintain that using their method of problem-based learning was essential to lay the groundwork for the updated standards, and they also find that their educational work in urban settings is reflected in the standards' focus on environmental justice. New Jersey Audubon leaders affirm that their extensive work in the field with teachers and school leaders fostered excitement about climate change education and provided many examples for those who eventually worked on revising the 2020 NJSLS.

[New Jersey School Boards Association](#) is a federation of the boards of education, with the goal of providing mandated governance training to all of New Jersey's boards of education. They offer paid training and professional learning opportunities for boards, including Mandated Training, Annual Workshop Conference, and Coaching from Field Service Representatives.

[The College of New Jersey](#) (TCNJ) School of Education provides high quality learning to undergraduate and graduate students, creating the next generation of administrators, educators, and teachers. Its deep roots in the state allow a rapid response to the evolving landscape of education, as the SoE trains its educators for success in the classroom. The Environmental Sustainability Education minor at TCNJ is the only in the state accredited by the North American Association for Environmental Education (NAAEE), and one of just 12 institutions in North America to hold this distinction.

[SubjectToClimate](#) (StC) is a nonprofit organization that serves as a connector between K-12 educators and credible, unbiased, engaging materials on climate change. The website is a free, easy-to-use hub that provides educators of all grade levels and subject areas with the resources they need to teach about climate change, including:

- Resources from other organizations curated by StC, along with additional synopses, teaching tips, and notes;

- Teacher-developed lesson plans that show educators how they can integrate climate change into their current curricula;
- News articles for students that can be differentiated by reading level;
- Professional learning opportunities;
- An interactive support center developed in partnership with MIT Climate Portal that answers questions about climate science and pedagogical strategies.

The platform aims to increase the number of hours teachers spend teaching about climate change. StC accomplishes this mission by including educators in the development process – from the curation of the resources to the development of the exemplar lesson plans – so that the resources are relevant to the needs of current teachers.

Furthermore, StC also works with stakeholders in specific states or regions to adapt its platform to fit local needs. StC aligns the teaching resources to relevant educational standards and works with teachers to develop lesson plans on climate change issues that resonate with that particular region. In 2021, StC joined the New Jersey Climate Change Education Initiative (NJCCEI) to launch the state’s go-to hub for climate change education resources: the New Jersey Climate Change Education Hub.

[The New Jersey Department of Education \(NJDoE\)](#) “supports schools, educators and districts to ensure all of New Jersey’s 1.4 million students have equitable access to high quality education and achieve academic excellence.” The Department is overseen by Governor Phil Murphy and Acting Commissioner of Education Angelica Allen-McMillan, Ed.D. The department’s website contains various resources about climate change education, most of which can be found on this [page](#).

The [New Jersey Department of Environmental Protection \(NJDEP\)](#) aims to guard New Jersey’s natural and historic resources by protecting the environment and public health. Its first priority is to reduce and respond to climate change. It is overseen by Governor Phil Murphy and Commissioner of Environmental Protection Shawn M. LaTourette. NJDEP provides many public resources about climate change and climate change education; notable pages pertaining to this report include the 2020 New Jersey [Scientific Report on Climate Change](#), the state of New Jersey’s 2021 [Climate Change Resilience Strategy](#) and NJDEP’s [80x50 Report](#), as well as NJDEP’s outreach and professional learning resources (for example, this [primer](#) on climate change basics).