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Green Light for Comprehensive Climate Change Education
Special Report for Earth Day 2023

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The Public Matters Project contributes to policy debates by introducing a new source of reliable and valid public opinion polling. It studies how Americans view a broad range of issues related to education, psychology and health. The Project draws on the extant infrastructure and survey research expertise at Teachers College. It brings together faculty from across the College to collaborate on public opinion projects related to their specific areas of interest.

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Green Light for Comprehensive Climate Change Education
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1. Why study public views towards climate change and education?

Scientists and the international community agree: Climate change is a defining issue of our time and we are at a defining moment. The Intergovernmental Panel on Climate Change (IPCC), which includes more than 1,300 scientists from the United States and other countries, estimates that human activities have caused approximately 1.0°C of global warming above preindustrial levels. If conditions remain the same, global warming is likely to reach 1.5°C between 2030 and 2052.

The education sector – including K-12 schools, higher and post-secondary institutions, and informal sites where learning happens (e.g., museums, parks, zoos) – can play an important role in our collective effort to address climate change.[1] In this report, we focus on the role of K-12 schools across three domains. First, **K-12 schools can help mitigation** by reducing the emission of greenhouse gases (e.g., contributing to the production of solar energy, reducing direct and indirect energy consumption, and transitioning school buses from diesel to electricity). Second, **K-12 schools can support adaption** by adjusting to the current and future effects of climate change (e.g., providing students with mental health support, and ensuring the resilience of schools and their communities). Third, **K-12 schools are uniquely positioned to engage and empower** a new generation of students to address climate change.

Despite the importance of the education sector in climate mitigation and adaptation, research into how the general public view this issue is relatively limited. Most studies, including two reports by the Center for Sustainable Futures, have focused on public perception of the importance and support of teaching about climate change in K-12 schools.[2] In this research brief we extend past research by examining Americans' views of comprehensive climate change education that includes a whole-school approach to climate change education (i.e., curriculum and operations).

2. Most Americans recognize the importance of learning about climate change

A large majority of Americans (80%) say it is important that elementary and secondary school students learn about climate change (Figure 2.1). Half of respondents (50%) perceived it as

[1] To read more about the potential role of education in addressing climate change:

- Climate Action Commission. (2021). K12 climate action plan 2021. Washington DC: The Aspen Institute.
- Kwauk, C., & Winthrop, R. (2021). Unleashing the creativity of teachers and students to combat climate change: An opportunity for global leadership. Washington DC: Brookings Institute.

[2] See two previous publications:

- Pizmony-Levy, O. (2023). Two Worldviews, One Planet: US Public Views on Climate Change Education in a Time of Political Polarization. New York: Teachers College, Columbia University.
- Pizmony-Levy, O. and Pallas, A. (2019). Americans endorse climate change education. New York: Teachers College, Columbia University.

"very important," and about one-third of respondents (31%) perceived it as "somewhat important." The remaining one-fifth of respondents perceived climate change as "somewhat unimportant" or "not important at all" (10% and 9%, respectively).

The 2023 survey shows a modest increase in public support for teaching about climate change (Figure 2.2). Between 2020 and 2023, we find a 2% point increase in the share of Americans saying it is "very important" (from 48% to 50%). Americans equally value the importance of teaching about climate change and teaching about ethnic and racial diversity. However, support for teaching these is relatively lower than support for teaching about health issues. This pattern is not surprising given the recent global covid-19 pandemic.

3. Most Americans back comprehensive climate change education, but support vary across topics

We asked respondents whether they agree or disagree that schools should address different contents and competencies related to climate change. At least three-out-of-four Americans agree with each of these proposals (Figure 3.1). A strong majority agree that schools should teach how to identify false and misleading information about climate change (strongly agree 50%, somewhat agree 36%), and that schools should teach about the causes, consequences and potential solutions to climate change (strongly agree 49%, somewhat agree 36%).

Because climate change is a complex topic, we asked respondents more concrete questions related to teaching about climate change. Specifically, we explored whether respondents support teaching about the relationship between climate change and food. A strong majority agree that schools should teach about the potential impact of climate change on food availability and the potential impact of food on climate change (strongly agree 45%, somewhat agree 42%).

Although majority of Americans support each of these proposals, we find relatively less support for content that offers a more critical perspective on climate change. One in five Americans (20%) disagree with schools teaching about climate justice in terms of which nations are more responsible for causing climate change and which nations are more most vulnerable to the harm of climate change. About one in four Americans (23%) disagree with schools teaching how Indigenous People view climate change.[3]

There are different ways to bring about educational change and reforms, such as comprehensive climate change education. We asked respondents about two policy tools that are common in the United States: State standards and teacher education (pre- and in-service; Figure 3.2). State standards set expectations for what students should know and able to do in each subject at each grade level. In 2020, New Jersey became the first state in the nation to include climate change in learning standard across content areas. Eight in ten respondents

[3] The survey provided the following definition of the term Indigenous Peoples: "Indigenous Peoples in the US are mainly Native American people and Alaska Native people. They share collective ancestral ties to the lands and natural resources where they live, or from which they have been displaced."

(81%) agree that states should include climate change in their standards to ensure that all students have a foundational understanding of climate change and they are prepared for the future (strongly agree 43%, somewhat agree 38%). A similar majority (77%) agree that states should mandate that all teachers be prepared so they have the knowledge and instructional tools to improve teaching about climate change (strongly agree 35%, somewhat agree 42%).

4. Most Americans support climate change education that empowers and prepares students for the future

High quality climate change education goes beyond the sheer transmission of knowledge (i.e., facts about climate change). We asked respondents whether they agree or disagree that schools should empower and prepare students for a future affected by climate change (Figure 4.1). Eight-in-ten Americans agree that schools should prepare students for future jobs in the clean energy economy (strongly agree 44%, somewhat agree 42%) and for sudden changes in their education because of severe weather (strongly agree 43%, somewhat agree 41%). A similar majority agree that schools should help students to translate their knowledge on climate change into actions (strongly agree 39%, somewhat agree 41%), and further engage students through informal education opportunities (e.g., community-based programs, museums, zoos, and parks; strongly agree 39%, somewhat agree 45%).

In recent years scholars have reported on growing climate anxiety worldwide and in the United States, especially among young people. In a 2020 survey, more than half of survey respondents said they felt "sad, anxious, angry, powerless, helpless, and guilty" about climate change.[4] Eight-in-ten Americans agree that schools should support students who are stressed about the impact of climate change (strongly agree 43%, somewhat agree 41%).

5. Most Americans support initiatives to reduce schools' carbon footprint, but support vary across initiatives

Similar to other organizations, schools can reduce emission of greenhouse gases by installing solar panels and reconsidering their practices and operations. Greening school facilities is important not only for reducing the carbon footprint, but it also provides students with greater access to hands-on learning opportunities, and with healthier learning environment (e.g., cleaner air). A large majority of Americans agree with proposals to install solar panels on the roof of school buildings (85%), to get school food from local farms and food producers (85%), and to redesign existing asphalt school yards with green outdoor spaces (82%).

Americans are somewhat less enthusiastic about other proposals, but still a large majority agree with proposals to replace existing diesel school buses with electric buses (75%) and to prioritize communities that are disproportionately impacted by climate change when developing policies and plans (75%). A relatively smaller majority (59%) support serving more vegetarian meals at schools.

[4] Schneider-Mayerson, M., & Leong, K. L. (2020). Eco-reproductive concerns in the age of climate change. *Climatic Change*, 163(2), 1007-1023.

6. There is broad agreement across political ideologies on some proposals, but liberals are more enthusiastic than conservatives

Majorities of liberals, moderates, and conservatives agree with proposals to advance comprehensive climate change education (Figures 7.1 and 7.2) and with initiatives to reduce schools' carbon footprint (Figure 7.3). For example, nine-in-ten liberals and moderates (93% and 88%) and three-fourths of conservatives (77%) agree that schools should teach how to identify false and misleading information about climate change. We find an average gap of 29 percentage points between liberals and conservatives; with a small average gap between liberals and moderates (8 percentage points) and a sizeable average gap between moderates and conservatives (21 percentage points).

One proposal brings out a stark difference between liberals and conservatives: serving more vegetarian meals. While 75% of liberals favor serving more vegetarian meals (to reduce emissions or to improve students' health), only 41% of conservatives support this proposal.

7. Conclusion

Americans support comprehensive climate change education that includes a whole-school approach to climate change education. This includes teaching different contents and competencies, empowering and preparing students for the future, and taking actions to reduce schools' carbon footprint. The level of support, however, varies by political ideology.

With this clear and robust signal from the public, policymakers and frontline educators should continue with efforts to improve and enhance climate change education in the United States. There are many ways for schools to engage climate change. This topic is not only a scientific matter; it is an ethical and social issue. If one wanted to promote the study of climate change in K-12 schools, which many of our respondents support, one could infuse climate change throughout the curriculum to provide as many perspectives on the topic. Similar to the broader topic of sustainability, meaningful engagement with climate change requires a whole-school approach. A strong collaboration and alignment among the official curriculum (e.g., textbooks, lesson plans), the co-curriculum (e.g., school gardens, social events, and field trips) and facilities is a promising approach (e.g., solar panels, electric school buses).

8. How we did it?

The Center for Sustainable Futures and The Public Matters at Teachers College, Columbia University conducted this study to understand how Americans view the role of education in climate mitigation and adaption. We surveyed 2,019 adults (18 year of age and older) from March 16, 2023 to March 31, 2023.

The survey was conducted on Qualtrics Panel. Qualtrics, a marketing research firm, partners with a variety of online panel providers to supply a nationally representative sample. The sample is compiled using overall demographic quotas based on census percentages for representation (i.e., age, gender, race/ethnicity, household income, and census region). To allow greater power for analysis, we over-sampled people who identify as Black, Asian and Pacific Islander, and/or Latinx. The sample is weighted to represent the U.S. adult population living in households or group quarters. The survey included several quality assurance measures, including attention checks and a speed check. Attention checks asked respondents to mark a specific answer. Respondents who failed one or more of these checks were removed from the final sample.

Most of the survey items were developed by the research team and colleagues at Teachers College. For example, we used the Aspen Institute's menu of climate solutions to develop questions about specific policies and initiatives that schools, districts, and states can implement. Other survey items were adapted from the General Social Survey (GSS), Gallup, and Pew. The survey also included a detailed battery of survey items on sociodemographic characteristics. In addition to close-ended items, the survey asked several open-ended questions, allowing respondents to contextualized and explain their responses in greater detail.

All surveys are subject to various forms of error. One form is sampling error: the variation in results that is attributable to chance in which members of a population are randomly selected to participate in the survey. For percentages based on the entire sample, the approximate margin of error is +/- 3.2%. For subgroups, the margin of error is larger. For example, the margin of error for Black respondents is approximately +/- 9.0%.

<u>Questions used in this brief:</u>

1. Perceived importance of different topics in K12 education. The survey asked respondents: "How important is it that elementary and secondary school students learn about the following topics?" The survey included three contemporary topics or issues: (1) Health issues / Global health issues, (2) racial and ethnic diversity, and (3) Climate Change. Topics were presented in a randomized order. Responses are on a four-point scale: 1 = not important at all, 2 = somewhat unimportant, 3 = somewhat important, and 4 = very important.

2. Support for policy proposals. The survey introduced the topic and contextualized the budget implications: "There are different opinions as to what the education sector and K-12 schools should do to address climate change. The following statements describe several initiatives. Some of these initiatives cost money, others save money, and some

are budget neutral." Then, the survey asked respondents: "To what extent do you agree or disagree with the following proposals to address climate change in U.S. public schools?" Proposals were presented in three blocks reflecting different levels of policy: school, school district, and state; all proposals were presented in a randomized order. Responses are on a four-point scale: 1 = strongly disagree, 2 = somewhat disagree, 3 = somewhat agree, and 4 = strongly agree. See wording for all items in the table below.

Shortened text in charts and tables	Full text in questionnaire
Schools should…	
[teach about] the causes, consequences, and potential solutions to CC	Schools should teach our children about the causes, consequences, and potential solutions to climate change.
[teach] how to identify false and misleading information about CC	Schools should teach our children how to identify false and misleading information about climate change.
[teach] how Indigenous Peoples view CC	Schools should teach our children how Indigenous Peoples view the consequences and potential solutions to climate change.
help children to translate their knowledge on CC into actions	Schools should help our children to translate their knowledge on climate change into actions.
support children who are stressed about the impact of CC	Schools should support our children who are stressed about the impact of climate change.
prepare children for changes in their education because of severe weather	Schools should prepare our children for sudden changes in their education because of severe weather, like floods, intense storms, heat waves or fires.
develop career education opportunities for jobs in the clean energy economy	Schools should develop career and technical education opportunities to prepare students for jobs in the clean energy economy.
provide opportunities to explore CC through non-formal education	Schools should provide our children with opportunities to explore climate change through community-based programs or informal learning in spaces such as museums.
[teach] which nations have been most responsible for causing CC	School should teach our children about which nations have been most responsible for causing climate change.
[teach] which nations are most vulnerable to the harm of CC	School should teach our children about which nations are most vulnerable to the harm of climate change.
[teach] the potential impact of CC on food availability	Schools should teach our children about the potential impact of climate change on food availability.
[teach] the potential impact of food on CC	Schools should teach our children about the potential impact of food on climate change.
School districts should…	
prioritize communities who are disproportionately impacted by CC, when developing policies	School districts should prioritize communities who are disproportionately impacted by climate change, when developing policies and plans.
replace existing diesel buses with electric buses	School districts should replace existing diesel buses with electric buses to reduce emissions and improve air quality.

Shortened text in charts and tables	Full text in questionnaire
install solar panels on the roof of school buildings	School districts should install solar panels on the roof of school buildings to produce clean energy and provide opportunities for students to learn about this.
redesign existing asphalt schoolyards with green outdoor spaces	School districts should redesign existing asphalt schoolyards with green outdoor spaces that incorporate grass and trees to reduce community heat and flooding.
get school food from local farms and food producers	School districts should get school food from local farms and food producers to reduce emissions from transportation.
serve more vegetarian meals	School districts should serve more vegetarian meals to reduce emissions/to improve students' health. [50/50]
States should…	
include CC in their educational standards to ensure that all students understand CC	States should include climate change in their educational standards to ensure that all students have a foundational understanding of climate change and they are prepared for the future.
mandate that all teachers be prepared to improve teaching about climate change	States should mandate that all teachers be prepared so they have the knowledge and instructional tools to improve teaching about climate change.

Figure 2.1: Views toward teaching climate change, overall

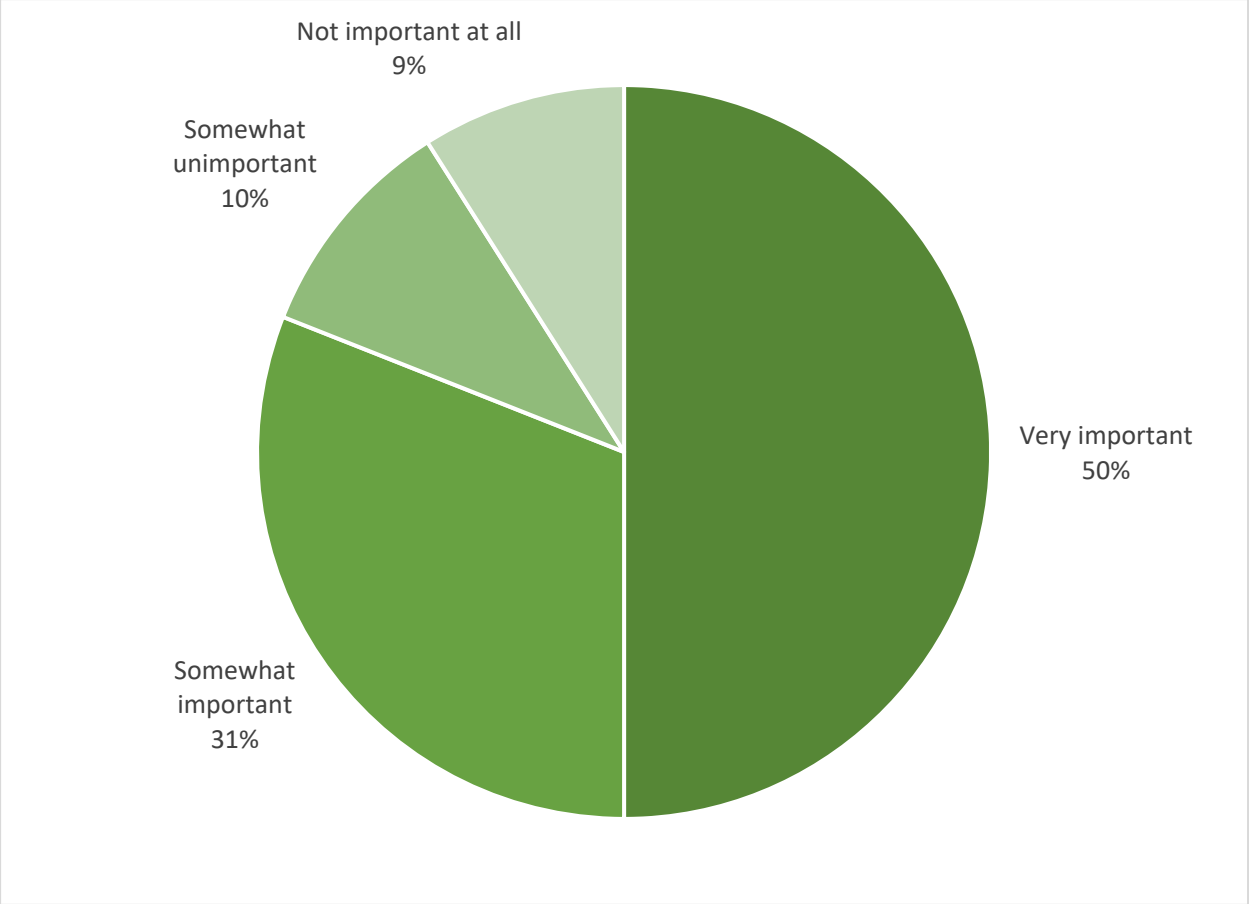


Figure 2.2: Views toward teaching climate change, racial and ethnic diversity, and health issues, over time (% say "very important")

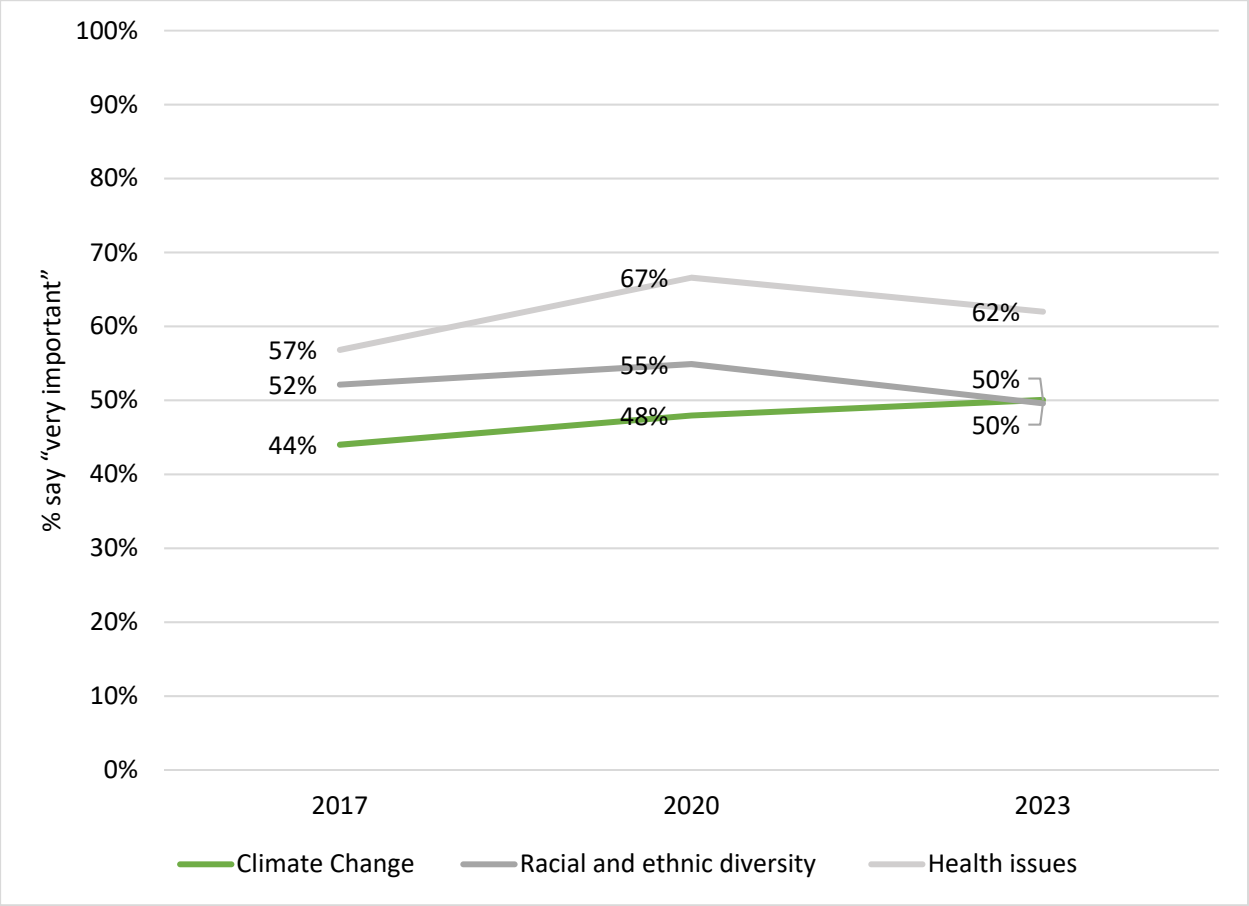
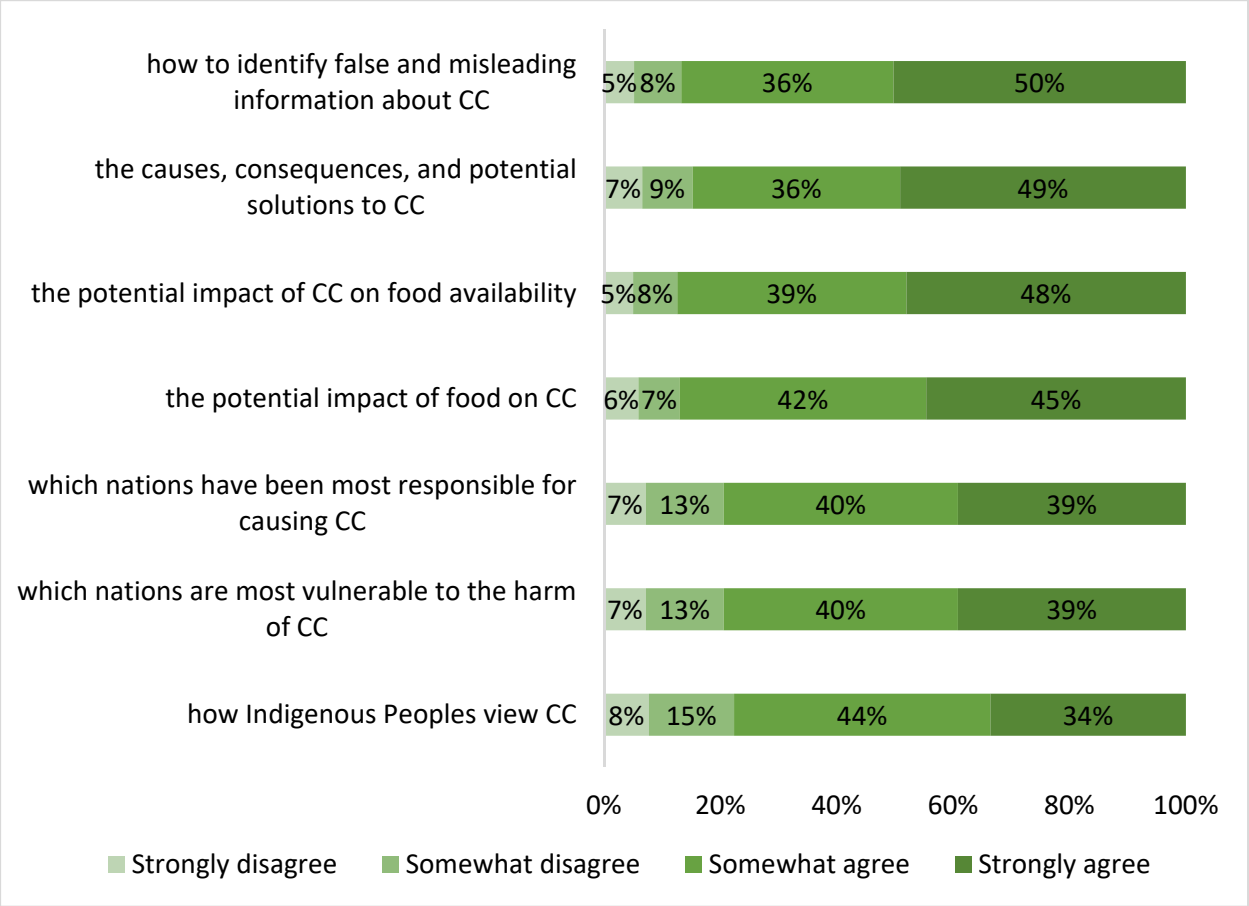
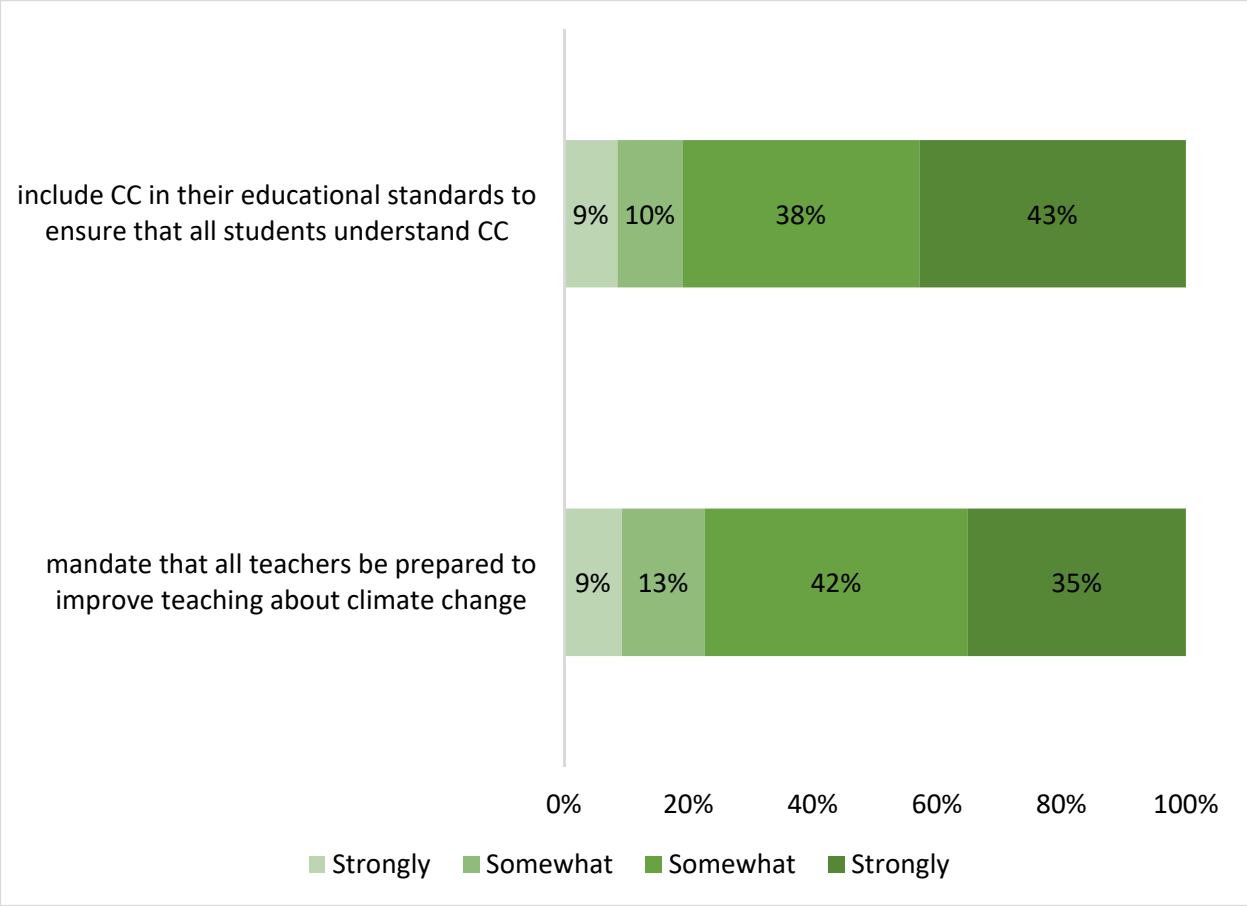


Figure 3.1: Views toward selected proposals for how schools should teach about climate change, overall



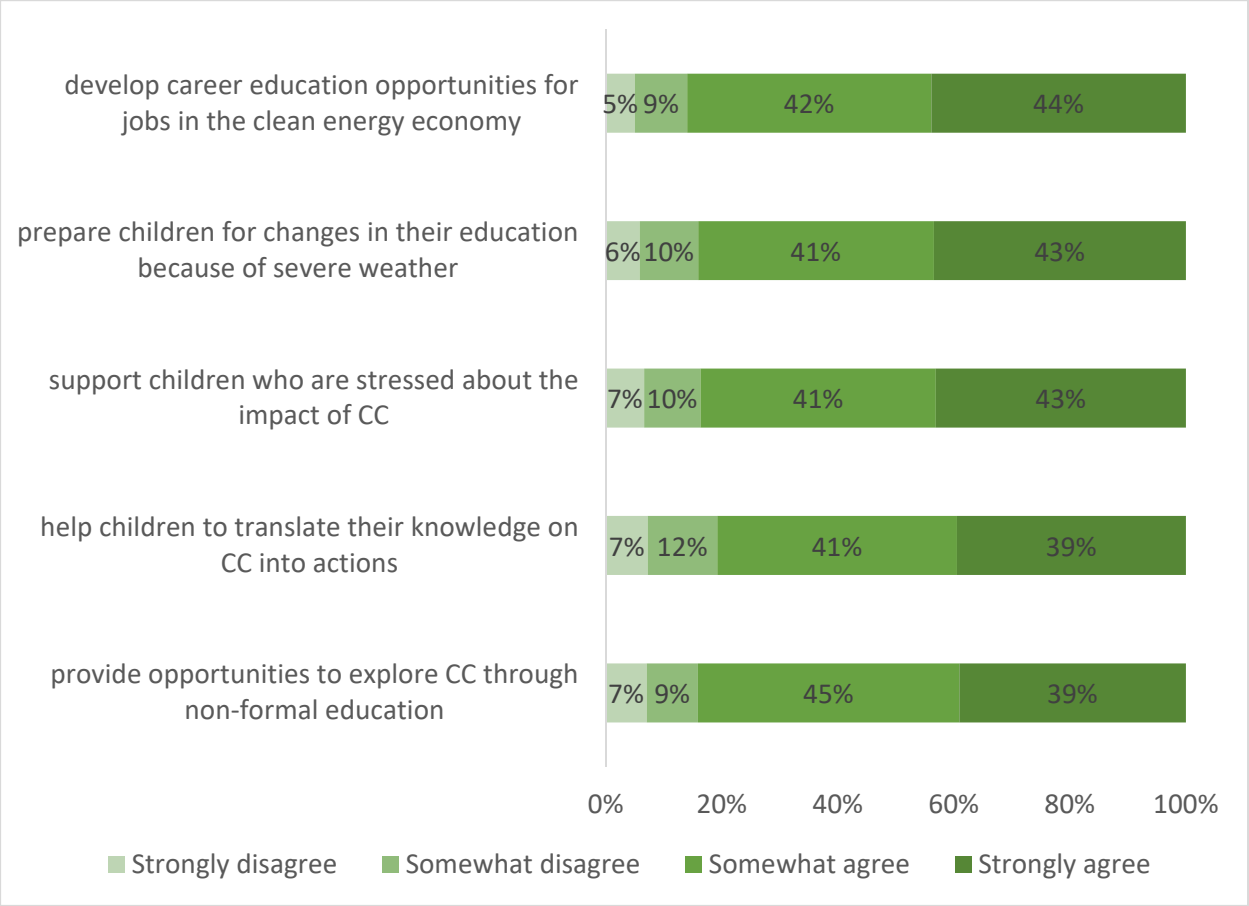
Note: CC = Climate Change

Figure 3.2: Views toward selected proposals for how states should address climate change, overall



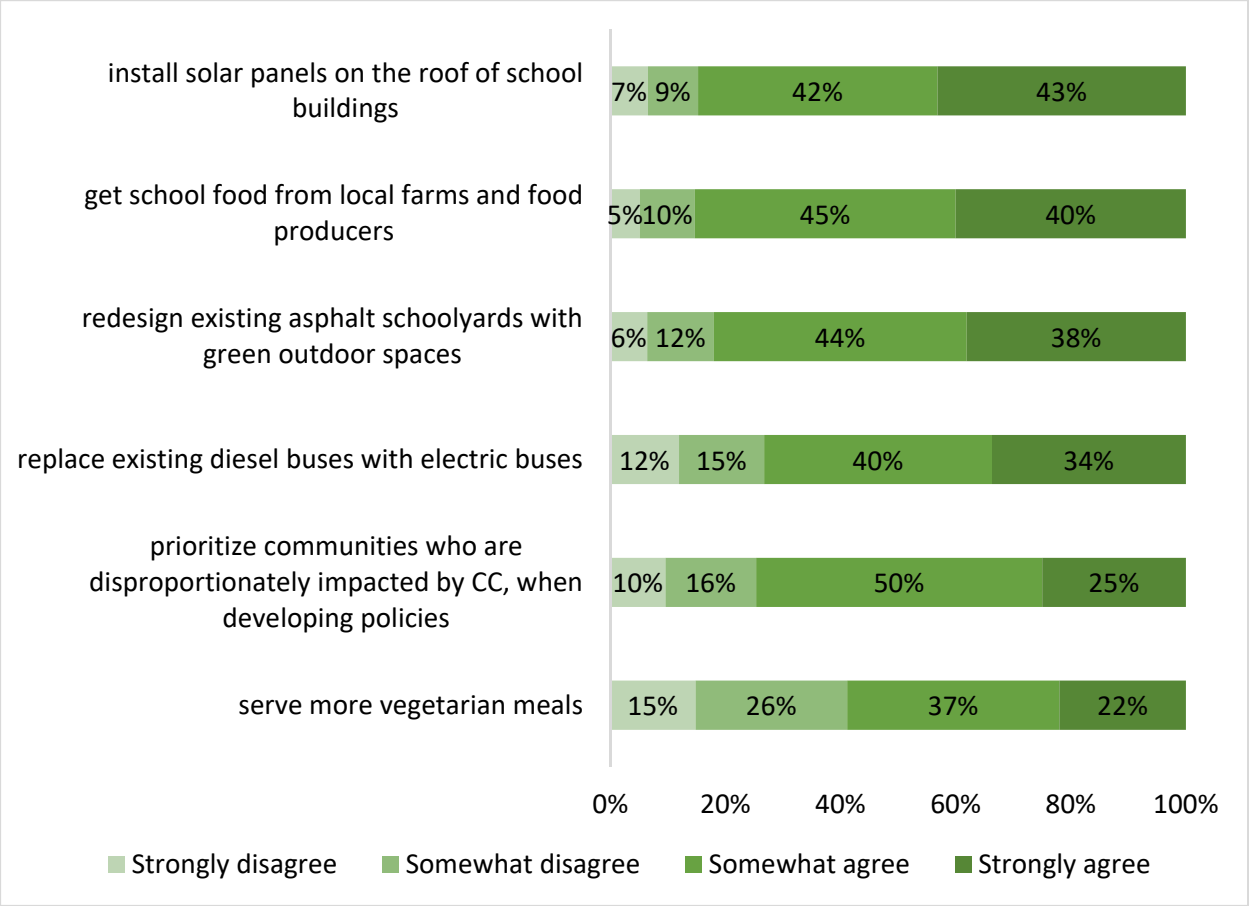
Note: CC = Climate Change

Figure 4.1: Views toward selected proposals for how schools should empower and prepare students for the future, overall



Note: CC = Climate Change

Figure 5.1: Views toward selected proposals for how school districts should reduce their carbon footprint through facilities and operations, overall



Note: CC = Climate Change

Figure 7.1: Views toward selected proposals, by political ideology
(% of ____ who strongly agree and somewhat agree)

Schools should…	**Liberals**	**Moderates**	**Conservatives**	**Total**	**Gap**
teach how to identify false and misleading information about CC	93%	88%	77%	87%	16%
teach about the potential impact of CC on food availability	96%	92%	71%	87%	25%
teach about the potential impact of food on CC	96%	91%	71%	87%	26%
develop career education opportunities for jobs in the clean energy economy	94%	89%	72%	86%	22%
teach the causes, consequences, and potential solutions to CC	96%	90%	66%	85%	30%
support children who are stressed about the impact of CC	95%	87%	67%	84%	29%
prepare children for changes in their education because of severe weather	93%	88%	68%	84%	24%
provide opportunities to explore CC through non-formal education	95%	88%	68%	84%	27%
help children to translate their knowledge on CC into actions	94%	86%	59%	81%	34%
which nations are most vulnerable to the harm of CC	92%	82%	62%	79%	30%
teach how Indigenous Peoples view CC	90%	82%	58%	78%	32%
teach which nations have been most responsible for causing CC	83%	77%	62%	75%	21%

Note: CC = Climate Change; Gap = % of liberals agreeing - % of conservatives agreeing

Figure 7.2: Views toward selected proposals, by political ideology
(% of ____ who strongly agree and somewhat agree)

School districts should…	**Liberals**	**Moderates**	**Conservatives**	**Total**	**Gap**
install solar panels on the roof of school buildings	94%	88%	69%	85%	25%
get school food from local farms and food producers	94%	87%	73%	85%	20%
redesign existing asphalt schoolyards with green outdoor spaces	92%	84%	68%	82%	24%
prioritize communities who are disproportionately impacted by CC, when developing policies	91%	78%	53%	75%	38%
replace existing diesel buses with electric buses	90%	77%	50%	73%	40%
serve more vegetarian meals	75%	59%	41%	59%	34%

Note: CC = Climate Change; Gap = % of liberals agreeing - % of conservatives agreeing

Figure 7.3: Views toward selected proposals, by political ideology
(% of ____ who strongly agree and somewhat agree)

States should…	**Liberals**	**Moderates**	**Conservatives**	**Total**	**Gap**
include CC in their educational standards to ensure that all students understand CC	94%	86%	60%	81%	34%
mandate that all teachers be prepared to improve teaching about CC	93%	81%	54%	77%	39%

Note: CC = Climate Change; Gap = % of liberals agreeing - % of conservatives agreeing