

Climate change and sustainability in primary and intermediate schools

Findings from the 2019 NZCER national survey of English-medium schools

Rachel Bolstad



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1. Introduction

NZCER’s research project “Educational policy and practice for a changing climate” explores what kinds of changes or adaptations our education systems may need to make in the immediate and short-to-medium term future, in response to climate change. The project is guided by the high-level research questions in Table 1. We are using a mixture of methodologies to address these questions, including a literature review, key informant interviews, and surveys. The project began in July 2019.¹

TABLE 1 **Overarching research questions guiding the project**

1. According to national, international, and indigenous perspectives, how could Aotearoa’s education systems and policies respond to climate change?
2. To what extent is climate change considered an urgent issue or priority in the education system (for schools, kura, and in terms of system-level educational policy and planning)?
3. What can be learned from kura Māori and kaupapa Māori approaches and responses?
4. What are the implications or impacts of student-, school-, and community-led climate responses for the educational system in Aotearoa New Zealand?
5. What might education look like in Aotearoa New Zealand, if climate change mitigation and adaptation were factored into policy and practice across the system?

In 2019, we had the opportunity to ask a few questions about climate and sustainability in the NZCER national survey of primary and intermediate schools.² NZCER began regular surveys of primary schools in 1989 and has run a national survey of English-medium schools every 3 years since then, covering a broad range of themes and areas. A full report of findings from the 2019 national survey will be available in mid-2020.³

This report outlines the teacher and principal survey findings related to climate and sustainability. Since we were only able to include a few questions in the survey, these data only provide a high-level view of practices and perspectives in primary and intermediate schools, and only in English-medium schools.⁴ In other parts of our project, we are gathering more in-depth interview data from educators and young people, including some from secondary and tertiary educational settings. We also plan to survey English-medium secondary schools in 2020.

1 All publications from the project will be available at <http://nzcer.org.nz/research/climate-change>

2 Schools completed the survey between September and November 2019.

3 The report will be available at <https://www.nzcer.org.nz/research/national-survey>. The national survey went to a representative sample of New Zealand’s primary and intermediate schools in August 2019; principal and teacher responses provide a broadly representative picture in terms of key school characteristics, with some under-representation of full primary schools and those in rural areas for teachers and large primary schools for principals.

4 NZCER is currently exploring with key stakeholders whether a tirohanga ā-motu (national picture) of Te Rāngai Māori (Māori medium levels 1 and 2) education would be useful, and if so, how would it be useful.

1.1 Why ask schools about climate change and sustainability?

People have been aware and concerned about human-caused changes to the climate for decades. However, the pace at which climate impacts are being experienced, and global consciousness about the scale of the problem, has escalated in recent years. In October 2018, the International Panel on Climate Change released a landmark report (IPCC, 2018) in which leading scientists warned that we may have just a dozen years left to act to keep the global temperature rise limited to +1.5 degrees Celsius. The scientific community's consensus is that given existing greenhouse gas (GHG) emissions, remaining within this range is not certain, and depends on the actions that are taken as a global community now. The associated effects of rising global temperatures present multiple environmental, social, economic, political, cultural, and ethical challenges for human societies.

In terms of impacts of climate change for Aotearoa New Zealand, there are increasingly detailed analyses of what kinds of changes we can expect to experience, and what sorts of adaptations we are likely to need to make (Office of the Prime Minister's Science Advisory Committee, 2013). For example, the recent *Environment Aotearoa 2019* report (Ministry for the Environment & Stats NZ, 2019) notes that climate change is already affecting Aotearoa New Zealand, and that "all aspects of life in New Zealand will be impacted" (p. 100). Region-by-region projections outline some of the expected impacts in different parts of Aotearoa New Zealand,⁵ noting that the actual impacts will depend on what happens with global GHG emissions.

The United Nations Framework Convention on Climate Change (UNFCCC) (United Nations 1992)⁶ indicates that all nations must engage in two key responses to climate change: mitigation, and adaptation. These are explained in simple terms in Table 2.

TABLE 2 Responding to climate change

Mitigation	Reducing emissions of carbon dioxide and other greenhouse gases to slow down global warming and climate change
Adaptation	Dealing with the consequences of climate change. This involves anticipating, planning, and preparing for the changes that will occur in our lifetimes and for future generations—given that some temperature rise can no longer be prevented or reversed.

Globally, education is seen as playing a central role in responding to climate change. Article 6 of the UNFCCC (1992) outlines the need for education, training, and public awareness initiatives "to reduce the impact of climate change by enabling society to be a part of the solution."⁷ Although the education sector is not a high contributor to GHG emissions relative to other industries, education can contribute directly and indirectly to mitigation and adaptation efforts. Education also needs to respond to, and have input into, changes that will happen across many other sectors due to climate change, including health, industry and employment, housing, and infrastructure.

1.2 How should the education system respond to climate change?

Souza et al. (2019) describe two big domains in which we can collectively act with respect to climate change and sustainability: the "material" and the "immaterial". These can also be thought of as "things" and "ideas and ways" (Table 3).

5 See <https://www.mfe.govt.nz/climate-change/likely-impacts-of-climate-change/how-could-climate-change-affect-my-region>

6 New Zealand is a party to this international treaty, which brings nations together to combat climate change and to accelerate and intensify the actions and investments needed for a sustainable low carbon future.

7 See <https://unfccc.int/topics/education-and-outreach/workstreams/education-and-training>

TABLE 3 Two domains over which we have influence

Material “things”	Our built world, the buildings, objects, vehicles, materials, and products that we use and consume, and waste products we generate.
Immaterial “Ideas and ways”	How we think, what we value, how we act in the world, our visions and expectations of how the world should be.

Material/tangible actions

There are direct climate benefits to reducing the environmental footprint of our materials and infrastructure, and seeking more efficient, cleaner, and longer-lasting alternatives. In November 2019 the government announced more support for schools to reduce energy consumption and environmental impact, including a \$5 million contestable fund for sustainability initiatives such as installing solar panels, replacing inefficient heating systems, and removing coal boilers. New school builds also provide opportunities for thinking in climate-smart ways.

Schools can also have a direct influence on living systems within or near the school grounds. Planting trees, building and sustaining food gardens, composting, worm farming, beekeeping, avoiding food waste, and building healthy soil all have climate impact benefits, as well as presenting rich opportunities for student learning and engagement.

Learning to think and live sustainably

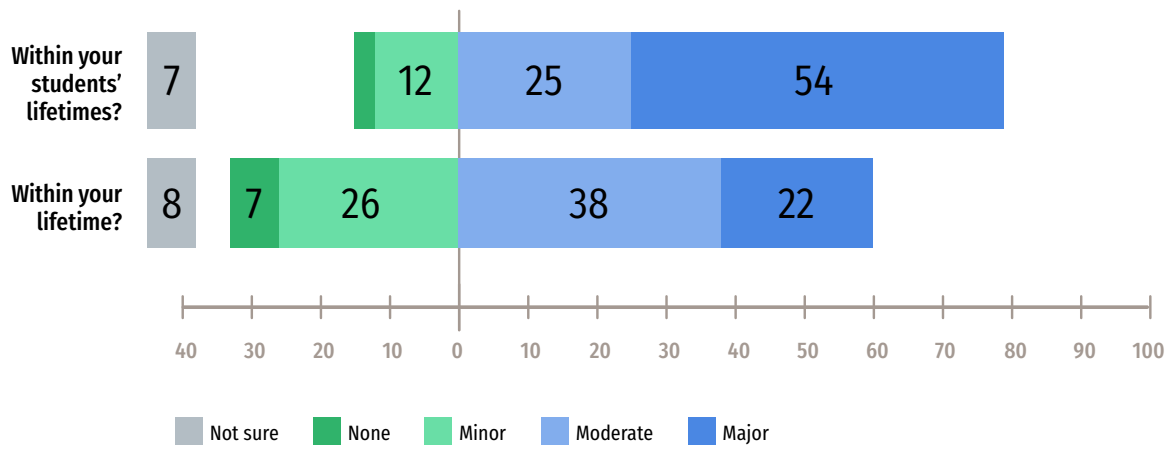
Education can also focus on the knowledge, values, attitudes, behaviours, and capabilities that people need to live sustainably. It is often easy for tangible “things” to become the focus of sustainability initiatives, with less reflective consideration of “the deeper values and principles upon which people as individuals and as part of collectives are currently building their future” (Brouwer et al., 2016, cited in Souza et al., 2019). We must “look to fundamentals” and “examine the degree to which existing education is adapted to, and prepares people for, radically different futures.” (UNESCO, 2012, p. 8).

The international literature also addresses the roles that schools can play in building community resilience, empowering and mobilising young people’s creative and adaptive problem-solving capabilities, and supporting localised innovation.

1.3 What impact will climate change have in our places?

NZCER’s national survey asked teachers and principals for the first time in 2019 what impact they think climate change will have on the place and community where their school is located, within their own lifetimes and within their students’ lifetimes. More than half said that climate change will have “major impacts” within students’ lifetimes, compared with 22% who expected to experience major impacts within their own lifetimes; 79% think students will experience “moderate” or “major” impacts in their lifetimes, and 60% expect moderate or major impacts in their own lifetimes. While 33% thought climate change would have “no impact” or “minor impact” during their own lifetimes, just 14% percent thought this would be the case for their students. Seven percent were not sure.

FIGURE 1 What impact will climate change have on the place and community where your school is located?



SOURCE: NZCER 2019 survey responses from primary and intermediate principals (n=145) and teachers (n=620)

Due to the length of the national survey, respondents were not asked to explain the nature of the impacts they anticipated for their areas and communities. However, this question has been asked in our key informant interviews, the findings of which will be reported separately.

2. School-wide and classroom practices

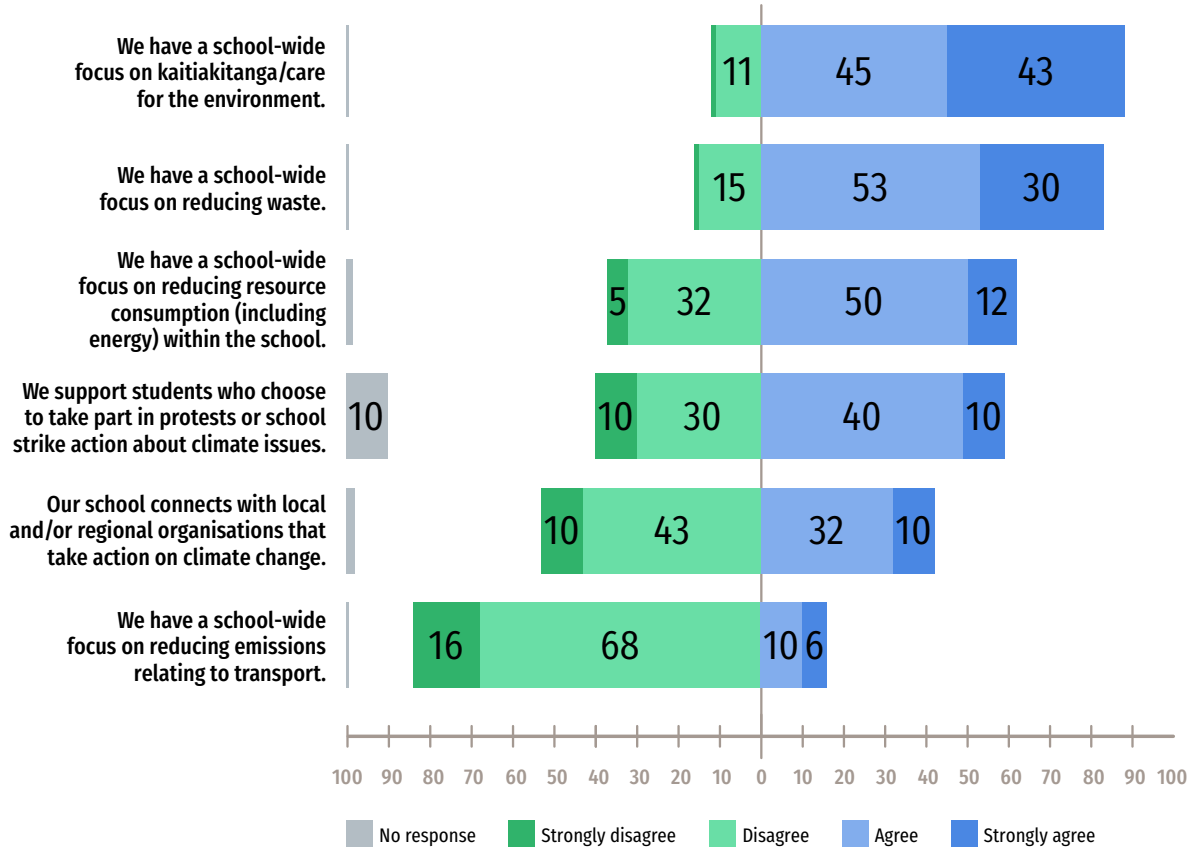
2.1 School-wide practices reported by principals

Principals were asked about a range of school-wide practices that might be in place within their schools. Most principals said EnviroSchools or student environmental/gardening projects were “well embedded” (46%) or “partially embedded” (32%), within their schools and 15% were “exploring” these activities. Just 6% said this was “not a focus” for their school.

In terms of other school-wide practices (Figure 2), 88% indicated they have a school-wide focus on kaitiakitanga/care for the environment, and 83% indicated a school-wide focus on reducing waste. Reducing resource consumption (including energy), at 62%, was a somewhat lesser focus. Principal comments reported in the next chapter identify this an area where schools may have less ability to make improvements without support.

The School Strike for Climate marches had a high profile in 2019 when the survey was carried out. Public opinion about students’ involvement in these actions varied. In media reports, some principals expressed views in support or in opposition to students’ participation. The principals we surveyed also had mixed responses. Fifty percent agreed that their school supported students who choose to take part in such actions, 40% disagreed, and 10% skipped the question. This question may be a difficult one for principals to respond to, as they still have duty of care responsibilities and protocols around student absence from school, regardless of whether they agree with students’ actions or not.

FIGURE 2 School-wide practices reported by primary and intermediate principals



SOURCE: NZCER 2019 national survey of primary and intermediate schools (n=145)

Fewer than half (42%) indicated their school connects with local and/or regional organisations that take action on climate change. Finally, just 16% said their school focusses on reducing emissions related to transport, although a few principals did specifically raise transport as an issue in need of system-level change in the open question reported in Chapter 3. Over half of New Zealand students now travel to school in a private vehicle (Theunissen, 2019). Road transport accounts for approximately 18% of New Zealand's GHG emissions and, with the growth in road transport, is one of the five main contributors to the increase in New Zealand's overall emissions since 1990 (Ministry for the Environment, 2019).

School-related transport emissions are not necessarily something schools can address on their own. The choices or options that individual families and whānau can make regarding where their children attend school, and how they get to school, are interlinked with many other factors including housing, public transport infrastructure, and school choice. Devonport (2017) looked at school choice in terms of cumulative CO₂ impacts, modelling the carbon emissions that could be reduced in Christchurch if secondary students attended their closest schools, rather than driving or being driven to schools further away. Schools can encourage low-carbon options such as walking, cycling, and public transport, but this option is not always available for all families. Developing system-wide approaches to reduce schooling-related travel emissions requires future-focussed urban planning and transport design. This could include creative thinking about where and how schools might be located relative to the communities they serve, and urban design that enables localisation of learning, and ensuring that all schools can provide well for the needs of students in their local area.

2.2 Classroom practices reported by teachers

Teachers were asked to respond to a set of statements about climate and sustainability learning and teaching practices that might occur in their classrooms (Figure 3). Most teachers agreed or strongly agreed that their class talked about changing our lifestyles to reduce our impacts on the environment (89%), that students learned about ecological and conservation issues for Aotearoa New Zealand (81%), and that students undertook direct actions for the environment⁸ (77%).

Overall, 71% said their classes talked about the causes and impacts of climate change. However, this statement and several others varied for teachers of different year levels. The percentages who agreed or strongly agreed were: 88% of those teaching Years 7–8 students, 81% of those teaching Years 4–6 students, and 62% of those teaching Year 0–3 students. Similarly, for the statement about talking about adaptation to a changing/warming climate, 63% of Year 7–8 teachers agreed or strongly agreed, compared with 57% of Year 4–6 teachers, and under half (43%) of Year 0–3 teachers. Teachers of Year 0–3 were also less likely than other teachers to say their students undertook social actions for the environment.⁹ This statement was the lowest-rated practice on the list, at around 22% agreeing or strongly agreeing for teachers of Years 0–3, and around 38% for teachers of Years 4 and above.

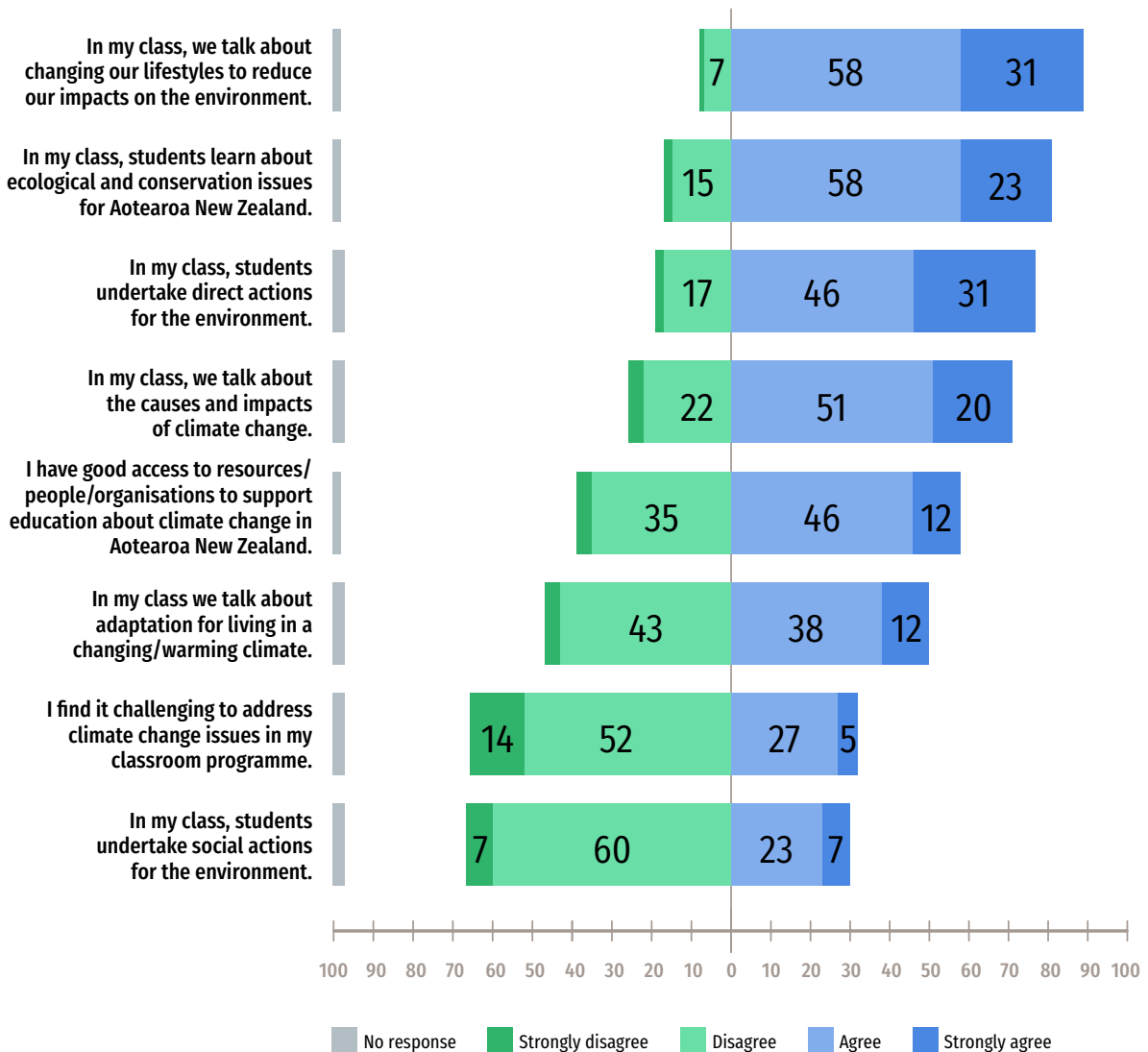
Interestingly, only a third of all teachers indicated that they found it challenging to address climate change issues in their classroom programmes, with slightly more agreement from Year 0–3 teachers. Over half (58%) of teachers agreed or strongly agreed that they have good access to resources, people, and organisations to support education about climate change in Aotearoa New Zealand.

We could not include an open question on climate change and sustainability in the teacher survey, so we are limited in our ability to interpret these data. We will be seeking to unpack these findings in other parts of the project, including through key informant interviews.

⁸ The survey gave the following examples as prompts for what might be considered direct actions: tree planting, reducing plastic use, monitoring waterways, pest control.

⁹ The survey gave the following examples as prompts for what might be considered social actions: letter-writing, climate action marches, social campaigns.

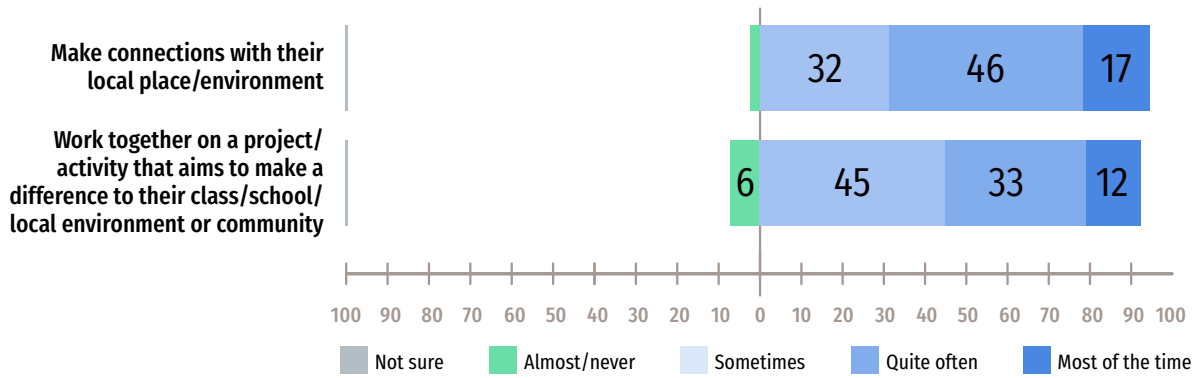
FIGURE 3 Primary and intermediate teacher descriptions of classroom practices



SOURCE: NZCER 2019 national survey of primary and intermediate schools (n=620)

Two other items in the survey indicate primary school practices that, although not directly about climate change or sustainability, relate to the idea of local places and making a difference in your local place (Figure 4). Sixty-three percent of teachers said students in their classrooms make connections with their local place and environment quite often, or most of the time, and almost a third said this happens “sometimes”. Forty-five percent of all teachers said students often or most of the time work together on a project or activity that aims to make a difference to their class, school, local environment, or community. Teachers of Years 5 and 6 were the most likely to say this happened quite often or most of the time in their classrooms; 45% of all teachers said this happens “sometimes”.

FIGURE 4 Other student learning opportunities, reported by teachers



SOURCE: NZCER 2019 national survey of primary and intermediate schools (n=660)

3. Principals' views on systemic changes or transitions needed

Principals were asked what, if any, changes or transitions the education system (as a whole) might need to make in response to climate change. Forty percent of respondents (57 principals) wrote a response to the question. Tables 3 and 4 show the most common themes and subthemes in principals' responses. Comments often included multiple themes.

3.1 System-level support and resourcing

Sixty percent of comments indicated the need for national/system-level support and/or resourcing (Table 3), with a variety of subthemes as to what form this should take (see Table 4).

TABLE 4 Principals' views on education system response to climate change

General theme	%
National/systemic support, priority, resourcing (see Table 2)	60
Energy-efficient school property	30
Local responses	19
Curriculum	18
Pushing back	14
Waste minimisation	9
Transport	7
Engage families/whānau	5
Student voice	4
Promote optimism	4
Other	7

SOURCE: NZCER 2019 national survey of primary and intermediate schools (n=58)

TABLE 5 National/systemic support, priority, resourcing—subthemes with examples

Subtheme	Example comments
Make it a priority, support for all schools	It is important—we tend to do it in “patches” rather than consistently. Ensuring our charter goal and school directions are including climate change education and focus so every school is learning and collectively championing for the planet. All schools should be Enviroschools.
Strengthen the curriculum	Make it a mandatory part of the NZC. Embed it into our curriculum. Build science and technology/problem solving and creativity as core subjects.
Funding for infrastructure	Funding for solar power, power usage monitoring, re-use of water. Recycling bins should be free of charge to schools. Blue bins are twice as expensive to rent monthly than normal waste bins.
Funding for teaching and learning projects	The MOE should encourage/support this to make it financially easier for schools to work towards implementing environmental activities. Allowing more funding for staff to be involved during school time to participate in DOC/ environment initiatives.
Teaching resources	Providing teaching resources that can be used to teach about climate change. Up-to-date info and resources to ensure we teach the things that will make the most impact and are highest priority.

3.2 Energy efficient and sustainable school property

Elsewhere in the survey, in a set of questions about school buildings, 74% of principals disagreed with the statement “Our buildings are energy efficient and have low environmental impact”. The second most common theme in the open comments reported in Table 3 above related to improving the energy efficiency of school property: 30% of responses mentioned this.

Schools are not designed to be energy efficient. This will need to change

A serious look at how the school is heated, lit etc

Two comments also considered whether the “school day” and “school hours” might need to change or be more flexible due to hotter days and changed weather conditions.

3.3 Local responses

Nineteen percent of the principals’ comments referred to localised responses and actions, including taking responsibility to care for the local environment, and local support.

All schools could have a better focus on looking after the school, local environment, and teach this any year.

Rather than emotive jargon like ‘Climate Change’ the focus should rather be on our personal responsibility for caring for our spaces e.g. rivers, lakes etc.

Not sure [about system changes] but our school and community would support any changes re: climate change.

One principal wanted localised information about climate change and what it means for their region.

More interactive way of sharing information related to our region with students.

3.4 Strengthening the curriculum

Some comments about strengthening the curriculum are shown in Table 4. Additional comments included the view that human relationships to the environment should be a central focus within curriculum.

Curriculum to focus on cause/effect of humans on the planet

Focus on our environment and our impact on it as a major valuable focus. We have moved away [from] trying to cover everything [in our curriculum]

Some comments also referred to the importance of teaching science, and developing learners' critical thinking, problem-solving, creativity, and innovation.

We need to continue to develop critical thinking skills so that the children can make sensible conclusions based on available information

3.5 Pushback

Fourteen percent of comments “pushed back” on the idea that climate change can or should be a system-wide focus for primary and intermediate schools. One respondent said, “How do we know [what education should do]? The governments worldwide still can't agree!” Other reasons for pushing back against a climate change focus included:

[It is] up to each school to decide in their local curriculum

We are already overcrowded in what is expected

In an environment where we are largely dictated by central funding, I don't believe we have the resources to be able to make many of these decisions within our budgets

A few principals expressed concern about the impacts for children.

Let young children enjoy their childhood

I don't believe it should be pushed upon primary age children. Enough is enough! Stop making it their responsibility!

3.6 Waste minimisation and transport

Nine percent of comments referred to waste minimisation approaches, including “litterless lunches and water only”, and using paper and other resources within the school less wastefully. Seven percent referred to transport, including the need for better public transport options, and encouraging or requiring the use of vehicle types that have lower or zero carbon emissions by contracted transport providers, “especially the big players.”

3.7 Student voice, community engagement, focussing on the positive

A few comments touched on the importance of engaging students as well as families and whānau as leaders and deciders about what kinds of changes can be made in their schools and communities.

Involve students in exploring concepts around climate change and deciding next steps for our school

Give students a voice, encourage families to lead in this area

Educating tamariki so they can educate their whānau and their tamariki too

A few comments recommended schools focus on positive messaging, rather than information that could cause distress or a sense of futility in young people.

Ensure that we present opportunities and optimism rather than presenting a dire future. We have enough young children with anxiety issues already.

Negative, doom and gloom messaging is unhelpful—kids need to believe in a worthwhile future.

4. Conclusion

The 2019 national survey data suggest:

- many primary and intermediate teachers and principals think climate change will have an impact on their communities in the near future
- while sustainability and caring for the environment are valued, schools are most likely to focus on easy-to-implement practices such as waste reduction and gardening activities
- some areas that could contribute to mitigation may be harder for schools to act on individually; for example, improvements to energy efficiency, reducing resource consumption, or managing travel-related GHG emissions.

Principals expressed a range of suggestions for system-wide changes or transitions that might be needed in response to climate change. These included:

- system-wide approaches to improving infrastructure efficiency
- making climate change response a bigger priority across the system and embedding it into all school decisions, and
- approaches to curriculum and pedagogy that support localised actions, critical and creative thinking, and empowerment of young people and communities.

Teacher responses indicate that while sustainability and the environment are a focus in classrooms, climate change is less of a focus, particularly for students in the junior years. The teacher survey data indicate differences related to year levels of students, and these patterns are not unexpected. Other key findings indicate

- the causes and impacts of climate change were a more common focus of discussion than adaptation to a warming climate
- teachers were more likely to say their students undertook direct actions for the environment, and less likely to say their students undertook social actions for the environment.


Perhaps the most surprising finding is that two-thirds (66%) of teachers say they *don't* find it challenging to address climate issues in their classrooms. Over half (58%) say they *do* have good access to resources, people, and organisations to support education about climate change in Aotearoa New Zealand.


The findings from the 2019 national survey provide a high-level snapshot about climate change and sustainability in primary and intermediate schools, and some of the findings raise further questions. As the survey covered only English-medium schools—we also don't yet know how these findings would compare with perspectives and practices among Māori-medium kura. We also don't yet have comparable data for secondary schools. There are still many research gaps to fill. We hope to add further insights through other research activities planned in the next phases of this project.

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