



HEAT ADAPTATION FOR SCHOOLS

A introductory guide to
cooling your school and
preparing for hot weather



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Background

As a result of climate change, heatwaves will become more frequent, and more intense in the coming years. Optimal classroom temperatures are between 19 and 23 degrees Celsius. Studies show that educational performance starts to fall at 24 degrees, and there are serious health risks past 35 degrees.

This is also a safeguarding issue: heat is dangerous for health in general, but also exacerbates mental health issues. Some medications have contraindications for temperature regulation, and SEN children are more likely to have issues with temperature regulation.

In terms of having to close the school, some children may be left alone if parents have to work; family homes may be even warmer than the school environment; and domestic abuse rates also rise in hotter weather.

This is a non-exhaustive list of measures schools can implement to cope with increased hot weather, designed to help schools get started in adapting to the climate of the future.

How does heat get in?

1. External Temperatures: i.e. fossil-fuelled heatwaves.
2. Solar Gain: direct sunlight coming in, especially an issue for buildings with lots of glass.
3. Outside Setting: hard surface materials, roads, vehicles. Softer surfaces, and trees can mitigate heat.
4. Internal Heat Sources: electrical devices radiating heat, cooking and building services, number of bodies (70-100W per person!).
5. Building Design: most school buildings were built in a different era, for a different climate, and in many cases are designed to retain heat.

What can be done - short term

- Include heat risk in safeguarding documentation and policy.
- Plan ahead for changes to timetabling, room use, uniform etc.
- Allow access to cold drinking water at all times.
- Look at supplying cooling cloths or hand fans in classrooms.
- Measure the temperature in different rooms at different times of day, so you can understand which areas are most likely to be hottest, and when.
- Ensure heating systems are optimised - no radiators turning on automatically in hot weather, for example.

What can be done - short term (cont'd)

- Control windows, blinds, and doors to reduce temperature as far as possible - opening windows in the early morning and evening to gather cool air; closing windows as soon as the air outside is hotter; blinds to be closed wherever sun falls directly onto the windows.
- Ensure windows and air-vents are not blocked by furniture to encourage circulation of cooler air.
- Control doors to maximise air-flow from cooler areas to hotter areas, or to maintain cool areas that you can move classes into.
- External shading is significantly more impactful than internal shading - if the sun isn't hitting the windows / walls, that is much more effective at reducing internal temperatures than blocking the sunlight inside. There are solutions for this in the 'longer term' section below, but for immediate impact, you can look for opportunities to create shade outside that prevents the sun from reaching your school buildings. Even hanging sheets over the outside of windows has been shown to be effective at reducing heat indoors.
- Adopt 'low mow' regimes for suitable areas of grass - long grass creates a localised cooling effect.
- Ensure all electrical items are switched off at the plug when not in use, as these can generate heat.

What can be done - longer term

- Install external shades, shutters, or awnings and ensure they are used effectively on hot days.
- Planting 'living walls' and 'green roofs' externally creates a significant cooling effect for any large surfaces of brick or concrete.
- Install seating in shaded areas within the school grounds from single benches, up to (with funding) an 'outdoor classroom'.
- Plant drought-resistant trees (e.g. olive trees) to create more shade in the grounds.
- Remove paving, concrete, tarmac, and hard surfaces wherever possible - these contribute to the 'heat island' effect.
- Invest in reflective solar window film.
- Install air-conditioning when possible, but be aware that air-con just moves heat to a different place, it doesn't remove it completely, so where it is installed needs careful thought.

Rooftop solar as part of the solution

- Installing rooftop solar panels can deliver significant energy cost savings, that would certainly cover the additional energy draw from air-con and possibly even enough savings to fund air-con installation, depending on the system.
- The cost of solar energy can be 8 x lower than grid prices.
- Solar is ideal for schools as most of their energy usage is during daylight hours.
- There are options for fully funded solar schemes, with no upfront capital costs at all, and up to 40% reduction in energy costs.
- On a hire-purchase basis, solar panels can pay for themselves in as little as 4-6 years, and a well-maintained system can provide price stability and clean energy for over 30 years.
- Switching to solar energy would also reduce the schools emissions and therefore (in a very small way) help reduce the likelihood of dangerous heatwaves.

I can refer you to a reliable solar supplier that will complete a free assessment and systems design for your school building. If you are interested in this, please email me: hello@samdruryshore.com

Resources and more information

This is a very useful webinar from Let's Go Zero - [Our School is Cool! Practical solutions to prevent overheating](#)

I would recommend signing the school up to the [Let's Go Zero](#) programme. They are philanthropically funded and offer free expert advice to schools on carbon action plans, cost reductions, sustainability initiatives, and more.

[Climate Adaptation Toolkit](#) from Built for Change - head to the 'Learning in warm and hot weather' tab from this link.

[Compendium of adaptation and resilience measures for schools](#) from Arup - sections C and D focus on heat.

If you have any questions about this document, reach out to me via my website: samdruryshore.com