

# 8 key ingredients for running successful energy and carbon awareness programmes in schools

**A review of award winning programmes from across the UK**

## Introduction

This report draws on the experience of ten schools in the UK, all winners of the Ashden Awards for Sustainable Energy. It examines how schools considering the installation of renewable energy technologies can raise energy awareness and engage with carbon reduction activities and behaviour, to reduce energy costs and cut emissions. And it looks at the broader benefits for pupils, teaching and administrative staff and local communities from engaging with these issues.

Each of the schools reviewed here has been judged to be outstanding in promoting sustainable energy and carbon reduction within their school community. None of them has approached this in exactly the same way, and there is no set template for creating a 'sustainable school'. But there are factors common to each which are described in this report, with short case studies, which it is hoped will be useful to local schools seeking to change the way they operate.

## Key lessons

### 1 - Define a vision

Each of the winning schools had defined a vision of what they wanted to achieve and which helped to explain what the school would be like once this was realized. Some chose to describe this in clearly quantifiable ways. Okehampton College in Devon for example wants to be self-sufficient in energy, meeting their annual requirements from renewable technologies in the school. They have put in place measures to accurately monitor their consumption and the impact of their energy saving behaviour on this.

#### Antarctic vision

Inspired by a trip to Antarctica, where he witnessed the effects of climate change first hand, the head teacher of Ashley C of E Primary School, Richard Dunne, set about transforming every aspect of school life and defining a vision of what the school would be like after these changes had taken effect.

This was to deliver all school activities using less than 100kWh of electricity per day. Taking this as the stimulus for a range of activities that includes an Antarctic Curriculum the school cut electricity consumption by 50% in the first year and a further 28% the year after with an 18% reduction in gas consumption in the first year.

The activities and benefits have moved beyond the school. Seventy-one staff, governors, and pupils families have joined the Carbon Countdown Challenge to use less than 100kWh of electricity per week at home.

For others such as Seaton Primary School in Devon the vision was to create a school where the environment is woven into the ethos of the school, reinforced by a school motto 'Care now for the future'.

In both cases, setting a clearly defined vision helps to explain not only what the school is doing but also why.

### 2 - Ensure you have the support of the Head Teacher, Caretaker and Chair of Governors

What is clear from the review of these ten schools as well as projects in other schools, is that without the support and commitment of the Head Teacher, Caretaker and Chair of Governors efforts to raise energy and carbon awareness and to reduce energy consumption and emissions, are will almost always fail.

The active support and commitment of the Head Teacher is needed to give authority to changes in practices, routines, the allocation of staff time and the curriculum which come out of a focus on energy and environmental issues.

Often these involve adjustments to long held ways of working so resistance from some quarters is not uncommon. Where there is a lack of support from the Head, strong initial enthusiasm from children and teachers can quickly seep away.

Equally important is the support of the Governors and especially the Chair of Governors. This is particularly so where changes to budget allocations, spending and the role of teaching staff are required. One key factor which

#### Outsider In

When Ringmer Community College in East Sussex chose to review its environmental credentials and performance, like many schools responsibility was allocated to a member of staff.

The difference in this case was that this was a new member of staff, who was not a teacher, but an environmental consultant. Working with children, teachers and the Care Taker he introduced new ways of working including devolving authority to children selected to be Eco-Reps, given responsibility to monitor performance and 'name and shame' those (including staff) performing poorly. The school has also installed PV panels and a wind turbine.

This approach with the devolution of responsibility to children and a new, non-teaching member of staff was only possible with the support of the Head Teacher, Caretaker and Chair of Governors.

has enabled Ashley Primary school to achieve success with sustainable energy is the commitment of the governing body. The governors redefined the responsibilities of the head teacher, deputy head teacher and administrative staff, so that the head teacher has the time to implement the school's sustainable development action plan and share it with other schools, both regionally and nationally.

The importance and involvement of

the school Care Taker is often overlooked. But the ten schools reviewed here show that it is critical to success in increasing awareness and cutting costs. Care Takers are often the first to arrive in a school and the last to leave, so have a key role in controlling energy consumption when the school is shut. It may also be their responsibility to set and control the heating system. Each of the ten schools reviewed here involved their Care Taker in some way. In East Church Primary School, children read the energy and water meters weekly, helped by the Care Taker.

In Ringmer Community College the Care Taker's role is much more proactive. This is an old school with buildings constructed in the 1950's and an boiler of similar age. By monitoring energy use and demand throughout the day and manually adjusting the boiler and radiators throughout the day the school has generated savings of £6000 per year.

### 3 - Make it exciting

Few people respond well to being asked not to do something, especially if it is an habitual aspect of daily life. Each of the schools reviewed here had worked hard to focus on positive new ways of working, and to do this in a way which is exciting for the whole school community.

The schools have developed a wide variety of ways to do this ranging from weekly assemblies and drama, to clubs, pledges and competitions.

Because a number of the schools were focussed not just on energy but broader environmental issues they were able to use a range of other ideas including wormeries to compost food scraps, ponds, and keeping chickens.

There is a strong emphasis on fun, participation and helping children to make the connection to the 'bigger picture' in all of these approaches.

In St Columb Minor School in Cornwall, all pupils learn about renewable energy, alternative fuels and electric vehicles. And Year 5 design the body of an electric go kart which they test in the school play ground.

Each of the schools had or planning to install some form of renewable energy system. Having a renewable energy technology within the school provides an immediate benefit in terms of being able to demonstrate first hand how they are installed and operate. And renewable technologies are exciting in a way that energy efficiency technologies often aren't. It is also clear that the more information can be provided on what the renewable energy systems are doing (generating), and how they work the more likely initial interest can be maintained.

Cassop Primary School (Durham) has installed PV panels and a 50kW wind turbine. An interactive display board shows what these are producing and how they connect to the grid. The school has also built a small wind tunnel which is used for a Turbine Challenge in which pupils design and test their own wind turbines.

#### **4 - Renewables may be the catalyst - but behavioural change is key**

Each of the winning schools recognizes the potential of renewable energy systems installed within a school to excite and inform pupils and staff. Between them the ten schools had installed wind turbines, photo-voltaic panels, biomass (wood) boilers and solar water heating.

Despite the obvious attraction of renewables, the schools were very clear that renewables are only ever going to be part of the solution and are of limited value without changes in the way we think about and use energy.

A number of schools had introduced school pledges (and world pledges) to reduce waste by ensuring lights and appliances were switched-off (and not just on standby) when not in use.

Progress in changing behaviour can only be seen through monitoring. Some of the schools do this through regular checking (including random checks) of class-rooms and shared areas with weekly feedback at assemblies.

Competitions between classes and year groups are also used to maintain momentum and interest.

Most schools of the schools are also measuring their progress by taking weekly (and in some cases daily) meter readings. Provided consumption meters are accessible this can be done manually by noting readings, and calculating consumption

#### **Big challenge - big change, big savings.**

Okehampton College in Devon set itself the challenge of becoming self-sufficient in energy through the installation of solar and wind generators.

They realized that new technologies will be of limited value if they didn't reduce their energy consumption and waste first.

By setting out to become an exemplar, working as a team, giving children the necessary skills and 'opening minds' they have cut electricity use by 50% saving £20,000 a year and 70 tonnes of CO<sub>2</sub> focusing on the use of lights and appliances.

An added advantage of concentrating on behavioural aspects of energy use is that everything learned in school can be applied at home, amplifying the overall benefit.

over a given period. In the case of Woodheys Primary School (Manchester) these readings were being passed to the Local Authority for further analysis.

There are a number of proprietary software tools to help schools monitor their energy consumption. Dashboard (used by Okehampton College) shows gas and electricity consumption as well as heat and power generated by renewable systems (e.g. PV and solar thermal).

Eco-driver (used by Ashley Primary School) provides detailed information on consumption and consumption patterns, in graphical form. This can be particularly useful for revealing 'hidden' consumption at times when the school is closed such as evenings and weekends.

A key point to note here is that even where schools already have automated meter reading, and consumption data is available, qualitative and quantitative monitoring is an essential part of the engagement process and in effecting behavioural change. And behavioural change practiced in school can be directly applied to life at home and elsewhere.

## 5 - Give pupils responsibility, control and authority

In each of the Ashden schools pupils were actively involved in monitoring the performance and environmental impact of the school. Some had done this by setting up Eco Clubs, others had appointed monitors in each class responsible for making sure lights are turned off and windows closed.

Woodheys Primary School has appointed an Energy Team in Year 7 to monitor and report on overall performance across the school. This includes monitoring the performance of teaching staff who are left notes if appliances or lights are left on unnecessarily.

Woodheys is not alone, in this approach and some schools have taken it a step further. Ringmer Community College (East Sussex) has 200 Eco Reps (25% of pupils) who are responsible for monitoring the performance of the school including the teaching staff. Teachers are 'fined' £5 from their budget every time a projector is left on unnecessarily and departments are monitored and ranked in terms of their energy performance and use of materials (paper, reprographics etc). This approach was controversial when first introduced, but concerns that devolving responsibility to children and asking them to monitor teachers might undermine authority and behaviour have proved unfounded.

## 6 - Build partnerships

Developing collaborative and long-term partnerships are a key element of the success of the Ashden schools. These include partnerships within the school community and with the wider community.

### Devolve responsibility - build confidence

Eastchurch Primary School on the Isle of Sheppey began working to improve its environmental performance 10 years ago. The school has installed solar panels, but the key success factor has been engaging children in monitoring energy and water consumption.

The 'E-team' has 6 members and is responsible for monitoring the whole school including teachers. Working in pairs pupils assess whether doors and windows have been closed and lights turned off, daily. Acknowledging different levels of technical understanding the approach is to encourage good practice at all levels. Results are collated weekly and announced at a Thursday morning assembly with the winning class receiving a certificate.

Changing the habits of pupils, teachers and parents has brought environmental benefits but it has also been about building children's confidence. And a key component of this has been asking children to monitor and report on the performance of adults.

Most of the schools had established some form of partnerships within schools whereby older children take-on more responsibility for helping younger children to meet the various energy challenges and targets set.

Several of the featured schools made visits to other schools. Ashley Primary school has set up partnerships with local schools and businesses and Okehampton College organizes visits to local primary schools. Cassop Primary School receive visits from six schools a term.

Links with parents and guardians are also seen as key. Newsletters are used by all the schools to keep parents informed. Ashley Primary School provides real-time energy displays (which show electricity consumption) for

pupils to take home and monitor their home energy consumption.

#### Acting local, acting global.

St Columb Minor School is a large, rural primary school on the eastern outskirts of Newquay. Opened in 1982 it has over 400 pupils, 17 teachers, and 53 other staff. It is located in an area of relative poverty with significant numbers living in temporary accommodation (due in part to a mixed services base in the vicinity).

The sustainable energy activities are led by the School Business Manager, supported by the school's Eco-Team.

Non-teaching staff, governors and parents are also actively involved in the sustainable energy work of the school. Pupils promote energy efficiency at home, and have highlighted the use of low energy lighting and insulation in their homes and changes in the use of standby on TV's and games consoles.

A community 'Green Day' was held in September 2009 to celebrate the award of the school's first Eco-Schools Green Flag and to raise awareness amongst local people of the school's energy activities.

The school helps other local schools to develop their own sustainable energy activities. It has produced guidance material which is available on Cornwall Council's website and has held a renewable energy seminar for schools and community groups. Pupils have also been involved with the outreach activities, including surveys of local businesses, and presenting their energy activities to pupils in other schools. Through its global links the school has raised money for solar cookers and showers in Peru and shared sustainability ideas with schools in India.

It is widely recognized (from other studies) that children can have a very strong and beneficial influence on adults with regards to energy awareness and behaviour.

Several schools have planned or completed new buildings or extensions to existing buildings and were able to get children working alongside architects to plan the energy saving aspects of these.

Ringmer Community College amended the design of a new building (to limit a wind tunnel effect) at the instigation of pupils.

As illustrated in the case study St Columb Primary School in Cornwall has extended partnership working into the local community and beyond.

## **7 - Define a local, national and global context**

Defining a context in which sustainable energy and environmental activities are located is important and helps to explain the need for and significance of what is being done.

Several schools made strong connections between the local history of the area or other pressing and topical issues. Cassop Primary School is in a former coal mining area and so is able to draw on its own local and historical context when considering the role and impact of renewable technologies in society today.

Currie Community High school broadened its focus to look at the health (as well as the energy saving) benefits of walking and cycling to school. It also runs Education for Sustainable Development Classes and events such as fashion evenings for clothes made from recycled materials.

Several schools (including Woodheys Primary School) had worked with pupils to consider what it means to be a global citizen the impacts of climate change on poor communities in other countries.

St Columb Minor School held a one world week to enable pupils to study energy around the globe. Year 3 pupils learned about energy needs in Peru and made working models of solar cookers as well as investigating solar showers. External support for this project was provided by an academic who works with young people in communities in Peru and the UK.

## **8 - Integrate sustainable energy and carbon awareness into every aspect of school life**

Though no two schools had adopted the same approach to reducing their energy consumption and environmental impact, in each their approach was integrated into every aspect of school life including the curriculum.

What is very clear from this work is that this is not something that can be 'bolted on' with any degree of success.

Sustainable energy, carbon reduction and climate change offer huge potential for integration into the curriculum at both primary and secondary school levels. The areas where this applies include, geography, maths, design technology and science as well as topics such as citizenship, politics and development.

Where renewable energy systems are installed the more available and accessible the energy data from these can be made the greater the potential. But as schools such as Ashley Primary School and Okehampton College show, monitoring existing consumption (even before renewables are installed) can provide a great deal of useful information which can be included within the curriculum.

Most of the schools use the National Curriculum. St Columb Minor uses the International Primary Curriculum as the framework for its teaching and learning. The IPC covers all the requirements of the National Curriculum but its broader focus provides a global perspective that readily accommodates education for sustainable development.

What these schools also illustrate is that these topics can be explored in a very practical and hands on way though ideas such as electric go karts, and building you own wind turbine, as well as more academic approaches.

## List of schools reviewed for this project

- ▶ St Columb Minor School, Cornwall;
- ▶ Okehampton College, Devon;
- ▶ Currie Community High School;
- ▶ Ashley Primary School;
- ▶ Sandhills Primary School, Oxford;
- ▶ Ringmer Community College, East Sussex;
- ▶ Seaton Primary School, Devon;
- ▶ Woodheys Primary School, Sale;
- ▶ Cassop Primary School, Durham;
- ▶ Eastchurch Primary School.

## Further information

Further details about these schools, a longer case study and short film can be viewed on the Ashden awards website <<http://www.ashdenawards.org/winners>>