



**CENTRE FOR
SUSTAINABLE
ENERGY**

ENERGY EDUCATION HITTING HOME

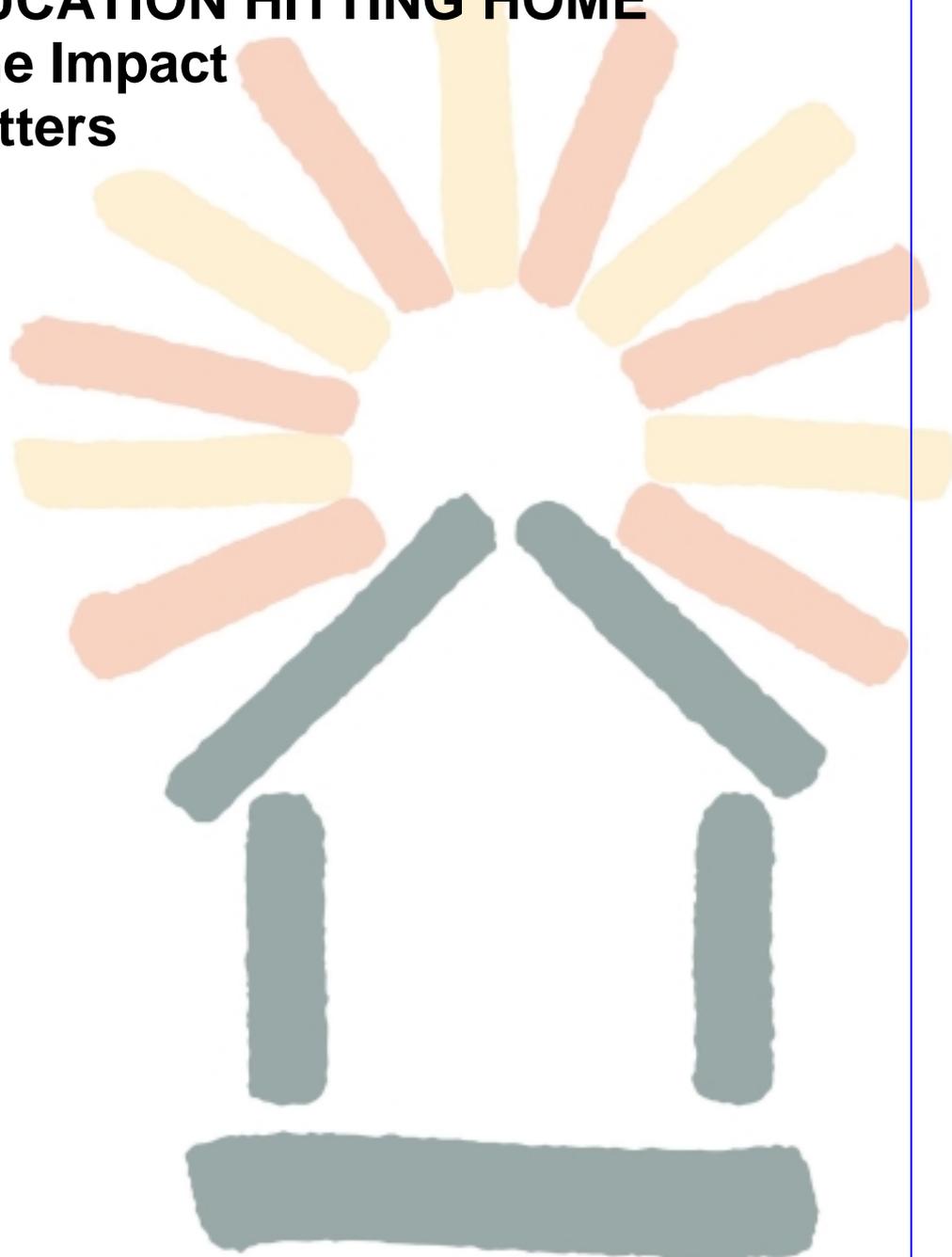
Monitoring the Impact of Energy Matters

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April 2003

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ACKNOWLEDGEMENTS

Funders

The Centre for Sustainable Energy is grateful for the support of the Shell Foundation, through its Sustainable Energy Programme and the Bridge House Estates Trust Fund and for additional support from the Sainsbury Family Charitable Trusts.

Support and Advice

CSE is also very grateful to the participating schools, and the staff and pupils who gave generously of their time and valuable feedback from their experiences and without whom there would be no research findings.

Thanks are also due for the support and advice of Robin Sadler, of New Perspectives, who helped structure this research, in addition to carrying out part of the work.

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EXECUTIVE SUMMARY

This research provides some snapshots into the ways that staff at both primary and secondary schools addressed sustainable energy, often in the context of wider community issues. Of the range of environmental issues affecting society today, dealing with energy use and energy sources can have the most immediate impact on institutions, such as schools, and their local communities.

Energy Matters is an energy education programme developed and run by the Centre for Sustainable Energy, in London and across England. The programme is unique, in that it provides education materials with training and ongoing support for teachers through local Energy Educators who deliver the programme. The Energy Matters Resources cover Home Energy, Sustainable Energy and School Energy. These Resources respond to criteria in the National Curriculum, in Science and Geography, and link to other areas of the Curriculum, including Education for Sustainable Development, Literacy, Numeracy, PSHE and Citizenship.

This research aimed to evaluate the effect, on energy efficiency activity, of Energy Matters on the schools and homes of participating pupils. The research covered both behavioural changes, to reduce energy consumption, and installation of energy saving measures. Interviews were held with a sample of parents of pupils who had worked with Energy Matters, with a range of staff at some of the schools who had used the programme and with small groups of pupils at the same schools.

This research was completed in March 2003.

The findings from the research show clearly that there is a considerable impact in relation to energy saving in both schools and the homes of pupils where Energy Matters Resources have been used.

- Three quarters of parents had adopted some behavioural changes to save energy as a result of their children's involvement in Energy Matters. The level of behavioural change is comparable with that achieved by professional energy advice services, such as Energy Efficiency Advice Centres. These parents also rated their children and Energy Matters as almost twice as influential on their behaviour as other sources of information on energy saving.
- Nearly all the pupils involved in this research said that they had done a number of different things to save energy, both at home and at school, and that they would be able to keep on doing these.
- Staff in most of the participating schools reported a number of actions taken by pupils and staff to reduce energy consumption as a result of work they had done with pupils on Energy Matters.
- Most of the schools involved in this research undertook energy saving investment. Some of this was as a direct result of staff involvement in Energy Matters. Involvement in Energy Matters also encouraged other staff to ensure that energy saving was a factor in deciding on future maintenance and refurbishment programmes in their schools.

Energy Matters helps schools to build on their home-school links through an activity which helps educate parents as well as the pupils.

- Nearly half of the parents interviewed said that they were more interested in energy saving since their children had done some Energy Matters activities and 90% of parents were now interested in saving energy in the home.
- Parents, pupils and staff spoke of the value of being involved with the Energy Matters activities as a way of communicating the energy saving message, without any bias or moral implications.

Schools also use Energy Matters to develop their pupils as decision makers, using sustainable energy as a focus.

- Staff spoke about the value of using Energy Matters to set an example to other staff and pupils in their schools, and to the wider school community.
- The involvement and awareness of pupils in energy saving activities was a key factor in many of these schools.
- Several pupils indicated that they felt more confident in taking action and reminding other people to do the same, to reduce energy use.
- Staff also reported raised awareness and involvement in energy and other environmental issues among their pupils.

The Centre for Sustainable Energy is keen that Energy Matters continues to contribute to improved energy efficiency, and reduction in CO₂ emissions. Several recommendations are made to increase the number of local authorities and schools using Energy Matters.

The National Curriculum and related initiatives are constantly being developed. CSE also recommends that support is provided for revisions to Energy Matters to keep abreast of these changes.

The delivery of Energy Matters is based on a network of Energy Educators. CSE makes recommendation about further developments of this network, including possible links with other related networks.

1 ENERGY MATTERS

1.1 Background

Previous research carried out by the Centre for Sustainable Energy (CSE) illustrates that young people can play an important role in influencing energy efficiency behaviour within the home. Involving young people in the study of energy not only raises the awareness of future energy consumers, it also encourages energy efficiency improvements in their homes *now*.¹

Experience has shown that the impact of stand alone paper teaching resources can be limited by the teachers' ability to implement new projects within an existing curriculum plan. Any new programme has to be designed to meet teachers' curriculum and classroom management needs. Where possible direct support is needed to enthuse and stimulate teachers, get them started and ensure that problems and queries can be dealt with quickly.

CSE's links with local authorities provided an impetus to help them respond to the demands of the Home Energy Conservation Act (HECA) which encourages reduction of energy consumption in the domestic sector over a period of years. CSE investigated the production of suitable educational materials which could be built into their strategies and develop their links with schools.

1.2 Energy Matters

The initial Energy Matters was designed to fit with curriculum initiatives and reduce energy use within the home. The programme promoted the involvement of young people as environmental decision-makers and links between school and home.

CSE piloted the initial Energy Matters programme with some 30 local authorities in the South West and, with the support of Shell Education Service, Energy Matters became a national programme. At the launch in the House of Commons, June 1999, Michael Meacher described Energy Matters as "an exciting example of education for sustainable development put into practice". By May 2000, the Energy Matters programme was being delivered in 66 local authorities across England.

The Energy Matters programme is unique, providing not only education materials but also training and ongoing support for teachers through local Energy Educators who deliver the programme. This structure enables teachers to quickly and effectively incorporate Energy Matters into their teaching plans. The Educators can deal with queries quickly and, in some cases, encourage teachers in further development of energy education and links with other initiatives.

The Energy Matters 'Home Energy Resource' has been developed to fit with the Curriculum at Key Stages 2 and 3 (ages 7–14), and, to provide the local authority link with the Home Energy Conservation Act, focussing on home energy efficiency. Students complete a Home Energy Survey and analyse the data back in the classroom, before taking home recommendations for energy efficiency improvements.

A central part of the Energy Matters programme was the development of a national network of energy educators. They were trained and accredited to deliver the programme at a local level. The educators carried out the initial marketing with schools in order to train at least five pilot schools in each local area. They then

¹ Young People's Influence on Home Energy Efficiency, CSE 1999

provided ongoing support to schools whilst they used the Energy Matters resource and kept in touch with the schools in order to evaluate their use of the resource pack.

Two training sessions were held over the course of the programme and a total of 21 Educators were employed to support the delivery of Energy Matters.

1.3 Energy Matters in London

Energy Matters in London builds upon the earlier Energy Matters programme. Funding from Shell Foundation's Sustainable Energy Programme has enabled CSE to pilot Energy Matters in London as an exemplar programme for the delivery of a whole school approach to energy education.

CSE developed Energy Matters in London to take things a step further. In addition to the Home Energy Resource, new resources have been produced to widen the approach to school energy. These new resources help schools respond to developments in the National Curriculum, and address Education for Sustainable Development across Curriculum 2000, including Literacy, Numeracy, Citizenship and Personal, Social and Health Education (PSHE). Additional links to the Qualifications and Curriculum Authority's (QCA) Schemes of Work are also provided.

The 'School Energy Resource' is designed to help school personnel, including pupils, teaching staff, and management and site staff, to start a process of managing school energy use. The Resource also contains teaching materials for relevant areas of Key Stage 1 and is designed to start the process of education about sustainable energy issues.

The 'Sustainable Energy Resource' covers areas of the Key Stage 3 Geography Curriculum. The activities cover local and global aspects of energy sourcing and their environmental and social impacts. Pupils disseminate their findings to school governors, the local authority, and get adults at home involved.

From earlier pilot work, CSE established links with the Greater London Energy Efficiency Network (GLEEN) and its network of local authority Energy Managers. These provided a clear geographical area to pilot the developed Energy Matters programme. In each of ten London authorities, local staff have helped recruit four pilot schools to participate in the EMIL programme. As with the Energy Matters programme, trained local Energy Educators delivered support sessions for the teachers and worked with the schools to facilitate the programme delivery.

A London-based Project Manager had an additional role in the delivery programme to schools, supporting the development of energy management strategies with the participating schools. As well as providing support and additional resources to the Energy Educators and participating schools, being responsible for the evaluation of the Energy Matters in London programme, the Project Manager also provided a point of contact for all those involved in the London programme,.

1.4 Programme Evaluation

Each element of the Energy Matters programmes has been evaluated. Teachers were asked about the INSET sessions, the use and value of the resources and the support from the energy educators. The educators evaluated how the programme progressed in each of the participating schools. The outcomes of the evaluation have been reported back to each local authority involved with the programme and will be collated to form an overarching report.

2 RESEARCH: WHY ENERGY EDUCATION?

2.1 Background

Research, carried out between 1996 and 1998 by the Centre for Sustainable Energy (CSE) and New Perspectives, into the influence of young people on home energy efficiency, identified several key findings:²

- the accuracy of the data that young people collect about their home is comparable to that collected by adults using a self-completion home energy survey;
- the involvement of young people, as part of a school-based project, together with the provision of written energy advice, can significantly influence energy efficiency improvements within the home. This influence increases substantially over time;
- householders involved by their children, and receiving energy advice, carry out levels of energy efficiency improvements comparable with adults contacting an energy advice centre directly.

Having identified that young people clearly have a significant role to play in improving energy efficiency within the home, CSE set about creating a meaningful education package that would enable them to do this and meet the needs of both schools and local authorities. CSE worked with Croydon Borough Council, and 20 Croydon teachers, to produce a HECA education resource that would achieve this. It was then piloted in the South West of England and later became Energy Matters.

2.2 Aim of this Research

The aim of this research is to look at the current Energy Matters programmes and focus on the key question: “What effect, on energy efficiency activity, have the Energy Matters and Energy Matters in London programmes had on the schools and homes of participating pupils?” This includes both behavioural changes, to reduce energy consumption, and installation of energy saving measures.

To this end, the researchers investigated three sub-questions:

- What energy efficiency activity have householders, and schools, implemented, or intend to implement, as a direct result of the energy education pupils received through the Energy Matters programmes?
- What are the perceived and actual benefits as a result of schools’ participation in the programmes?
- How do participants feel about this type of information, and the follow up survey, going to homes via the school?

2.3 Context of this Research

2.3.1 School involvement

The funding from Shell Foundation’s Sustainable Energy Programme for Energy Matters in London included an element for monitoring the effectiveness of the Energy Matters programmes, in terms of improvements in energy efficiency in homes and schools.

All schools involved with both Energy Matters programmes were forewarned, as part of the training for the programme, that CSE was intending to carry out a monitoring

² Young People’s Influence on Home Energy Efficiency, CSE 1999

exercise and that this would involve contacting parents by telephone for a short interview.

2.3.2 Wider context of energy improvement

There has been a considerable amount of work done on the effects of energy saving advice. Last year, the Energy Advice Providers Group (EAPG) of The Energy Efficiency Partnership for Homes commissioned the New Perspectives research, Energy Advice – a Good Investment, on the benefits of energy advice.³ This research assessed the impact of the work of the national network of Energy Efficiency Advice Centres. Other studies have been carried out by fuel companies, looking at their energy advice phone lines, and the regulator, Ofgem. Work has also been done on fuel poverty factors in the provision of energy advice.

From these studies there are impacts that can be expected, through both behavioural changes and energy efficiency investment, and the benefits of these are broadly known. Findings in this research, have been compared with the findings from Energy Advice – a Good Investment.

2.3.3 Evaluation of Energy Matters programmes

As part of the package provided to local authorities using Energy Matters and Energy Matters in London, CSE carried out an evaluation of teachers' views of the resources from each school involved. The local Energy Educator also did an evaluation of the progress of the programme in each area.

Reports from the evaluations are given to local authority officers, with information about the elements that helped schools make the best use of Energy Matters and with recommendations to develop and expand the use of the programme in their authority.

From these evaluations, CSE has considerable knowledge of the use schools and local authorities have made of the Energy Matters programme. Where this experience bears on the current research, appropriate comments are included.

2.4 Methodology

This research has been carried out by the Centre for Sustainable Energy with the support of New Perspectives. New Perspectives acted as advisors to CSE staff, on the school based interview sessions, and were responsible for the telephone survey element and the analysis of the findings from these. CSE staff visited the sample schools to interview staff and pupils and did the analysis from these sessions.

This research has been structured to gather both qualitative and quantitative data to draw conclusions as to the impacts of the Energy Matters programme on householders and school personnel. Three research tools were chosen to gather data to both ensure that the findings were substantiated and to assess whether there were any particular aspects which had specific implications; telephone interviews with parents, staff interviews at the schools and group interviews with a small group of pupils at each school.

The original target was to use a sample of 15 schools from both the Energy Matters programmes, from London and nationally, to provide research material. Schools would be offered a range and choice of incentives to support this research. The research was finally undertaken with the support of 14 schools, of which 12 schools

³ Energy Advice – A Good Investment, Energy Efficiency Partnership for Homes, Energy Saving Trust, 2002

provided staff, parents and pupils for each element of the research, 1 school provided staff and pupil interviews, and 1 school contributed only to the parent telephone interviews.

2.5 Research Methods

2.5.1 Telephone survey with parents

Research staff originally hoped to carry out telephone interviews with 600 householders, whose children were involved in the Energy Matters programme from these schools within the last couple of academic years. Due to problems with the sample recruitment, New Perspectives were able to progress with a final sample of 229 parent details and 148 of these were interviewed.

New Perspectives designed a telephone questionnaire to evaluate the effects of the *Energy Matters* programme on parents' activities at home. This work was based on their involvement in CSE's earlier research and their recent evaluation of the effects of advice from the national Energy Efficiency Advice Centre network. New Perspectives in turn commissioned the telephone fieldwork from NFO, a London based research agency with experience of evaluation work on energy efficiency.

In order to maximise the value of the interviews with the reduced sample, it was decided to tape the answers to an open-ended question about the ways in which children had influenced their parents to save energy in the home.

New Perspectives have produced a separate report for CSE, on this element, Energy Matters, Home Energy Resource – its effect on energy efficiency in the home. The summary conclusions from that report are included in Section 3.

2.5.2 Parent sample recruitment

CSE and some of the participating schools were disappointed by the low level of parent recruitment for the telephone interviews. It had been anticipated that a response rate of approximately 30 parents from each participating school was achievable. While a couple of schools produced double that amount, the average was 20, ranging from 60 down to 6.

Schools informed parents about the incentives, provided by CSE, to encourage them to take part in the telephone interviews. A second round of recruitment increased these incentives by an additional cash payment to the school for each parent agreeing to an interview. This was also publicised to schools, who had already agreed to participate, to try to increase numbers of parental responses.

General issues relating to privacy and worries about adult access to children affects recruitment for a project of this nature. In all relevant communications, CSE stressed that the information would be subject to the Data Protection Act and that children would not be contacted. A very limited amount of personal information was needed, a contact name and a telephone number.

2.5.3 Semi-structured interviews with school staff

CSE staff hoped to do semi-structured interviews with two members of staff at each of the schools. The target staff were a member of the teaching and the non-teaching staff, such as Bursar or Site Manager, who had some involvement with energy management in the school. The interview would then draw responses from the different perspectives of these roles.

Two or three staff members were interviewed at eight of the participating schools. The Head Teacher or Deputy Head of three schools were interviewed and had

enough knowledge of the energy management aspects to respond to questions on these. At two schools, a Head of Department and a teacher, each with little knowledge about management aspects, were interviewed. At one school, the teacher who had helped recruit parents, had left and the school was unable to find anyone else who could be interviewed.

The questionnaire for these interviews was designed to find out about school based responses to the research questions. It was felt that semi-structured interviews, rather than structured or unstructured interviews, would provide a comparable structure to the telephone interviews, but also allow more probing questions to be asked, if needed.

2.5.4 Recruiting schools

CSE hoped schools would be recruited by the Energy Educators, who had a direct relationship with their schools through Energy Matters, and would have more success with recruitment. It had been hoped that each Energy Educator could recruit one or two schools and 30–40 parents/carers linked to those establishments.

As schools are under considerable pressures, incentives were offered for them to take part. These included a prize draw of £500, and a choice from additional support on School Energy Management from CSE staff, further Energy Educator support to help them develop their energy education, Fun Energy sessions run by Energy Educators and publicity for the school in the energy press.

2.5.5 Group interviews

CSE staff aimed to hold group interviews with four or five pupils from each of the sample schools. These were successfully run in all schools except one, where the teacher involved had left and there was no appropriate replacement. This session was to elicit information from the pupils on the energy education material which they took home and what they did about energy efficiency activities at school and at home, including any impact they had on parents and staff.

The pupils were selected by school staff and were drawn from classes who had been involved in Energy Matters education work.

2.6 Dissemination from Monitoring Research

CSE envisages three routes for the dissemination of the findings from this monitoring.

This report will be published and circulated and the detailed findings also made available on request. This will be publicised in a range of energy related media, including the energy education newsletter, EnergyWatch, which is sent to all schools in England and the websites of the Carbon Trust and Energy Saving Trust.

Through links with the Energy Education Forum and the Council for Environmental Education, findings will be presented to the Department of Education and Skills (DfES) and the Department for Environment, Food and Rural Affairs (DEFRA) to encourage them to increase support for energy education and school energy management initiatives.

Subject to sponsorship funding, a seminar for relevant professionals will be held to present and discuss the findings.

2.7 Participating Sample

14 schools were recruited to take part in the research. Of these, CSE had received parent interview consents from three schools as part of their initial use of the Energy Matters materials with their classes. The rest of the participating schools responded to the recruitment done specifically for this research.

The socio-economic details are taken from the school's latest Ofsted Report as published on the Ofsted website.

School A

A primary school in Kent where Energy Matters was used with the whole school as part of Science, Technology, ICT, Literacy and Numeracy. Home energy surveys were completed and analysed, and the results taken home. The school also made use of outside speakers to talk about energy.

Two parent interviews; staff interviews with teacher and Bursar; group interview with five pupils.

The school has 198 pupils on roll, which is lower than in primary schools nationally. Numbers have remained steady over the last few years. The school is over-subscribed. Except for the nursery class, each year group has about 29 pupils. There are roughly similar numbers of boys and girls in the school.

87 pupils are on the school's register of special educational needs, a higher proportion than in schools nationally. The proportion of pupils who have statements of special educational needs is above average, partly because the school provides two places in each year group for pupils with physical disabilities.

More pupils than in most schools come from above-average socio-economic backgrounds. About 5% of the pupils have free school meals, which is below average.

Almost all the pupils are white, and almost all speak English as their first language.

The overall level of attainment when children enter the school is above average.

School B

A primary school in Buckinghamshire. The Energy Matters Resource was used with 29 pupils, years 5 and 6 over a seven-week period in spring 2002 and will be used each autumn from now on. The work was done as part of an RE topic 'the natural world'. The pupils did brainstorming on energy saving at home, completed Home Energy checks and analysed these, taking home results and recommendations. Pupils designed brochures and some carried out further research into sustainable energy resources.

Four parent interviews; staff interview with Head Teacher; group interview with six pupils.

There are around 148 pupils on roll.

The school maintains a register of special educational need; there are 24 pupils that require extra help and support. Two pupils have a statement of special educational need. This is about the same number found in other schools.

Five are entitled to free school meals and this is below the national average.

All pupils are white with UK heritage.

The ability of pupils on intake to the school is average or above, with a high proportion of above average ability pupils.

School C

A primary school in West London. They used the Energy Matters Resources in the summer term 2002 with years 2 and 3 and 5 and 6. The pupils did the home energy survey and, after analysing their results, most of them took recommendations home. They also made a brochure on energy saving. The school is continuing to use these resources.

Three parent interviews; staff interview with Deputy Head; group interview with six pupils.

175 pupils are on roll. There is a gender imbalance throughout the school. This is most evident in the Year 5 and Year 6 classes, where two-thirds of the pupils are boys.

About 32% of pupils have been identified as having special educational needs. Four pupils have a statement of special educational need.

Socio-economic data suggests that the circumstances of many families in the area are more favourable than the averages but 31% are eligible for free school meals, which is above the national average.

About a third of the pupils are from ethnic minority background, only a few have English as an additional language.

Reception class data indicates the overall attainment target on entry is close to the national average.

School D

A primary school in Hertfordshire. Mixed year group classes, Years 3 and 4 (7–9yrs), followed Energy Matters at easter 2002. The pupils did the work as a block as part of Science Week. They used the Home Energy Resource, doing home energy checks, making draught excluders, and monitoring energy use at home during the week. The school also linked this work to their Literacy and Numeracy strategies.

12 parent interviews; staff interview with Deputy Head; group interview with five pupils.

It is a small school (around 98 pupils on roll), attended by boys and girls aged between 4 and 11.

There are 16 pupils on the school's register of special educational need. At 16.2% this is below the national average. No pupil has a statement for special educational need and no pupils are eligible for free school meals.

Very few pupils come from an ethnic minority background and there are no pupils for whom English is not their first language. This is below the national average.

When children enter the reception class in the term of their fifth birthday, their attainment is above average.

School E

A primary school in Buckinghamshire. They used the Energy Matters Resources with Year 6 in summer 2001 and Year 5 in summer 2002. The pupils brainstormed ideas, did the home energy survey, made draught excluders which linked to Design and

Technology and played the energy game. Some activities were used as part of environmental lunch club.

One parent interview; staff interviews with teacher and caretaker; group interview with five pupils.

There are 261 pupils on roll, 147 girls and 114 boys, aged from 5 to 12 years.

The school identifies approximately 20 per cent of pupils as having special educational needs. No pupil has a statement of special educational need.

The social and economic circumstances of the pupils are above the national average and the percentage of pupils eligible for free school meals is well below the national average.

Very few pupils have English as an additional language.

Pupils' attainment on entry is above average.

School F

A primary school in South London where 64 pupils in Year 6 took part in Energy Matters in February, 2002. They used the Key Stage 2 material on home energy and supplemented this with some Key Stage 3 activities on sustainable energy. Their Special Needs pupils did work at Key Stage 1 on energy and keeping warm. Pupils did a home energy survey and analysed their findings in school. They then designed a brochure on energy saving and took recommendations home.

43 parent interviews; staff interviews with teacher and governor; group interview with five pupils.

This school has around 277 pupils aged between 7 to 11 on roll. There are approximately 3% more boys than girls in the school.

Just over 11% of pupils are entitled to free school meals. This is in line with the national average.

The school draws pupils from a wide social background. The majority come from European backgrounds but 39% of pupils come from ethnic minorities. The two largest groups are Black Caribbean and Black African. Just under 10% of pupils have English as a foreign language.

School G

A primary school in South London who used the Energy Matters Resources in the autumn term 2002. They used the resource as part of Science and Maths at Key Stage 2 with years 3 and 4. The pupils looked at the issue of energy use and keeping warm and then did the home energy survey.

Seven parent interviews; staff interviews with teacher and Deputy Head; group interview with five pupils.

205 pupils are on roll.

Twenty one per cent of pupils have special educational needs, which is about average nationally, but seven pupils (3.4 per cent) have Statements of Special Educational Need. This is well above the national average.

A substantial number of pupils are from a fairly high socio-economic background, and a substantial number are from a fairly low socio-economic background. Even though the background of pupils evens out as 'average', this term has little meaning, as it

varies greatly. Twenty one per cent of pupils are entitled to free school meals, which is above average nationally.

About half the pupils are from ethnic minority backgrounds and 22 per cent come from homes where English is not the main spoken language, a much higher percentage than the national average.

Similarly, attainment on entry is 'average', but with a very high variance.

School H

A primary school in Central London. Pupils took part in Energy Matters in March, 2002. The whole school, 220 pupils, used parts of the materials as part of their Science Week activities. Key Stage 1 materials were used with infant and nursery pupils; Key Stage 2 materials were used by years 3 and 4 and years 5 and 6 used Key Stage 3. Years 3 to 6 did home energy surveys, work on their findings at school. In addition, they made brochures and designed a web page. All pupils took some recommendations home.

Six parent interviews; no staff or pupil interviews.

The school has around 219 girls and boys on roll between the ages of 3 and 11.

About 30% of pupils are on the school's register of special educational need, this is above the average, but the 1.5% with a statement of special needs is similar to most schools.

The school serves a very mixed community and pupils' home circumstances reflect diverse socio-economic backgrounds. The proportion of pupils eligible for free school meals is 31% which is above the national average.

The ethnic mix is also very varied. Over 60% come from minority ethnic backgrounds. About 50% (a high proportion) speak English as an additional language. 22% are at the early stages of learning English.

The movement of pupils into and out of the school at times other than the normal times for admission into the reception class and transfer to secondary school at the end of Year 6 is significant.

School J

A secondary school in Cumbria. They initially ran the Energy Matters programme with the school's Eco-club for years 7.8 and 9 (11–14). They used the Key Stage 3 section on energy ideas, carried out a home energy survey and analysed the data from this survey. They made and played the energy game from the resource. Pupils gave an assembly and presentation to the school council, wrote an article for the school newsletter and made energy saving posters. They also investigated energy use in the school and made suggestions to the school which are being acted upon.

48 parent interviews; staff interviews with Deputy Head, Bursar and Head of Projects; group interview with 6 pupils.

There are around 1,237 boys and girls aged between 11 to 18 on roll, of whom 240 are in the sixth form.

There are 151 pupils with special educational needs, which is below average. The school has a specialist unit for up to 15 autistic pupils.

There are 151 pupils who are eligible for free school meals which is well below average for similar schools.

Less than 1% of pupils are from ethnic minority backgrounds and 8 pupils have English as an additional language.

The attainment of pupils on entry to the school at age 11 is well above average for similar schools.

School K

A secondary school in Surrey, where 150 pupils in Year 8 were involved in Energy Matters in March, 2002. The Key Stage 3 sections of the Energy Matters Resource were used. Children collected data on their own homes, these were analysed in the classroom to identify the most effective ways to save energy, and recommendations were taken home to parents/guardians.

Six parent interviews; staff interview with Head of Department (Science); group interview with five pupils.

This school is an average sized comprehensive (432 boys and 391 girls).

There are 144 students registered as having special educational needs.

Pupils come from a range of backgrounds. The percentage of pupils eligible for free school meals is below average.

There are relatively few pupils from ethnic minority backgrounds and the proportion speaking English as a second language is low.

The attainment of students on entry is above the average.

School L

A secondary school in Berkshire. The school used the Energy Matters Resource with seven classes, during Year 8 geography in autumn 2002. The pupils filled in home energy surveys, analysed these in school and produced wall displays. They made use of computers for the production of graphs from computer data. Recommendations were taken home.

Three parent interviews; staff interview with teacher; group interview with six pupils.

This is a mixed comprehensive school, taking boys and girls between 11 and 18.

19% of the school roll are registered as having special educational needs. Of these 2.5% have a statement of special need. These proportions are close to the national average. A unit for visually impaired pupils (VI) is attached to the school with places for eight pupils.

The proportion of pupils entitled to free school meals (14.2%) is close to the average.

Most pupils and students are white; almost 20% are from an ethnic minority background. Most are Asian or Caribbean, and the proportion of pupils with English as an additional language is higher than in most schools.

Attainment of students on entry to the school has been a little below the average and covers the whole ability range.

School M

A secondary school in East Sussex. As far as is known, the school has been using the Energy Matters Resource since 2000 but we have no update on which parts they are using.

No parent interviews; staff interviews with teacher and site manager; group interview with five pupils.

There are 871 pupils on roll, with a reasonable balance of boys and girls.

The 18.7% identified as having special educational needs is broadly in line with the national average. 3.4% have a statement of special educational needs which is above the national average.

The percentage entitled to free school meals is 7.4%. This is below the national average.

Less than 1% of the pupils (below average) come from a home in which English is not the first language and below average percentage (2.4%) of the pupil roll is non-white.

Standards of attainment upon admission fluctuate annually from well above average to slightly below average.

School N

A residential special school in Worcestershire. The school used the Resource with 135 pupils across years 7 to 11 (aged 11 to 15). They took part in the project including brainstorming energy ideas, completing and analysing home energy checks. 10 children, members of the eco-club, took recommendations home.

Five parent interviews; staff interviews with Head Teacher and teacher; group interviews with six pupils.

There are 146 students on roll (110 boys and 36 girls).

80 students have moderate learning difficulties, 27 have severe learning difficulties, 4 have profound and multiple learning difficulties and 35 have autistic spectrum disorders. All students have a statement of special educational need.

37 students are eligible for free school meals.

Almost all students are of white UK heritage and none have English as an additional language.

School P

A special school in Worcestershire. The Years 6 and 9 classes worked on Energy Matters in June 2001 using both KS2 and 3 Resources. Pupils brainstormed of energy ideas and took home the energy survey, which was analysed in school. They then took home to parents energy saving tips and information on reducing fuel bills and designed a brochure to promote energy saving. Using the Sustainable Energy units, they looked at a range of exercises on sustainable energy and developed proposals for using sustainable energy in their school.

5 parent interviews; staff interviews with Head Teacher and teacher; group interviews with 6 pupils.

There are 112 pupils on roll, 13 of these are part time.

104 pupils have a statement of special educational need. In addition to their physical difficulties, 31 pupils have profound and multiple learning difficulties, 12 have visual impairment and almost half have speech and communication difficulties.

32 pupils have free school meals, which is typical for such schools.

105 are of white UK heritage, and 7 from a wide variety of other ethnic groups, all of whom speak English.

Pupils' attainment on entry to the school is well below average.

3 FINDINGS FROM PARENT INTERVIEWS

The following are the summary findings from the report on the telephone interviews with parents, carried out by New Perspectives. This research is reported in full separately and is available from CSE.

3.1 Energy Matters Activities Recalled

Most parents (92%) could recall one or more of the *Energy Matters* activities in which their children had taken part – e.g. lessons on energy (83%), doing a home energy survey and bringing home recommendations (both 64%) – and we found that the more activities the parents remembered, the more likely it was that they had taken some action to use energy more efficiently, either by changing their behaviour or by installing energy saving measures at home. Altogether 80% of all parents had done something to improve energy efficiency at home.

3.2 Energy Saving – Behavioural Changes

Three quarters of all parents (76%) had adopted some behavioural changes to save energy following their children's involvement in *Energy Matters*. The average household had taken 3.5 different actions, such as turning off unused lights, controlling heating and hot water more carefully, not leaving appliances on standby, closing curtains and blinds earlier, and discussing how to save energy with their children.

This level of behavioural change is broadly comparable to that found among all households seeking energy advice from fuel companies, Energy Efficiency Advice Centres etc., and suggests that *Energy Matters* can be as influential in encouraging behavioural change as typical professional sources of advice. (See *The Benefits of Energy Advice* by New Perspectives, published by the Energy Saving Trust, 2002). Where children were also able to pass on to parents some ideas of the possible savings from energy efficiency, then we find that the influence of *Energy Matters* is even more marked.

3.3 Energy Saving – Measures Installed

Many children who took part in *Energy Matters* took home written recommendations on energy efficiency measures to install. These too had an effect, although not quite as marked as the behavioural advice. Over half the parents (54%) had already installed some measures, and an additional 12% were still planning to. The average amount spent was £543 per household installing any measures. The more popular measures installed were low energy lamps (40%), energy efficient appliances (15%), draught-proofing (11%) and double glazing (10%).

Where parents remembered more of the children's *Energy Matters* activities, they also tended to install more measures. But we found relatively very few households had installed the most worthwhile (and expensive) measures like cavity wall or loft insulation, and only 3% had applied for any grants. We have concluded that this is because few parents knew that some measures were available through Warm Front grants or EEC subsidy schemes, and it would have been useful if *Energy Matters* could have conveyed such information. Nevertheless, in terms of numbers of energy saving measures installed, *Energy Matters* again seemed almost as influential as professional energy advice.

Just over one third of our sample (36%) had not yet installed any energy efficiency measures (since their children took part in *Energy Matters*) nor were they planning to. Most of these households said that this was because they were happy as they were, had already done enough or already had the recommended measures. (This is unlikely in most cases.)

But we found that these less motivated households were also less aware of what their children had done as part of *Energy Matters*, and few of them had discussed with their children how to save energy at home. We also found that more of these households tended to be warm enough in winter, and find their bills easier to pay, because even though their average fuel bills were higher, so were their incomes. This confirms the findings from so many previous surveys: when people are warm enough and can afford their fuel bills they see little need for energy efficiency.

3.4 Additional Energy Saving Advice

Since their children took part in *Energy Matters*, relatively few parents had sought additional advice on energy efficiency (7%) or recalled being given such advice by any source (14%). These levels are no higher than we would expect in the general population, so we conclude that *Energy Matters* has not encouraged households to seek further advice on energy efficiency. This is a shame, because more parents might then have received more information on the grants available for the more appropriate measures for their homes.

3.5 Influence of Children from Energy Matters Education

We are confident that children's education through the *Energy Matters* Home Energy Resource Pack has been primarily responsible for the behavioural changes made and the energy efficiency measures installed. Parents who had done something about energy efficiency rated the influence of their children and *Energy Matters* as almost twice as influential as other sources such as books, magazine, papers, radio, and advice from friends, family, fuel companies or Energy Efficiency Advice Centres.

Many parents could describe several ways in which their children influenced their behaviour and encouraged them to install some energy efficiency measures, although these tended to be the cheaper measures, and not the more effective (and expensive) ones where a grant might have been needed to help make them affordable.

We found that levels of interest in energy efficiency among both children and parents were in many cases now higher than they had been before the children took part in *Energy Matters*, and that 90% of parents were now *very interested* or *fairly interested in saving energy at home*. We conclude that *Energy Matters* has helped to raise awareness and interest in energy efficiency among both parents and children.

3.6 Benefits from Energy Saving Actions

Many households are already feeling the benefits from heeding their children's advice following their *Energy Matters* education. Of all households which have taken any action some 40% have already noticed fuel bills which are lower, by £13 a quarter on average (or probably about £39 a year, as it was a winter quarter when we did our fieldwork). 41% have noticed their homes are warmer (even though half of them have also been able to turn the heating down). Others have noticed fewer draughts (37%), less condensation (25%), less damp (13%) and fewer health problems (14%). These benefits (and the numbers noticing each one) are

substantial, and are only slightly lower than the numbers noting similar benefits after receiving professional energy advice from fuel suppliers and Energy Efficiency Advice Centres.

Despite the influence of *Energy Matters* and the measures adopted as a result, we still found that about 14% of our 148 households were either *often too cold/always too cold in winter*, or that they found their fuel bills *quite difficult/very difficult* to pay. These households are likely to be experiencing Fuel Poverty – the inability to heat their homes to a temperature conducive to good health. We believe that these households at least really needed further signposting from *Energy Matters* to sources of additional help such as Warm Front, energy suppliers' Energy Efficiency Commitment programmes, or Energy Efficiency Advice Centres.

4 FINDINGS FROM INTERVIEWS WITH SCHOOL STAFF

From the separate evaluation of the Energy Matters programme, CSE had found that there had been a very wide range of use of Energy Matters by schools. The schools that agreed to take part in this monitoring research generally fell into 2 categories. The first included schools where there was ongoing work on energy and environment issues across the school and curriculum areas. The second category included responses from individual teachers who were actively encouraging energy and environment education, although, in some cases, with little wider support from school management.

4.1 Range of Resources Activities Used

Interviewers asked this question as an introduction to the subject of energy and to help staff think about the issue, through previous activities they had used from Energy Matters.

Generally, all those involved had quite a good recollection of work that had been carried out. Answers to this question also showed the range of approaches to Energy Matters taken by staff.

Some staff did the work as part of their class teaching, with the Home Energy Survey as the key element.

“Did programme with juniors, Key Stage 2, on whether energy is lost in the home and how energy is created, we did about 7-8 sessions.”

“Didn't do as much as we could have on sending recommendations home but parents were heavily involved in helping children fill out first part (of the Home Energy Survey) so had seen the costs per unit.”

“Most of the pack, about usage in the home, the exercise (about) what was switched on, what wasn't, the questionnaire, do you close windows, wall insulation, loft insulation and so on (and) the home survey.”

Some schools used Science Week, a national week organised by the British Association for the Advancement of Science and generally held in mid-March. Schools then focus on a topic area and link most of their teaching to this.

“Blocked out a week for the work, with focus on using Energy Matters, linked to Literacy, Numeracy, Science. (We) primed parents beforehand. Activities on money saving, decimal points, persuasive writing, informative text, wrote letter to parents. (We) adapted materials up and down to year 3.”

“As Science Week was totally environment based, also want to teach children about looking after their planet”

Another approach is to do the Energy Matters activities with members of an environment club. In some schools, there was both class teaching and an environment club.

“Years 8 and 7, in eco-club, did the survey from Energy Matters.”

There was a sense that where energy education was done in class or as part of a structured week, there seemed to be a more widespread effect on general awareness. The importance of energy is seen in the wider context of the school life. However, where energy is covered by the activities of an environment club, interview responses, particularly from pupils, indicated that the eco-group can be quite isolated and marginalised when trying to influence school policy. (See Section 5; Findings from interviews with pupils)

4.2 Opportunities and Obstacles for Energy Education and Involving Pupils

4.2.1 Opportunities

Staff were asked about opportunities for further work with Energy Matters and possible obstacles that they could envisage. To some extent, the actual interview caused some staff to think about ideas and others talked about what they were planning.

“Eco-Warriors (a computer software programme displaying current energy consumption) is the key, instead of just talking about saving energy, they can see it and we will take it into Year 6 maths – energy bills are not user friendly, can't easily explain kWh – but if you can say look at the screen and then turn all the lights off and turn them on again (to see the effect on the display) it's got to be in a visual way.”

“Award responsibility to monitors, we have ones for watering the plants, taking out the recycling baskets, so could be light switch monitor.”

“As part of savings as a whole, conduction, properties of materials, hope the teacher will take from the page to surroundings.”

(Re: energy strategy) “Have had things come through, don't think of it as my area but if they did it, I would involve the pupils, sort of link”

4.2.2 General pressures

The responses indicated that there are increasing curriculum pressures on schools which reduce their ability to respond to external initiatives, such as the Energy Matters programme.

“Problem keeping it on the agenda, certainly doesn't get anywhere near the top of the agenda. Everything is so target led but none of them are about making the best use of (resources).”

“The staffing side, so many initiatives, so much pressure for this or the other, at the behest of one arm of government or other, it's like give us a break, we'll try.”

4.2.3 Time

Teaching staff expressed some frustration at the limited time they then had, although the responses included those who were working to ensure that broader educational

subjects, such as sustainable energy, were included in their teaching and those who felt there was not enough time to develop these areas.

(Energy Education opportunities) “It fits in very nicely after heat, which will be in the new QCA, but not sure when, the course is incredibly full, we will have to buy time for it somewhere not sure at the moment where that time will be.”

“The curriculum is squashing and pushing – (they’re) trying to take time (after SATs) away for doing progressive work to link year 6 and 7 at secondary schools and that is going to be quite a lot of work, in literacy and numeracy – it’s a shame because that last half of the summer term is when I like to develop a wider curriculum.”

4.2.4 National Curriculum

In addition to the pressure of time, some of the staff interviewed indicated that they felt limited by the National Curriculum and thought they and their colleagues would have, and sometimes had, done more without these constraints.

“The curriculum, in fact if a larger chunk was written about sustainable and renewable energy and there were people to ensure that schools met certain standards, and gave the money to do it.”

“Try to loosen ties with national curriculum and drawn into cross curricular activities as much as possible to make relevance important.”

There were staff who were working to overcome these limitations.

“Putting into curriculum – over weighty curriculum we have at the moment – try to keep green issues alive through project time and Green Team – try to squeeze them in when they fit in.”

(Frustration at QCA) “Yes, I’m not alone in that, but QCA is here to stay, there is too much invested in it, but we are increasingly being told to select from what’s there and, this is the first year into it, we are learning from our mistakes and I think (it will improve).”

4.2.5 Outside influences

In this context, the issue of the wider world impacting on pupils came up.

“Got to get over the obstacle that young people are in this wasteful environment, idea that they can constantly have things, not to think about waste.”

4.3 Actions Resulting – School and Home

These questions related to actions, both behavioural and installed, which aimed to save energy. Where possible, staff were asked to check what they were doing or knew was being done in their school against a list of behavioural and installation measures to save energy.

The summary responses are included in a table at the end of this section.

Responses from staff show that energy saving activities were being undertaken in most schools participating in this research. This ranges from a more holistic approach to sustainable energy, involving most of the school’s community and including a wide range of actions to just trying to turn off lights and computers in classrooms when leaving. These groups of activities fall roughly into three levels of effect as a result of

involvement with Energy Matters, in terms of energy saving activities and approaches to sustainable energy.

- The highest level of impact was in schools where there was a wider school approach to energy issues, with considerable pupil involvement. This was frequently linked to the school's approach to other wider issues which fall under the Citizenship and Personal, Social and Health Education areas of the curriculum. In these schools, forward planning was a clear part of policy development, and some of them were looking to develop innovative projects, such as the use of solar panels to power outdoor facilities in nature areas. One school had done the feasibility work, with consultants, for an eco-centre and were now embarking on the fundraising work to build it.
- The next level included schools where there was a high level of awareness, amongst pupils and staff, about energy saving behaviour and basic actions to save energy were being done. These schools were starting to look at energy efficiency investment, over and above that done as part of regular maintenance work.
- The lowest level of impact was where the staff and pupils interviewed initially said "no" to the questions about any actions on energy efficiency improvements. Usually, in the course of answering other questions, they went on to report a few basic actions, such as turning off lights and computers at the end of the school day. In these cases, there was generally a low level of school involvement.

The findings indicate that, although the earlier Energy Matters programme focussed only on home energy, schools from that programme, involved in this research, still reported actions being carried out aimed at saving energy in school. This can be seen in the table of actions, where the programme that schools worked with is clearly identified.

There is not enough evidence from this research to identify differences in the energy saving impact between schools using the two programmes, Energy Matters and Energy Matters in London. However, the findings show that the value of a wide school approach to energy issues indicate that some schools have used their experience, using the Energy Matters Home Energy Resource, to develop energy management initiatives.

The following sections provide more detailed information about how schools approach sustainable energy issues and the impacts on the school community and buildings.

4.3.1 Behavioural changes in school

There is quite a range of behavioural actions to save energy in schools.

Several schools had a fairly comprehensive approach to energy saving activities in the school, using both staff and pupils who were given specific responsibility. Staff reported a mix of the following types of activities and personnel involved.

"The project inspired pupils. Class monitors across the whole school switching off lights. But once they were made aware, they can slip back into their old ways."

"Children very responsive to 'must close doors', make sure we're not wasting electricity, much more clued into environment, not sure how much it is because they've done exercises like that but it does have an impact."

“Computers on most of the day, have monitors to turn them off.”

“If eco-reps come across a problem in the class room they bring it back to me and then I feed it into the system for maintenance.”

“I do environment group, and on wet days we’ve done posters to put up – don’t waste water, put lights off – very enthusiastic about doing that – keen and eager.”

“Caretaker and staff have now been told before they leave to ensure that computers are off at the mains, when they were shut down, you’d often have the monitor blinking away and so staff were asked to do that themselves and the caretaker will do it if they forget . . . had thermostat settings checked and explained to caretaker how to adjust them – new, not much training, often the case that didn’t know how to adjust, no user’s manual . . . the idea is that after training he’ll be a bit more proactive and do it himself.”

“(Computers) definitely turned off at the end of the day, deputy head in charge of that and she always does it.”

Some schools seemed to manage to turn off computers and lights, at least at the end of the school day, although in some responses, this may be through a fairly inefficient mechanism, depending on someone to remember.

“I don’t focus on the school at all and am not aware of any knock on effect.”
(Re Management discussions about energy efficiency) “I am not aware of it, I don’t think they are.”

(NB Pupils, at the same school, reported some very limited action in turning off lights and they thought that computers were turned off at the end of the school day)

“Turn off lights as we leave the room, I try and get them to do that. The computers are on all day as they use them all the time. . . we do switch them off at the end of the day, I leave one on for me. Changing light bulbs are out of our control, but generally have the lights on all day.”

A small action to respond to seasonal changes was also mentioned.

“In winter, we take latches off doors so they can’t be kept open.”

4.3.2 Energy efficiency investment in school

The picture coming from this research of the level of energy efficiency investment in schools is very mixed. This can be seen in the following summary table.

Some people seem to have been galvanised by their involvement with Energy Matters.

“Came here about 3 years ago, was contacted and went to the Energy Matters meeting and picked up a pack . . . since then as a spin off, it’s highlighted the issue entirely . . . had all the lights replaced with energy saving lights . . . energy saving switches throughout the whole school.”

Several staff mentioned programmes of window replacement and lighting renewal, both as an initiative to save energy and as part of a school refurbishment programme.

“All written down, as far as energy is concerned, we do an annual review . . . changed all the light bulbs to energy saving light bulbs . . . all windows have been replaced.”

In some cases however, there appeared to be no link between investment in energy saving measures and procedures for ensuring behavioural activities maximised the savings. This seems to apply particularly where a school had carried out a lighting modernisation programme but were not systematic about ensuring lights were off in empty rooms during the school day.

The following quote is from a pupil but is relevant here, as this school had had new lighting installed.

“In the staff room they don't turn off the lights, the other day I went in to get the bell, there was no one in there and the light was on.”

4.3.3 Energy saving activities at home

Staff also commented on possible impact in pupils' homes from the effect that some of the education work had on pupils.

“They were quite shocked by how much things cost, things like dishwashers, one little boy by leaving TV on standby – they are aware of things like that and Energy Matters does help raise awareness.”

“Good that Energy Matters targets pupils and their parents and homes. Parents get more involved and not many resources work in that way. I was surprised by the number of returns.”

“They will turn lights off when they go out the room so they are aware of the content of what they did and I think they do try to put it into operation in their own little way and I'm sure that a lot of parents had a lot of nagging over it.”

“If you ask any of them who leaves the tap on when they clean their teeth, very few will because that's been drummed into them, even I don't.”

4.4 Perceived/Real Benefits of Energy Saving Activities

These questions were to ascertain what value staff put on the actions they were taking. Responses include saving money and wider benefits. Teachers mentioned benefits from increased sense of responsibility in pupils.

“I notice it when I'm here for evening meetings in winter, no longer is school completely ablaze with lights, between 5 and 7 when the evening classes start, it's actually patches of dark around the school, sounds silly but it's good to see it, we know the savings are there.”

“Saved more than half our gas bill from new boilers, very dramatic.”

When asked what happens to any saving on fuel bills, the following quotes give examples of what happens.

“Going towards new building, new quality build better than mobiles (classrooms).”

(Reduced fuel bills) – “Savings eaten up in school budget.”

The following exchange shows the possibility that the wider school community is unaware of the benefits of saving energy and the resulting impact on the school.

“We ought to publicise that, seeing such an improvement in the way the building is maintained, carpets, painting regularly, – we're getting £3k back into the school (budget from energy saving).”

(CSE staff then asked: Would you have made that correlation if I hadn't asked?)
"Probably not . . . think that's because we're all so busy, don't always communicate as well as we could – have we told staff what's going on, important that we blow our own trumpet, in staff meetings and in school magazine."

There seemed to be some uncertainty about financial savings as schools were affected by changes in their fuel use, notably the increasing installation of computer suites.

"I wouldn't say we have seen any yet, with all the factors, it's very difficult, too many things happening." (Mentioned computer suite, lights programme, payments and payback, other potential installations)

Raising awareness appeared to be a benefit that several staff commented on.

"Got caretaker more aware he's the key figure really in terms of controlling the heating, that's the key saving factor."

"(Pupils) far more responsible, if they see a light on they will go and turn it off – they always turn computers down after they've finished."

"Interest in energy spreading."

4.5 Beyond Energy Efficiency

The interviews showed where some schools were going following their success in improving the school's approach to energy efficiency. These were the exception and these schools had very keen staff leading any initiatives in this area.

"Swimming pool most likely will have solar heating (by 2004) . . . and looking into option of solar hot water system . . . looking at boiler replacement, options on biomass or wood burning with TVEnergy."

"New eco-centre, on the cards, 4–5 years as a concept – just completed feasibility study, funding received when get final study, will be able to tout it around to raise funds . . . have got whole community behind us, as well as the school."

ENERGY EDUCATION HITTING HOME – MONITORING THE IMPACT OF ENERGY MATTERS

Measure	School A / EM	School B / EM	School C / EMIL	School E / EM	School F / EMIL	School G / EMIL	School J / EM	School M / EM	School N / EM	School P / EM
Behaviour / Management / Strategy										
Discuss energy saving in school	V	V	V	V – pupils, governors and teachers	V	V	P	V	V	V
Keep regular records of actual energy consumption	V	Started recently	Random	V – monthly, oil weekly	V		V	V	V	V
Check fuel bills against records	V	P	V	V	V		V	V	V	V
Develop school energy management strategy	V	P	X	V	Thinking about		P	V	V	V
Involve pupils in development of strategy	Part	Want to increase role	X	V	P – school council		P	V		V
Involve pupils in energy saving activities, give examples	Posters, calendar		Switching off lights, monitoring PCs – on/off	Made draught excluders, Earth Champions	Started daily paper recycling, think about switching lights off	Assemblies, talking about turning lights off in empty rooms, layout of school (new building and refurbishment work)		V	Assemblies, pupil empowerment	V
Turn off lights not needed	V	V and some automatic	V	V – end of day	V	V	V	V – P	V	V
Turn off computers and other appliances when not in use	Aware	V	V	V	V	P	Turned off overnight, etc	V	V	V
Control heating more carefully / check timing controls	V	P	V	N/A	Improvements done in Juniors	P	V		V	V
Control heating / check thermostat and reduce temperatures	V	Lack of control of heating	V	Room Thermostats	X	V	V	P	V	V
Control hot water / check timing controls	V	P	V	V	Checked by site manager	P	V	P	V	V

ENERGY EDUCATION HITTING HOME – MONITORING THE IMPACT OF ENERGY MATTERS

Measure	School A / EM	School B / EM	School C / EMIL	School E / EM	School F / EMIL	School G / EMIL	School J / EM	School M / EM	School N / EM	School P / EM
Reduce use of individual electric heaters	V	V	N/A	V – 2 only	X	V	Rarely used	V		V
Control hot water / check thermostat and reduce temperatures (ensure safe hot water levels)	V	New controller installed with week timer programme	V		X		V	V		V
Close external doors to minimise heat loss	V	V	V – could be improved	V	Done for security reasons	V	V – at end of day	V	V	V
Close windows to minimise heat loss	V	V	V	V	At end of day – otherwise too hot	V	V – at end of day	V	V	V
Installations										
Blank off ventilation grills, chimneys which are not functional	Not possible – louver windows	N/A	N/A	N/A	N/A	N/A	P	N/A		N/A
Install additional controls for individual heaters	V	P	V	N/A	P		X	V		V
Insulate any hot water cylinder	V	V	V	V	V		V	N/A		V
Put reflective foil behind radiators	N/A	X	X – but may be possible	X	Possibly when decorating done		X	X	V	N/A
Replace any tungsten lighting with low energy lights	Part	V – all done	V – as part of rewiring project	V	Not yet	V	X	V	V	V
Overhaul/repair heating and hot water controls, and make tamperproof	V	P	V	Within 5 years	V		P	V	V	V
Improve/repair insulation on heating and hot water system	N/A	V	V	V	V		V	V	V	V
Install thermostatic radiator valves	N/A	P	X	Have already	X – on wish list	V	X	P	V	N/A
Fit self closing devices on external doors	V – + taping over hooks	V	V	Most replaced	V	V	Partial	V	Part	X

ENERGY EDUCATION HITTING HOME – MONITORING THE IMPACT OF ENERGY MATTERS

Measure	School A / EM	School B / EM	School C / EMIL	School E / EM	School F / EMIL	School G / EMIL	School J / EM	School M / EM	School N / EM	School P / EM
Draught-proofing on external doors and windows	Not possible – brittle frames	Window replacement programme done	X	Phased replacement	Some	V	Partial	X	V	V
Install push taps, automatic valves, water saving devices	V	V	V	V – except staff	V		V	V	V	Part
Rearrange light switching	V	V	V	X	Done in part		V	X	Part	V
Floor insulation	Part – in new build		X	X – carpets in some rooms	X	V	X	X	V	On new build
Improve zoning of heating system	Part	P	Part zoned – hall separate	Already there	Unlikely		X	X – too difficult		V
Install new energy efficient heating and hot water boilers	V	P	Replaced 3 yr ago	Within 5 years	New calorifier	V	P	X – too difficult	V	V
Replace electric heating and hot water appliances with gas-fired equivalents	V	No gas	N/A	X	N/A	V	X	V	V	All gas
Install draught lobby to main entrance	V	X	V	X	X – in plan	V	V	X	V	V
Fit secondary or double glazing	V	P	X	Within 5 years	Rolling programme	V (partly)	Partial	V	V	On new build
Install occupancy sensor to light fittings	Part – in new build	V	X	X	X		X	X		X
Replace old light fittings with efficient fittings	V	V	V	V	In planned maintenance	V	Partial	V	V	V
Install loft insulation	N/A	V	N/A	V	V		V	Some areas	V	V
Bought most energy efficient version of any new appliances	V	X	X	V	V		P	V		Not sure

ENERGY EDUCATION HITTING HOME – MONITORING THE IMPACT OF ENERGY MATTERS

Measure	School A / EM	School B / EM	School C / EMIL	School E / EM	School F / EMIL	School G / EMIL	School J / EM	School M / EM	School N / EM	School P / EM
Any other		Planning swimming pool heating improvements, linked to a solar system					Lighting controls			
Codes										
V – done/doing;										
Part / room for improvement										
P – planned;										
X – not done										

4.6 How Schools Approach Energy Education and Management

4.6.1 Staff involved

From the interviews with staff, findings indicate that the work on Energy Matters is dealt with by schools in three ways:

1) Energy Matters has the support of the Senior Management Team, using a wider school approach and is linked to other environmental and similar activities. In some cases, CSE staff interviewed two or three personnel involved in different aspects of school management.

“(Our) Energy strategy (is) joint work between Deputy Head and Business Manager. . . (We’ve) done a lot of work on consultation, with pupils, staff, local community, working closely with DC LA21 group, who form a vocal part of committee including students and pupils.”

“Involving pupils, via School Council, routinely used for communication of issues, try to include children in policy making, action planning.”

“There’s an association, with teachers involved, called the Greening X School Committee – they’ve been proactive in what’s going on here, more than the Governors who have been supporting them, in terms of what they’d like to see here.”

2) Energy Matters is led by a senior teacher (Deputy Head or Head of Department), encouraging other staff, getting energy activities into the school’s Schemes of Work and on to the agenda for school building and management issues.

“Yes, there’s an interest, not yet a culture, the school does have a culture, we do a lot of work on recycling, conservation, reducing waste – the children are actively involved in collecting up recycling baskets for paper, recycling aluminium cans, get money from that for playground projects.”

“Discussed with pupils, governors and teachers.”

3) Energy Matters is run by a single teacher, effectively working on their own, from personal commitment and, occasionally, looking to develop in next stage of their career.

“It’s an issue of personal energy levels for developing (any initiatives)

“Will continue with this work in my new school.” (As Head Teacher)

Re: Lack of support

“Could do better, need Head Teacher push/drive forward, e.g. can’t recycle paper towels, not composting fruit (from break).”

“No personal desire to make an impact, for example, between security or access and energy efficiency, the former always wins, no compromise.”

“Can’t be bothered, personal attitudes”

From the interview responses, one of the key factors which seems to affect schools’ energy efficiency activities is the gap between education and management issues for school staff. Generally, teaching staff, who have no relevant management responsibilities, have very little involvement in school buildings’ issues. Management staff, both financial and site management, appear to regard teachers as having little interest in the running of the school buildings and budgets. They do, however,

understand the pressures that teachers are under, from ever increasing educational demands. They have an attitude of both exasperation and acceptance. It seems that the clear exception to this is those teachers who are personally committed to good environmental practice.

“Teachers are quite involved in classroom, see delivery to children as very important facet of energy saving and awareness raising with them as the future generation – but they just want to be able to come to school but not worry about whether things work, because if they don't they can't use it.”

“(Staff) need to concentrate on their teaching, not on management – but can inform them about actions and report back.”

(Site Manager's comment)

“(School) suffers from attitude about communal energy, like paperclips, paper, etc. – it's not mine, I'm not paying for it so don't need to bother . . . teachers worst, people in my position (caretaker), bursar senior management have a lot more thought about it . . . teachers expect classroom to be set up and when they finish teaching it's someone else's problem . . . (then goes on to say) . . . teachers, because of pressures, (need) a building for them to do their job in . . . (energy is) discussed at governors meetings, senior management level – quite a lot of support and, at our level, people involved – a lot of support but people in the middle, 50 staff, underpaid/overworked, there to teach, why should they worry about county's budget.”

4.6.2 Routine activities

Most schools visited had made some energy efficiency improvements as part of their planned maintenance programmes.

Many had new light fittings, were using narrow fluorescent tubes and had improved elements of their heating and hot water systems, mentioning improved controls and replaced calorifiers. Technical advances, linked with higher levels of capital funding for schools, mean that energy efficiency advances are almost inevitable.

The interview responses indicated that schools using Energy Matters had raised awareness of the importance and impact of these improvements and so were able to build on this.

(Re: energy walk round) “Done as part of routine health and safety check, will also look at radiators, windows left open and shut these if no one in the room – if lights are left on and no children in the room we will mention this to the teacher – did this before Energy Matters as part of Health and Safety but Energy Matters has involved children and heightened awareness.”

“Lots is done as part of the everyday overhaul and maintenance work.”

“If eco-reps come across a problem in the classroom they bring it back to me and then I feed it into the system for maintenance.”

4.6.3 Financial management

Looking at cost versus investment

In schools where there was an interest in energy issues, staff who were at least reasonably keen indicated that their senior or management staff had discussed the feasibility of larger scale energy efficiency investment. These discussions took into account the age of their school and its heating and hot water systems. They had

looked at the balance of the cost of investment against likely benefits and the life time of any such investment, including, for example, factors such as general wear and tear or damage by pupils.

“Very limited as to what we can do, e.g. the louvre windows round the top of rooms, they are dreadful, security risk and incredibly draughty – investigated replacing them and inordinately expensive, payback would be 50 years, that's when energy saving becomes exorbitant.”

“Need to make the financial arguments, if we're going to save £100 per year and spend £5000, we're talking about long, long payback time – so tight balancing of the books from year to year – if payback isn't too long and investment not too large.”

As mentioned above, some schools were able to invest in energy saving measures as part of their planned maintenance and refurbishment, which allowed them to make the financial argument.

“Looking at putting in infill UPVC panels (at bottom of full height windows) – very expensive – many of wired glass panels broken, so justified as we needed to replace about a third anyway.”

One school had clearly made the correlation between energy saving from investment and options for further investment. Again, the investment was done as part of a planned upgrade.

“Looking at energy efficiency costs – have just revamped a couple of our IT suites, and in one of them have put in flat screen monitors, which save something like 30% of normal monitors and are extending facilities further and that's the direction we'll be going in.”

Monitoring fuel use

While very few staff actually reported monitoring their energy use with an eye on potential savings, there was likely to be some monitoring going on as a few mentioned financial savings as a benefit from energy saving activities.

Meter reading was specifically mentioned as a way of establishing where energy was being wasted.

“Random readings enabled me to know that there was a lot of power at weekends, computers left on and heating left on at weekends – I've squared it with the caretaker now.”

Where monitoring or checking of bills was actually reported, this seems mainly to have been to check that they were not being overcharged by utilities, or to check that costs were not rising too fast. These checks were overseen by the school's finance committee.

“Finance committee would be monitoring expenditure on gas and electricity, largely to make sure it was not going up too much rather than looking for ways to reduce it . . . check records against bills, mainly to check that we don't get ripped off, awkward attitude towards schools, get three estimated readings and then they hit you with an actual one.”

4.7 Continuation Plans

Staff were asked about plans for future work on sustainable energy issues, both with pupils and in the school generally. The responses show that some schools have an

ongoing approach to this subject area. Just being involved in this research process prompted some staff to think about things they might be able to do.

4.7.1 School education and community

“Ooh, I think a nice little bribe via the school council, if you get all the children in the school turning things off, any energy savings could be split 50/50, and could be spent on the school playground for toys and games.”

“In curriculum, year 6 shown links with science, and other teachers . . . as part of savings as a whole, conduction, properties of materials, hope teachers will take from the page to surroundings . . . school site as teaching resource.”

“Always have energy page in magazine, make a bit more of it.”

“Work ongoing to get it into our Science Curriculum.”

“Future areas include turning TVs/computers off standby, turning the heating down but once you alter the thermostat, it takes a long time for the heat to go down. We just need to keep on flagging the issues ensuring a whole school approach. We plan to keep on promoting it every half term.”

4.7.2 Energy saving investment

“New boiler, when replacing, mindful of things that are going to be energy efficient.”

“In school building plan – budget every year, for planned maintenance, emergencies and servicing equipment and site services – as going through planned maintenance, looking forward to what will need to be replaced in future, or what can be more efficient in future.”

“I’m trying to get the County Council to readdress energy consumption and split the heating systems.”

4.7.3 Keeping it on the agenda

There was an awareness of the possibility of forgetting and the need to keep energy saving on the agenda. However, many mentioned that it had become habitual and so they would be able to continue.

“Hard part is remembering to do these things when you're busy, that really the bottom line not the will to do things, just forget – e.g. 30 copies of something when 20 would do . . . trying to get things on to laptops, e.g. school magazine electronically.”

“Further opportunities through education, but children lose impetus if keep pushing the same point so it has to be done in a planned way.”

“Keep on reminding people so it becomes part of their everyday life . . . people get lazy so need to keep on reminding them.”

4.8 Motivation and Awareness

In order to try to assess what affects the success, or otherwise, of Energy Matters, staff were asked why they did what they were doing. They were also asked to what extent any interest extended through the school.

Responses ranged from personal interest to a sense of duty, and from saving money to saving the world.

4.8.1 Teaching staff

From the responses, it is possible to divide motivation for teaching about energy into two main areas. Firstly, teachers who had a personal commitment to environmental issues and were influenced by this in developing their teaching programmes. Of those interviewed, some of these were working alone within their schools. Others said that this was their motivation but were also working in a more supportive context.

“Having contact with Planet Eco (local environment project), like a bombshell for me, he's just turned me on to everything about the environment, trying to protect the planet we live on so kids, future generations, have something to live on, not all the resources have been used up.”

“Personally very committed, given up this time, what children learn long-term, to keep themselves healthy, to look after the planet a few key things like that, I'd like to do more of it but it's difficult getting it on the agenda.”

The second group were staff who thought that the school had a duty to impart an understanding of the wider issues affecting their pupils lives. These staff would use a range of projects to address social, environmental and economic issues with their classes. From the interviews, this group worked in schools with a wider involvement the Energy Matters programme.

“Justification is citizenship now, get a little bit in science, always thinking of inspectors, if they come, this is a big aspect we focussed under citizenship.”

“I expect parents to understand that we are educating their children to be custodians of the future planet.”

“Important if we're an ecoschool, we should be practising what we preach.”

4.8.2 Management staff

Where there was a wide school approach to energy issues, CSE staff spoke to both teachers and staff whose role was related primarily to management issues. These were more clearly focussed on the bottom line, and, in some cases, boasted about their financial savings. However, even management staff seemed to be aware of the value of using Energy Matters to raise the involvement of other groups of the school community in non-education activities, with subsequent educational benefits. As mentioned previously, in Section 4.6.1, the school was able to involve virtually the whole community in consultation and the development of a new Eco-Centre.

“If Bursar shown ideas about things that will save money, she will be very keen on that.”

And from the Bursar at the same school

“Children don't access me – interesting as they might have done if asking questions about energy, how school runs.”

“Last 3–4 years things have rolled (in energy saving investment) and probably need a little more of a push now to work with kids more and make more high profile, publish more of what we're doing.”

In schools in the second category, in Section 4.6.1, with Energy Matters led by a senior staff member, this person usually had management responsibilities within their role, in most cases as a Deputy Head. For these staff, there was a clear overlap between their interest in relation to energy education and their interest in the benefits

that accrue from the management side of energy. Many spoke of other personnel with management responsibility, including Heads and Governors, who were supportive of their initiatives.

“Head forward looking in that way – didn't have anything when I first came here.”

“Quite a lot, worked with site manager, he was up for doing that, and doing more environmentally, and saving energy – taken it on board, knew how I felt about it so is very proactive – his background as park ranger, on environmental issues.”

“Had thermostat settings checked and explained to caretaker how to adjust them – (caretaker is) new, not much training, often the case that didn't know how to adjust, no user's manual.”

“Need to lead by example. The cleaning staff are also very committed so its had a trickle down effect.”

Their interest stemmed from both the potential to save money and the value of any actions in setting an example to pupils. Where pupils were involved in these actions, such as turning off lights when leaving a room, management staff also identified improved social awareness and pupil empowerment as added benefits.

“With School Council, they do take responsibilities seriously and they could take it on board at the end of school to go round and check things were turned off – have children that help switch off computers too.”

In the third school category identified in Section 4.6.1 above, no management staff were spoken to in some schools involved in this research, where there was a single member of teaching staff working with Energy Matters. The interviewers got the sense that the teacher had been ignored when broaching this subject, but this sense is not backed up by any concrete evidence, apart from the lack of involvement.

4.9 Links

Staff were asked about other areas of environmental or social education and activities they were involved in, and what other agencies they used to provide support for their work.

Responses from some staff, who were very active in making as many links as possible between education subject areas, covered other environment initiatives, empowerment for pupils through clubs and school council, and trying to stretch the National Curriculum to include all their aims.

“Geography/science key areas that do integrate the work – transport in geography, local environment, quite a lot – follow QCA type work, adapted to ourselves, so that covers that, and in citizenship now.”

“Yes, not explicitly enough, aim to interact with science and environmental science in the school – rewriting Science Scheme of Work.”

(Spoken about several, gardening, recycling) – “Pick up lots of materials, landscaping, volunteers.”

“Recycling project going on, each class has a recycling bin and other bins for fruit and teabags, etc for compost, from the break fruit, staff room and hall, it's Tony's (Deputy Head) thing. Nature garden used more in summer.”

“Started eco-club 2.5 years ago, 4–5 eco-reps, now up to 50–60, some classes have 4 reps, year 11 have a management role – so gradual process, frustrating at times but take the long view.”

Responses from other staff showed that they were unable to make any cross-curricular links and, in some cases, had no support from outside.

“Not sure of them (Geography Department) doing anything, don't have a good system in school for exchanging information, they may be doing something but I am not aware of it. If it is an obvious overlap, would be aware, (for example) Technology overlap with insulation (repeating work) . . . (Opportunities to discuss cross curriculum work?) No, I could make the opportunities but no system for discussing approaches.”

A few staff commented on both their local authority's and central government's role in supporting improvements in energy efficiency in the school.

“Not that high priority at county level, not aware that anyone comes round to do things we have done.”

“Like to see what's coming from government, talking about ESD alongside citizenship.”

The following table summarises the range of organisations and outside sources of information and support mentioned by staff. As well as including a range of environment centres and organisations, mention is made of local authority services.

Schools	Other agencies, outside sources
School A	County energy monitoring service – good support from them, a specialised field – (advice?) – yes
School B	SAVE (Bucks); TVEnergy; ADEC (Teachers Centre)
School C	Shell Education Service, Learning through Landscape, Groundwork
School D	Shortenills Environmental Education Centre; National Trust; Mopend Environment Centre; County Advisors
School E	BP; Planet Eco; Shortenills Environmental Education Centre; Alucan; County recycling and travel people
School F	Sutton Ecology Centre, Shell Education (both as part of Energy Matters)
School G	Council Environmental Education; Wastewatch; London Remade; Learning through Landscapes; RSPCA; YPTEC
School J	Local environment agency; RSPCA; Groundwork; BTCV; WWF; commercial environmental organisation; Cumbria WLT; Park authority; National Trust' Internet
School K	No other agencies, use websites like the DEFRA site
School M	None
School N	Bishops Wood Environmental Education Centre and the local education authority.
School P	Bishops Wood Environmental Education Centre

4.10 Parental Attitudes

Staff were asked about taking home information of this kind, relating to messages about saving energy, and whether they had received any feedback from parents.

Staff generally thought that it was alright to send information home in the context of work being done by the pupils. They were more cautious if information was provided from a commercial or other unrelated source. The following quotes summarise most of the responses to this question.

“No problem – wrote a letter, why being done, helping with research and why they would be interested, things their children were doing, learning at school, could they follow on at home.”

“(Energy Matters) not structured on high moral ground, these are the options – children made decision from work sheets, information and resources . . . if done as a "should" would have been ignored.”

“Quite difficult – can teach children the facts, using children for evangelical message, does put school in slightly awkward position . . . fine, children go home and talk about what they've done . . . as long as we give balanced view, encourage them to think round issues.”

“Yes OK, quite a lot of power, frightening the power . . . parents here very co-operative, so more likely to take notice of what you are saying rather than just bin it all the time.”

Of course, there has to be one who goes just that bit further!

“Told the children that if they could work out a plan so their parents could save money, they would have a good case for increasing their pocket money – huge motivation factor, I think it made their parents think twice.”

5 FINDINGS FROM GROUP INTERVIEWS WITH PUPILS

5.1 Range of Resource Activities Used

Interviewers asked this question as an introduction to the subject of energy and to help pupils think about the issues, through previous activities they had done from Energy Matters.

Generally, all those involved had quite a good memory of work that had been carried out. Answers to this question also showed the range of approaches to Energy Matters taken by staff.

“Did graphs and questionnaires on how much electricity we used – we took home a sheet for homework and had to fill in when we used things and how much it would cost.”

“Found out what we used, how much money's worth of electricity we used, on this chart we had to write down how many hours we used of light bulbs and TV and the chart said how much it is so we had to add it all up together.”

“Learned about the switches that made the light come on, with a battery and had to fix the cords together to get the energy to make the light go on.”

“Designed posters.”

“Renewable, non-renewable sources of energy.”

Pupils were also asked which activities they enjoyed or found interesting and which they disliked or found boring. Although the answers are fairly predictable, they do show that pupils do respond to projects which involve them in research into their own lives.

Participants in most groups mentioned the fact that it was interesting finding out about their energy use, and how much potential there was for making savings. Pupils also seemed to enjoy the activities where they were doing something, i.e. not just writing or completing worksheets.

“I couldn't believe how much energy we were using, before I did the survey – I thought we were quite energy saving but when I did it, I realised we weren't at all.”

“Finding out there are renewable and non-renewable sources, we will have to use renewable sources sooner or later.”

“I liked making the draught excluders as well because it saves energy with the heat and it was fun making them.”

“Doing putting the circuits together and putting the switches together and the buzzing.”

Dislikes seemed to centre on the need to concentrate and writing things down.

“When we had to do the kitchen survey, I didn't really like doing that because I always forgot to tick it off when something happened.”

“Writing was a bit boring because you weren't doing anything exciting like testing.”

“Sometimes I don't like to write it down, like doing the experiments, it spoils it because you know what it is but you can't describe it.”

However, a few mentioned the problem they had with the message of needing to save energy, either because they felt they were being criticised or the message was too gloomy and they were negative about the possibility of making any difference. However, when answering the questions about keeping up with their activities and their motivation, the majority of pupils were very positive. See sections below.

“Being told it's wrong to not turn off TV or lights when leaving room.” (Teacher criticising actions)

“They do repeat things, keep going on.”

“Talking about things are going to run out, we're going to struggle to carry on without resources.”

“We're the next generation and people controlling it now, doing it all wrong, and you can't do anything about it, cause you're only 13.”

5.2 Actions Resulting – Home and School

This set of questions provides the material to support and add to the findings from the telephone interviews with parents. Pupils were asked what they, and their families, were doing at home about energy saving, and what they were doing in school.

5.2.1 At home

Many of the pupils were doing things in their homes to save energy and the work done for Energy Matters had influenced their parents to look at energy saving measures in many cases. Among the pupils interviewed, most said that they did switch off lights and appliances at home.

“Started switching lights off when I go out of the room and switching the telly off – we haven't been filling the kettle up as much as really full, just as much as we need.”

“I remember to switch my train set off at the plug.”

“At ecoclub, we make these notes about turn the lights off, turn the taps off and we stick them in our houses where a light is.”

“We have all these switches by our lights and it says turn me off, my dad's really good at not wasting energy because, every time we're about to go out, he shouts at everybody is the oven off, is the tap off is the heating off?”

“Energy efficient light bulbs – foil behind radiators – done that – closing curtains, showers instead of baths, although prefer baths! – don't keep heating on at night.”

“I turn everything off properly like the TV and my stereo. I don't leave it on standby.”

Their comments on parental action in response to their Energy Matters work shows quite a wide range.

“After I took home the survey, she's been doing it a lot more since then and now it isn't just me, it's my mum, my brother and anyone in my family – they're all quite conscious of it now.”

“Dad goes on at my sister to close windows when heating is still on.”

“Had double glazing put in as a result of survey – my mum and dad were shocked as well about energy use.” (two pupils reported this)

“My mum complains when she gets home, it's cold, and I say I'm trying to save the planet!”

5.2.2 At school

The answers show that, in many schools, pupils were involved in some energy saving activity, mainly behavioural measures such as turning out lights in empty classrooms.

“If there's lights on and there's no one using the room, then you turn them off.”

“Used to leave door open and lights on when going to assembly, now shut the door and turn lights off.”

“When you're at the computer you've always got to check that it's off because it might still be on because the button might be lighting up.”

“Turn heating off when too hot, sometimes.”

They also commented on some areas where they could not take any action. Two reasons emerge, either because the system lacks local controls or because they are not allowed to.

“(I do) nothing at school – teachers normally turn off lights.”

“Our teacher gets really annoyed with the heater because you can't turn it off, so we would turn it off if we could.”

“I don't think we're allowed to turn off the lights.”

“Teachers normally turn things off, we're not allowed to do things, like turning off the radiators – we have to ask before we do it.”

In a couple of the schools, where pupils were members of an eco-group, they reported that their environmental concerns could be overridden on the school council agenda by school books or uniform issues. This indicates that their activities may be carried out only in the context of the eco-group with little wider impact on the school in raising awareness of sustainable energy.

(Re: School Council) – “Last year there was something about it, but it just gets squashed down, by buying new books for schools, or recycling gets squashed out by need for new uniforms.”

5.3 Perceived/Real Benefits of Energy Saving Activities

They were also asked whether they thought, or knew, that their actions were making any difference.

These questions were to ascertain what value pupils put on the actions they were taking. Responses include saving money and wider benefits. Pupils also talked about doing their bit for the environment.

This first quote is probably quite common.

“No, probably, don't know, a little bit.”

“It has been warmer because we have been shutting doors and curtains.”

“Dad mentioned that heating used to be on all the time, now we heat it only occasionally, and turning off lights, he says there's been a big reduction in the bills.”

“Electricity bills have gone down – know that it has gone down.”

When discussing reduced bills, one girl made the following point.

“Difficult to ask about bills, think it's my parents' affair, being nosey.”

There was also a few pupils who suggested that the benefit was difficult to explain and gave a positive response when asked whether it was about them feeling they were doing something.

“Don't know really, just made a big change in my life, can't explain it really.” – (Taking more control, feel better?) – “Yes.”

“It would make a difference though if everyone did it.”

5.4 Keeping up with their actions

Pupils were asked if they thought that they would be able to keep up their activities. Many of the groups gave a “yes” answer to this question and then went on to qualify this a bit.

There was an awareness of the possibility of forgetting, although many mentioned that it had become habitual and so they would be able to continue. However, some of these also said that their parents would remind them to turn things off, or vice versa.

“I just do it now, it's just become a habit.”

“Sometimes when I go into a room in the day, I try to turn off the light when I go out and I haven't even turned it on.”

“Yes, it is difficult to remember, sometimes I forget.”

“I think the stickers help, my brother turns things off when he's reminded.”

“My dad always shouts to my brother "turn the light off!"

“Sometimes you kind of do it naturally, don't you. Dad forgets so I do it instead.”

However, this response came from one of the secondary pupils interviewed but was exceptional in these group interviews generally.

“Can't be bothered.”

5.5 Motivation

In order to try to assess what affects the success, or otherwise, of Energy Matters, pupils were asked why they did what they were doing. Responses ranged from saving money to saving the world.

Pupils seemed to fall into three categories, in terms of their interest in energy issues.

1) The first category were those who were actively involved in some form of eco-club in their school. Some focus groups were chosen exclusively for this reason. This group were the most interested in energy saving activities and, in one group, were quite dismissive of school peers who were not interested.

“To help the environment, to stop global warming, less pollution.”

“Think other people, like politicians, are sorting out all the stuff that uses renewables but they're doing bad things so if you criticise them for it, but if you're not doing what you can, obviously not that much because we can't, then you can't criticise.”

“Problem of pupils being arrogant, not interested – don't pay much attention.”

“Stigma about being environmentally friendly, seen as tree huggers.”

2) Secondly, there were those who were interested in energy issues as part of an awareness of environmental issues. This second group was generally interested in energy saving activities as a contribution to the alleviation of global warming.

“Don't really have a reason, just do it because you have to live in the world, why ruin it?”

“So it won't affect the world, each time when we leave the lights on we're just wasting all the electricity for other people.”

“I think we keep wasting energy, our kids and their kids and so on, they're going to end up with nothing and it won't be their fault.”

3) The third category were those who were taking part in the focus session as they were bright and had been selected by a teacher mainly for this reason. The responses from this group were mixed, they seemed interested in the subject but had

some reservations about their capacity to take continuous action. Some of these indicated that their interest was mainly to do with saving money if they reduced electricity consumption, and avoiding waste.

“More money to spend on other things.”

“Kind of to save money, for my mum to pay – if it's not needed, not much point in leaving it on.”

“Pay less money and don't waste it.”

Participants in all three categories expressed interest in the findings of their survey work at home, when they discovered the level of energy saving potential the survey threw up as shown above in the section on what pupils liked about the Energy Matters work they had done.

5.6 Parental Attitudes

Pupils were asked about taking home information of this kind, relating to messages about saving energy, and how their parents responded.

Pupils' interpretation of the question meant that their responses either tended to focus on the help they had received from parents to complete survey work or their attitude to giving their parents energy saving messages. In both sets of responses, they seemed to fall into two types of response, very easy or difficult, and were, in some cases, linked with a comment about how much they talked with their parents in general.

5.6.1 Parental involvement with Energy Matters survey work

“They helped me so when I had to do the diary, they reminded me to tick things off.”

“My mum and dad helped, they always get Friday off so they could help me with the survey, they were very interested in saving electricity.”

“My parents were very pleased that I brought home the questionnaire and very interested in what mark they got and to see where they could have improved because it doesn't just help in saving energy, they're quite interested in saving money.”

“My mum helped me because I could tell her about some of the things like turn the lights off and stuff.”

“I don't really get help because they're usually doing something else so I don't get to speak – sometimes my mum helps.”

“A little disinterested, didn't seem to care too much, it was my homework so didn't care to be cooperative.”

5.6.2 Attitudes to telling parents about energy saving

“Quite easy, already doing some energy saving.”

“It was a bit difficult to tell them.”

“Felt like the right thing to do, then pay less money.”

“Nervous, they'll just say what's the point and I'll tell them the reason, and they'll say OK but you have to put some effort towards it as well.”

“I felt a bit bossy, telling adults they're doing something wrong, rude if they already knew.”

It is to be hoped that this pupil's response was not typical of differences between parent's interest in their children's work.

“It was OK with my dad but my mum doesn't understand she's not very high tech.”

5.7 Government Action

In order to broaden the picture of attitudes to sustainable energy, pupils were finally asked what they thought the Government could do.

Their responses ranged from providing more information and adverts, to funding for alternative energy sources or reducing car use.

Public information

“Try and make people more aware, how much electricity they use – posters.”

“To have every advertisement on TV, radio and newspapers, to not use it all the time or you won't have any left.”

Controls on energy use

“Limit how much electricity you can use a day, so you use it wisely – maybe have tokens.”

“When building or moving house, to build them more energy efficient, with cavity wall insulation and double glazing and insulation and draught excluders.”

Cars and public transport

“Do something about driving, so many cars, so much pollution.”

“Make it easier to use public transport.”

Setting an example

“In public service, you can buy energy efficient things like washing machines, places like schools hospitals, so encourage it in the everyday home.”

Renewables

“Energy grant to each family, so they could put solar panels on the roof.”

“Employ more people to find alternatives to unrenewable sources like oil and coal.”

Policy

“Put in more effort about the environment, they should be important, how they improve it.”

6 BEST PRACTICE IN REAL SCHOOLS

Much has been published on what constitutes best practice for a good school energy strategy. One of the key elements is considered to be the involvement of the whole school community in developing, carrying out and monitoring an energy strategy. This energy strategy should include energy education throughout the school teaching programme, regular maintenance checks and energy saving actions, planned capital investment, ongoing monitoring and evaluation and regular communications on progress. Occasional celebrations of activities help to keep up awareness and motivation.

While previous sections in this report cover the ways that schools approach energy education and management issues, the following four sections look across the staff and pupil interview responses to provide pictures of how some of the participating schools measure up to “best practice”. There is one example showing very little happening, and the disappointment involved.

No school, where interviews were carried out, was addressing all aspects of a “best practice” energy strategy. However, some very good practice was found during this research, with obvious savings being made on fuel bills and the involvement of several groups in the school community. The best results found in this research involved different groups of the school community, although not the same range in each case.

These examples roughly match the categories identified in Section 4.6.1. It is worth noting that the schools in the first two examples provided the highest number of parents who were willing to be interviewed for that element of the research, which also indicates that these schools are doing well.

Some of the quotes in these sections are repeated, having been used previously to highlight different aspects of energy saving practice.

6.1 Example 1

An energy strategy

A strategy for energy improvements was part of this school’s approach to its energy management. It was led by senior management staff and, while not necessarily involving all of the school community, did include communication with them over some issues.

“Energy strategy – joint work between Deputy Head and Business Manager.”

Involvement of the school’s community

Involvement in energy improvements in this school appeared to be from the top down. It reached a number of groups in the school community but mainly pertaining to either consultation, especially in relation to a new project for an eco-centre, or the regular involvement of support staff.

“Done a lot of work on consultation, with pupils, staff, local community, working closely with DC LA21 group, who form a vocal part of committee including students and pupils.”

“Quite a lot, worked with site manager.”

Responses in interviews with staff at this school also mentioned other site and administrative staff.

Although there was education work being done, these staff thought that they did need to communicate more with pupils to keep up the momentum of their energy saving activities.

“Last 3–4 years, things have rolled and probably need a little more of a push now to work with kids more.”

A response from the pupils backs this up.

“There's the whole eco-centre where we might start saving energy and we might start going round the classrooms, switching lights off – starting soon, after school and at break, heaters down and stuff.”

Energy education

Staff at this school mentioned a range of education work, covering different aspects of sustainable energy.

“Children know about alternative energies, looking at saving energy at home and school, in Key Stage 3.”

“Older pupils in science, across years 9, 10, 11 – modular basis throughout school, science department covers energy and aspects of energy.”

“6th form can do A-level Environmental Studies.”

This range was supported by the pupils who mentioned home energy surveys, videos on energy and a trip to the local environment education centre.

Maintenance and capital programmes

This school has a very positive approach to ongoing and future plans for energy improvements.

“In school building plan – budget every year, for planned maintenance, emergencies and servicing equipment and site services – as going through planned maintenance, looking forward to what will need to be replaced in future, or what can be more efficient in future.”

“Development aspect, programme of remedial action and planned upgrade for service, planning budget adequately.”

“New eco-centre, on the cards, 4–5 years as a concept – just completed feasibility study, funding received when get final study, will be able to tout it around to raise funds.”

Staff also indicated quite a range of regular energy saving actions undertaken on a daily basis, such as switching off lights, computers and other appliances. These actions were taken by a mix of staff and pupils.

Outcomes of the regular planning show that the school is improving the energy efficiency of its buildings and systems. Work has been done on lighting, heating and hot water systems, doors and windows, and water efficiency.

This school is on a large site and comprises a range of separate buildings, built at different times. Staff did mention the problems of this scenario in improving the energy performance of the school environment.

Monitoring and Evaluation

The management staff at this school did not specifically mention what or how they monitored progress. However, on the checklist of energy saving measures, staff indicated that they both kept regular records of actual energy consumption and checked fuel bills against records.

As a result, they mentioned that £3,000 was being saved from their energy bills and was available for other areas. This response indicates that monitoring and evaluation are probably done by staff and do not involve pupils.

“Such an improvement in the way the building is maintained, carpets, painting regularly – we’re getting £3k back into the school (budget from energy saving).”

Communication

There was some basic communication, but this was an area that the staff involved mentioned for improvement.

“(Wider feedback) – through newsletter, sending out the letter from CSE, what we're doing and why.”

“Think that's because we're all so busy, don't always communicate as well as we could – have we told staff what's going on, important that we blow our own trumpet, in staff meetings and in school magazine.”

From the checklist of energy saving measures, discussing energy saving in school, developing school energy management strategy and involving pupils in development of strategy were all marked as “planned”.

These pupils had no responses to a question about whether their energy saving activities, either at school or at home, had made any difference.

Celebration

Although there was no specific mention of any sort of celebration of the energy saving work being done, this school was concentrating efforts on the development of its new eco-centre. Such a high profile project helps to raise awareness of sustainable energy issues and clearly shows that the school is doing well and taking these issues seriously.

“Eco-centre raised awareness, to get government support for half million pound project is very important.”

In summary

This is a school where the energy strategy is led by senior staff and where there is considerable progress being made. They were aware of improvements which could be made to the range of activities and communications about sustainable energy in the school. Although energy education was incorporated into the school's teaching at different levels, much of the emphasis was on the technical improvements to the school buildings and services, including the proposed plans for a new eco-centre.

From the responses of the pupils at this school, there was little engagement in the school's energy developments and, apart from the eco-centre, little awareness of what was being done.

There was another school involved in this research which followed a similar pattern. In this case, pupils were much more aware of some of the technical improvements which had been made, in part because the Head had carried out a programme of light replacement with movement sensor light switching. The pupils were impressed by this technology.

A difference between these groups of pupils may be that the first are attending a large secondary school and the second are at a small primary school. It would appear to be easier to enthuse this younger and smaller community.

The school in the next example focuses more on the school community.

6.2 Example 2

An energy strategy

There was no formal strategy for energy improvements at this school. The initiatives specifically focussing on energy and environmental improvements appeared to be led by a senior teacher with the active support of a governor.

“(Re energy strategy) Could be thought about by Premises Committee – issues raised (there) but no Action Plan.”

Involvement of the school's community

Staff responses focussed on the work pupils had done and the support of staff in general to such initiatives. There was some emphasis on the rationale for wide involvement in school practices.

“Citizenship sessions, your place in the world, energy saving as part of this.”

“With School Council, they do take responsibilities seriously, and they could take it on board at the end of school to go round and check things were turned off – have children that help switch off computers too.”

“Also very together staff, very supportive of each other, very good staff atmosphere.”

“Made a great impression, especially in the younger ones, after the older ones did the presentation.”

The school's approach seems to be appreciated by parents.

“Parents here very co-operative, so more likely to take notice of what you are saying rather than just bin it all the time.”

“Quite a few would take the challenge.”

Responses from the pupils mentioned some involvement in energy saving, and in the recycling scheme which had been started in the school.

Energy education

Staff at this school mentioned a range of education work, covering different aspects of sustainable energy.

“Children know about alternative energies, looking at saving energy at home and school, in Key Stage 3.”

“Older pupils in science, across years 9, 10, 11 – modular basis throughout school, science department covers energy and aspects of energy.”

“6th form can do A-level Environmental Studies.”

This range was supported by the pupils who showed an enthusiasm for their energy education activities, they had been involved in a related competition and made presentations both to the school and to wider audiences.

Maintenance and capital programmes

The energy saving actions mentioned refer to behavioural changes. A regular health and safety check is done and this includes looking at where windows are left open or heating left on.

“(Re energy walk round) Done as part of routine health and safety check, will also look at radiators, windows left open and shut these if no one in the room – if lights are left on and no children in the room we will mention this to the teacher – did this before Energy Matters as part of HandS, but Energy Matters has involved children and heightened awareness.”

These staff also indicated quite a range of regular energy saving actions undertaken on a daily basis, such as switching off lights, computers and other appliances. These actions were taken by a mix of staff and pupils.

Staff at this school emphasised the difficulties of finding capital for investment in energy efficiency measures.

“Anything that's going to make a real difference like the heating, again, capital expenditure, (money's) got to be there before you can do anything about it. You need to save over several years, takes a lot of planning and forward thinking (with budget cuts, money really tight).”

While work was being done as part of regular refurbishment plans, such as improvements to controls on heating and hot water systems, the school had a real problem with the heating system which is why it was specifically mentioned above.

Monitoring and Evaluation

Staff at this school did not discuss any formal monitoring of fuel consumption. However, on the checklist of energy saving measures, staff said that they both kept regular records of actual energy consumption and checked fuel bills against records.

The comments they made related to the behaviour of pupils around the school and the growing interest in energy issues.

“Made a great impression, especially in the younger ones, after the older ones did the presentation.”

“They will turn lights off when they go out of the room so they are aware of the content of what they did and I think they do try to put it into operation in their own little way.”

Communication

Pupils at this school were entered into a local competition on environmental issues and, as a result, did a lot of work on the presentation of their activities. They gave their presentation both at school and at external events.

“Opportunity to go to presentation at the Royal Geographical Society – did presentation in PowerPoint, day in Science Museum, group of 10 children.”

“As a result got an award from Care for Croydon – did their presentation there too, speaking about what they had done.”

There were several references to the value placed on the school council for discussion and dissemination of these sorts of issues.

“Involving pupils, via School Council, routinely used for communication of issues, try to include children in policy making, action planning.”

Celebration

Again, there was no mention of any specific celebration of the activities the school is involved in, but taking advantage of external opportunities, as mentioned above, provided the opportunity to highlight these.

In summary

Staff at this school were putting as much emphasis on the involvement and education of their pupils as on more physical ways of improving energy efficiency. Staff involved in energy efficiency investment are more aware of the problems of the site and buildings and the issues of funding improvements.

From the responses of the pupils at this school, they showed a good level of awareness of the issues and seemed to be actively involved in actions in their school.

6.3 Example 3

An energy strategy

This school does an annual review of its energy efficiency actions but the staff interviewed made no mention of an actual strategy.

However, from the checklist, staff report the development of a school energy management strategy and the involvement of pupils in this.

Involvement of the school's community

Staff responses mentioned several groups, including staff, pupils and parents.

“Staff committed to it, lucky here, have staff who are committed and understand the importance of educating children about this.”

“Discussed with pupils, governors and teachers.”

Mention was made of parents involved through the school fair

“(Re spreading to parents/governors) Without a doubt, an awful lot we do, parents see it – we don't do things that are not environmentally friendly, like at the school fair, used to have smashing pianos, sending up balloons, chucked all the rubbish out, now separated (for recycling).”

From the responses elicited from the pupils, they appear to be actively involved in some of the energy actions in their school, mentioning turning off lights and closing doors when the classroom is empty.

Energy education

The staff here mentioned several mechanisms through which they teach about energy, as part of environmental education. These involved both internal and external sources of support.

“As Science Week was totally environment based, also want to teach children about looking after their planet.”

“Looked at not wasting energy, so things (signs) on switches to turn lights off.”

“Whole week at Shortenills (local eco-centre) on their Throwing Planet project.”

From the responses of pupils, the school provides a range of enjoyable and interesting activities around environmental education.

“We had a tour of our own school, we went out to see the drains, we went into the boiler room . . . our caretaker taught us how to check how much water the school used, it was a water meter.”

Maintenance and capital programmes

Most of the information about the school's energy efficiency activities came from the checklist of measures, rather than from the interviews with staff and pupils. However, it appears that most of the momentum for energy efficiency investment has been as a direct result of their involvement in Energy Matters.

“Head forward looking in that way – didn't have anything when I first came here.”

Again, staff also indicated quite a range of regular energy saving actions undertaken on a daily basis, such as switching off lights, computers and other appliances. These actions were taken by a mix of staff and pupils, including monitors for turning of the computers at the end of the day.

Investment to improve energy efficiency included efficient light fittings and low energy bulbs, a rolling programme of draughtproofing, double glazing and selfclosers on doors, and some work on water efficiency.

Monitoring and Evaluation

Again, staff at this school did not discuss any formal monitoring of fuel consumption. However, on the checklist of energy saving measures, staff said that they both kept regular records of actual energy consumption and checked fuel bills against records.

These staff were aware of financial savings from the more efficient use of energy in the school.. They also commented on the impact on pupils and some improved environmental aspects.

“Reduced fuel bills – savings eaten up in school budget.”

“(Pupils) far more responsible, if they see a light on they will go and turn it off – they always turn computers down after they've finished.”

“With the new windows, definitely the draught is reduced.”

Communication

From the staff responses, there is no specific mention of any formal communication routes, such as a school magazine. However, there is an impression that energy issues are raised at several fora, such as governors meetings and other planning and review meetings.

Celebration

Again, there was no mention of any specific celebration of the activities the school is involved in, but staff mentioned regular visits to and from external organisations which provide an opportunity to highlight energy issues and related activities.

In summary

These staff are dealing with energy saving and energy education using a range of activities and approaches. The school has a strategic approach and does look at energy efficiency investment on a regular basis but staff are not fully engaged with this element.

Pupils at this school also showed a good level of awareness of the issues and seemed to be actively involved in actions in their school.

The majority of the participating schools follow a similar pattern to Examples 2 and 3, where there is work being done across different aspects of energy, including education activities, behavioural actions to reduce energy consumption on a daily basis, and some investment in energy efficiency. In these schools, there would be a mix of teaching, management and site staff involved in progressing energy efficiency.

Problems related to the school buildings and site, and a lack of investment finance, hinder further improvements in energy efficiency, and seem to have the effect of reducing the impetus to develop approaches to sustainable energy issues further.

Generally, pupils at these schools seem be aware of issues of sustainable energy, at an appropriate level, and enjoy involvement in environmental activities in the school.

6.4 Example 4

An energy strategy

As far as the member of staff interviewed knew, there was no strategy for energy efficiency.

Involvement of the school's community

At this school, only a member of the teaching staff was interviewed. This response shows limited involvement in energy saving issues.

“I don't focus on the school at all and am not aware of any knock on effect. (Re Management discussions about energy efficiency) I am not aware of it, I don't think they are.”

However, from the pupils' responses, a slightly better picture emerged. They mentioned a few actions to save energy, carried out either by themselves or by other staff.

“I try to do little things, turn off lights more . . . teachers normally turn things off, we are not allowed to do things, like turning off the radiators – we have to ask before we do it.”

Mention was made of the School Council by both staff and pupils. However, it is set up as a forum for pupils themselves to raise issues and, when energy was raised a while back, it was overshadowed by problems with the school uniform.

Energy education

This member of staff responded in relation to science only. There were clearly difficulties in discussing teaching about energy in other disciplines or any cross curricular work.

We did a heat topic, with both year 7 and 8, conduction, radiation and how radiators work and we did experiments on insulation. We did the survey, used it as an ICT opportunity, displays last year.”

“(Re Geography?) Not sure of them doing anything, don't have a good system in school for exchanging information, they may be doing something but I am not aware of it.”

“(Re Opportunities to discuss cross curricular) No, I could make the opportunities but no system for discussing approaches.”

The pupils' responses were more enthusiastic about the education work they had done, and they were interested in environmental issues, including energy.

Maintenance and capital programmes

There was no information about any building related work, although as mentioned above, pupils were aware of some basic actions to save energy.

Monitoring and Evaluation

Neither staff nor pupils mentioned anything about ongoing monitoring or evaluation of energy saving activities.

Communication

There seems to be very little communication about energy in this school. It may be that teachers' personal interest in the subject area has had an effect on the attitude of pupils, given the slight discrepancy between responses from the staff member and the pupils.

Celebration

Celebration was not a high priority, although the mention of displays indicates that teachers try to show what the pupils have been doing.

In summary

At this school, there is a member of staff with a strong personal commitment who has tried to deal with energy issues within subject teaching. However, there seems to be little support or involvement from any other sector of the school community to develop a wider approach to energy efficiency in the school. However, the pupils were much more interested in environmental issues than might have been expected.

Two other participating schools provided similar scenarios, where there was a single member of staff addressing sustainable energy issues, through personal commitment. In each case, the pupils did seem to respond to this enthusiasm and were interested in these issues.

7 CONCLUSIONS

7.1 Does Energy Matters have an impact on reducing energy use?

From both the interview sessions with school staff and pupils, and from the telephone interviews with parents, it can be concluded that Energy Matters has a positive effect on reducing energy use in participating schools and their pupils' homes.

There are specific findings that provide signposts to achieving best practice in school energy education and management. The framework for any guide would highlight an inclusive approach by schools working in this area.

- The involvement of representatives from a range of the groups of a school's community, teaching and management staff, governors, pupils and parents in plans and actions aimed at energy saving.
- A positive approach to the empowerment of pupils and their involvement in school management, for example, through a school council.
- Use of energy education materials which highlight the effects of energy use, and the benefits of energy saving actions. The Energy Matters Home Energy Resource was valued for its focus on actual energy use in the home as a basis for the educational work.
- Links between any energy management planning and activities and other ongoing building related programmes, such as health and safety inspections or routine maintenance.

School action

Representatives of all schools who were spoken to reported some action aimed at reducing energy consumption. The most common actions were ensuring that electrical appliances, including lights and computers, were turned off, at least at the end of the school day. Of the 14 schools participating in this research, staff from ten schools also reported some investment in energy saving measures. In many cases, this was carried out as part of planned maintenance and refurbishment.

Of the 14 participating schools, ten had only used the Home Energy Resource of the Energy Matters programme, with no encouragement to look at school energy use. The findings show that, in these schools, there was still an impact on the school's energy practices, resulting from increased awareness of energy saving opportunities which could be applied in the school.

Action at home

This research has clearly demonstrated a positive impact of the Energy Matters programmes on energy efficiency in the home, thus enabling Local Authorities to

work effectively with schools to respond to the demands of the Home Energy Conservation Act (HECA) to reduce energy consumption in the domestic sector.

The research shows that although energy saving behaviour in the home is enhanced following the Energy Matters programme, this stops short of installation of the more expensive, and perhaps more effective, energy efficiency measures.

76% of parents reported that they had adopted some behavioural changes to save energy following their children's involvement in Energy Matters. In their conclusions, New Perspectives say that they are confident that children's education through using the *Energy Matters* Home Energy Resource has been primarily responsible for the behavioural changes made and the energy efficiency measures installed.

Parents who had done something about energy efficiency rated the influence of their children and *Energy Matters* as almost twice as great as other sources such as books, magazines, papers, radio, and advice from friends, family, fuel companies or Energy Efficiency Advice Centres. Many parents could describe several ways in which their children influenced their behaviour and encouraged them to install some energy efficiency measures, although these tended to be the cheaper measures, and not the more effective (and expensive) ones where a grant might have been needed to help parents afford these.

From the New Perspectives report

Our overall conclusion based on this small-scale research is that *Energy Matters* is an effective and worthwhile educational programme, which enables many children who take part to encourage their parents to undertake significant energy efficiency improvements at home. These improvements bring important benefits to many homes: lower fuel bills, warmer homes, fewer draughts, less damp and condensation, and even improved health for some.

In terms of its overall effectiveness and benefits arising, *Energy Matters* compares well with professional energy advice from fuel companies and Energy Efficiency Advice Centres. But it should be noted that it fails to provide adequate access (especially for the Fuel Poor) to further sources of advice or grants.

7.2 Is Energy Saving Activity Important...

6.2.1 ... for teachers?

Although teachers were possibly the group who seemed to be least interested in energy saving for its own sake, they could see the benefits in terms of educational goals. Mention was made of added value to basic National Curriculum subject areas such as Science, Geography, Literacy and Numeracy, opportunities for teaching Education for Sustainable Development, Citizenship and increasing levels of responsibility in their pupils.

6.2.2 ... for school management?

This group of staff included teachers who were responsible for some aspect of management, staff who had financial and project management responsibility and those who had site management responsibility.

They all thought that energy saving activities were of value to their schools and they would continue to look at opportunities for further work. Generally, those who had no involvement in teaching were most interested in the reduction of fuel bills, mentioning the opportunities to do more on other aspects of school building maintenance and development.

Those who were also teachers took the widest view, valuing both cost saving benefits and the opportunities for educational development.

6.2.3 ... for pupils?

Pupils seem to value the fact that they can make some impact on their environment. A few of those involved also mentioned the influence they had on their parents and families. Most groups of pupils said that they would be trying to keep up with the actions they were taking and indicated an interest in wider environmental issues, as well as being aware that their parents might benefit from reduced fuel bills.

6.2.4 ... for parents?

The results of the telephone interviews show that almost half of those interviewed were very interested in saving energy at home.

When asked whether they were more interested since their children had taken part in Energy Matters, almost half of the interviewees stated that they were.

7.3 Do the Communication Routes Work?

It is educationally sound to start with the personal experience of the pupil and then move away to investigate and/or learn about new situations. This is the way in which Energy Matters is designed to be used as a learning and decision making resource. The findings of this research show that teachers, parents and pupils like the way the resource allows parents and children to work together to investigate the use of energy in the home and thus to encourage home/ school links.

From responses from all three groups of interviewees, it is clear that the use of education materials by pupils in their homes, and with the help of their parents, is a significant factor in the success of Energy Matters. This mechanism strengthens home-school links, encouraging parents to be involved with their children's education, while learning themselves.

From the pupils, the impression is that most value was put on parental involvement with the activity the pupils brought home from school rather than just taking home recommendations. Pupils then seemed to be more confident about following up with reminders to their parents about energy saving.

Among all groups there was generally a positive response to the use of the school/home link to convey information about saving energy. The only qualification, mentioned by school staff, was that information should be neutral and part of the educational aims of the school. Schools are therefore comfortable sending home information in the context of the education material, and they are not seen as "preaching" a specific message.

In addition, there was a sense that, where schools actively involved pupils in energy saving, the relationship between staff and pupils was improved. Generally, the message was being carried through the education work and subsequent actions, rather than being pushed at pupils.

This approach encourages the pupils to make decisions about energy use in their own environment which can then both be transferred to their behaviour within the home and school. Pupils gain confidence through their experiences of working with their parents, and the further work done in school, which also validates any information taken back home to encourage parents to change behaviour and maybe to install energy efficiency measures.

7.4 A Valuable Educational Tool?

This research shows that National Curriculum limitations and pressures, together with a target led climate, reduce the ability of schools to respond to external initiatives which would help teachers and pupils make best use of both teaching materials and their local environment. The perception is that the National Curriculum developments are restrictive and preclude teaching of interesting projects.

The problems that many teachers reported with National Curriculum initiatives affect teaching about sustainable energy issues. Yet, many of these teachers were committed to environmental education and were working to find a way round their reservations. They use their project related work to extend teaching from the specific curriculum concepts to issues in the wider world. Some schools have identified set periods of time, such as the latter half of the summer term or during Science Week, to teach subjects in ways not covered by the National Curriculum.

Schools are responding to constant changes to the National Curriculum through Curriculum 2000 and the now widely used Qualifications and Curriculum Authority (QCA) Schemes of Work format. Energy Matters Home Energy Resource was developed before the introduction of Curriculum 2000, and, therefore, as with any education resource for schools, extension of the programme would necessitate revisions to update links to such new education initiatives, followed by a reprint or transfer to electronic format to allow distribution to new schools and authorities.

To date there has been very little evaluation of the impact of environmental education programmes in general or more specifically of energy education programmes. This research provides a valuable insight into the impact on energy use that can be achieved as a result of the Energy Matters programme. It is important therefore that the results are made widely available to encourage best practice. Ideally this should involve a seminar for relevant professionals to present and discuss the findings.

7.5 Support for Energy Matters Development

In the original pilot programmes, CSE staff provided the teacher / school support but as the programme went national it was no longer possible, nor perceived as beneficial, to try and provide support from a central base. This meant the development of a trained and accredited energy educator network to provide local support and enable links to other local initiatives. Whilst not evaluated in this research, CSE's evaluation of progress for local authorities has demonstrated the value of this approach.

The research provided a mixed picture of outside support for both energy education and energy management. Schools wishing to take responsibility for monitoring energy use in the school perceive a lack of support from local authorities and central government.

Support from local environmental organisations or similar is very varied and appears to be dependent on local availability, teachers' personal interests and a school's use of external support in general.

8 RECOMMENDATIONS

8.1 Increasing the Impact of Energy Saving

1. CSE recommends that those local authorities who have used Energy Matters work with additional schools in their areas and new local authorities start using

Energy Matters to increase energy saving, as part of their Home Energy Conservation Act strategies to reduce energy consumption, and subsequent CO₂ reduction, in local homes.

2. CSE has received enquiries from a number of authorities wishing to introduce Energy Matters in their schools since the pilot funding expired and recommends that further funding is sought to work with more authorities and schools.

8.2 Enhancing the Resource

1. CSE recommends that the school energy component is more explicitly incorporated into the Energy Matters programme as a follow on, and extension study, to the home energy work.
2. CSE recommends that the support provided for teachers is increased to assist this home to school approach and to foster the extension of energy education at the school.
3. CSE recommends that Energy Matters is revised to provide more effective signposting to sources of further advice and grants, such as the Energy Efficiency Advice Centres, fuel company advice lines, WarmFront and Energy Efficiency Commitment programmes.
4. CSE recommends that, to increase the effectiveness of information about advice and grants, mechanisms are explored to raise awareness of how energy efficiency grants facilitate the installation of measures. As Energy Matters was successful in encouraging pupils and parents to work together on energy saving, a similar approach would encourage pupils, as part of citizenship, to investigate why such grants are available, where from and how to access them, and encourage parents to take advantage of this information.
5. CSE recommends that funding is made available for this revision and reprint and for CSE to work with additional schools and authorities.
6. CSE has a very small stock of the Energy Matters Home Energy resource and recommends that funding is made available for revisions followed by a reprint and transfer to electronic format.

8.3 Strengthening the Impact – Links in and out of School

1. CSE recommends the continuation and development of the Energy Educators' network. This should include investigation of the feasibility of linking up with other existing education networks related to environmental education.
2. Therefore CSE recommends that funding is made available for further research to be carried out into the impact of environmental education programmes. The Council for Environmental Education are currently looking at the evaluation of sustainable development education programmes with the aim of providing guidance to disseminate best practice. It is important that the methodology and findings of this research are fed into the work of CEE.
3. CSE recommends further investigation into the role of local authorities and central government in supporting school energy developments to identify best practice. This may highlight the need for increased voluntary sector support to fill gaps in local authority services, or to provide guidance to energy management units and advisory teachers on support in this area.

8.4 Developing the Educational Framework

1. CSE recommends that further funding is sought to update the Energy Matters Home Energy Resource to make revisions and links relevant to the latest National Curriculum initiatives, and the QCA Schemes of Work.
2. CSE recommends that, at the next review of the National Curriculum, appropriate mechanisms are developed for the inclusion of sustainable energy, and similar broad topic areas, to enable teachers to return to project based teaching to allow for cross curricular links.
3. CSE recommends that guidance should be developed to raise the profile of energy education and energy management, and other topics under Education for Sustainable Development, in the OFSTED framework. This could encourage schools to incorporate these issues into their assessments and inspections.

9 CSE AND NEW PERSPECTIVES

9.1 Centre for Sustainable Energy

The Centre for Sustainable Energy (CSE) is a Bristol-based charitable company, established in 1979. CSE provides a combination of skills that bring together an understanding of national energy policy with practical experience of delivering local and regional initiatives.

CSE has been working with schools on environmental issues for over 15 years, delivering energy education programmes in more than 1000 schools across the UK to date. CSE encourages young people to act as environmental decision-makers and promotes the study of energy issues in the school, the home and the wider community alongside each other.

9.2 New Perspectives

New Perspectives is a social and market research consultancy, which was founded in 1982 by Robin Sadler and Liz Spencer, two experienced researchers, now with over 70 years research experience between them.

New Perspectives specialises in evaluating the effects and opportunities afforded by changes in society, by the growing awareness of the need to protect our environment. The areas in which we do most of our work are:

Energy – energy efficiency in homes and industry, energy advice, renewable energy (e.g. solar, wind, biomass), gas, electricity, transport fuels, Combined Heat and Power (CHP), and fuel poverty.

Environmental issues – Best Practice Programmes, pollution reduction, recycling (e.g. metals, paper, sewage sludge), planning issues and land-use.

Social Policy – housing, health, services for older people, care in the community, tenants' views on services and housing, transport issues, employment.

10 SUPPLEMENTARY MATERIAL

10.1 Questions for semi-structured interviews with staff

Approx time length = <1 hr

Ideally one teacher and one member of staff involved in the management of energy in the school

Section 1: Background to the work done in school and at home

Can you describe what the children did in school and at home as part of their Energy Matters activities?

Section 2: What energy efficiency measures have been put in or planned for school?

Before you taught Energy Matters, did you do anything to try to reduce energy consumption in this school?

Since you started teaching Energy Matters, have you done anything to try and reduce energy consumption in this school?

And are you planning to do anything to try and reduce energy consumption in the school?

Please look at these lists of some energy efficiency measures. Which ones on the list are you aware of? And are there any that you had forgotten in the answers to the last few questions?

Show prompt card (List of energy saving actions and measures) and tick on table below which measures/activities were recognised.

Section 3: Helps and hinders changing behaviour in school and installing energy efficiency measures in school.

Can you see opportunities, or any further opportunities, to encourage children (and staff) to be more energy efficient at school?

Do you see any problems or obstacles in encouraging children (and staff) to become more energy efficient at school?

Can you see any opportunities for helping the school install any energy efficiency measures?

Do you see any problems or obstacles to the school installing energy efficient measures?

Have you seen any differences, in relation to energy, for the school as a result of the energy education and any follow up activities?

If appropriate, use the list of areas of possible benefits. These will be classed as perceived benefits, unless the school can give us evidence of actual benefit.

Section 4: Staff attitudes to energy education in school.

To what extent are you interested in saving energy at school? Can you explain why?

And how about the school as a whole, including the Head, Governors and others?

Are you interested in teaching about energy at school and what is the reason for your answer?

Section 5: Attitudes of teachers/support staff to the PROCESS of the EM/EMIL programme AND the research process

Teachers (and Support staff if appropriate)

How do you feel about being a conduit for information about energy awareness and use to reach parents/carers?

Have you received any feedback from parents/carers regarding how they feel about being contacted by an organisation for a telephone interview?

If yes – probe what comments have been made.

Have you received any feedback from parents concerning how they feel about energy efficiency information going home via the teaching of Energy Matters/Energy matters in London?

Yes – probe what comments have been made

On a different issue, have you made any links between your energy education work and any other aspects of education for sustainable development?

Have you used any other agencies to deliver any environmental or energy education?

10.2 Energy Saving Measures Checklist

Behaviour / Management / Strategy	
Discuss energy saving in school	
Keep regular records of actual energy consumption	
Check fuel bills against records	
Develop school energy management strategy	
Involve pupils in development of strategy	
Involve pupils in energy saving activities Give examples:	
Save energy by turning off lights which aren't needed	
Save energy by turning off computers and other appliances when not in use	
Control heating more carefully by checking timing controls	
Control heating more carefully by checking thermostat and reducing temperatures	
Control hot water more carefully by checking timing controls	
Reduce use of individual electric heaters	
Control hot water more carefully by checking thermostat and reducing temperatures (still ensuring safe hot water levels)	
Close external doors to minimise heat loss	
Close windows to minimise heat loss	

Installations (Roughly in order of payback time)	
Blank off ventilation grills, chimneys which are not functional	
Install additional controls for individual heaters	
Insulate any hot water cylinders	
Put reflective foil behind radiators	
Replace any tungsten lighting with low energy lights	

Overhaul/repair any heating and hot water controls, and make tamperproof	
Improve/repair insulation on heating and hot water system	
Install thermostatic radiator valves	

Fit self closing devices on external doors	
Draughtproofing on external doors and windows	
Install push taps on sinks, automatic valves on showers, water saving devices on boys urinals	
Rearrange light switching	
Floor insulation	

Improve zoning of heating system	
Install new energy efficient heating and hot water boilers	
Replace electric individual heating and hot water appliances with gas-fired equivalents	
Install draught lobby to main entrance	
Fit secondary or double glazing	
Install occupancy sensor to light fittings	
Replace old light fittings with modern efficient fittings	
Install loft insulation where appropriate / possible	
Bought most energy efficient version of any new appliances	
Any other	

10.3 Pupil group interview discussion areas

4/5 children / Approx. 1 hr long

Starting Question / *Follow up questions*

Area 1: Memory of Energy Matters

Some time back, you did lessons on energy. What can you remember doing in class and at home when you learnt about energy?

(To help, ask them to think about what they did and learned)

(Also, ask whether they took any energy saving tips home)

What did you enjoy when you learned about energy?

(Ask about why for some examples)

What didn't you like when you learnt about energy?

(Ask about why for some examples)

Area 2: Actions they have taken

Since then, have you been doing anything in school to help 'save' energy?

(Also, ask about other classes or teachers)

And what about at home, have you been doing anything there?

Do you think these things have made any differences?

(And expand this to get examples)

(Referring to examples from Q4/5) Have you kept up with doing these?

Depending on response, ask why and/or how easy or difficult has this been?

Area 3: Telling parents

If you took home your energy saving tips, how was it telling your parents about these? What did you feel about doing this?

Do you tell your parents about other advice you get at school?

How did your parents react? Did they do anything about your tips or anything else to do with energy at home?

Area 4: Wider concerns

What is your most important reason for saving energy?

What action/s would you like the government to take to encourage people to be more energy efficient?

10.4 Initial information to schools

Energy Matters – Monitoring the impacts

Your school has participated in Energy Matters, a programme which provided energy education materials. The programme included the Energy Matters Home Energy Resource pack, for teachers and was supported by local Energy Educators visiting your school. Having been delivered across the UK after a lengthy evaluation, the programme has proved to be immensely successful. We are now in a second evaluation phase which addresses the question, “**What effect on energy saving activity has the Energy Matters programme had on the homes and schools of participating pupils?**”

We are looking for:

A minimum of 15 Energy Matters schools across the UK;

A minimum of 30 consent forms from each school;

* We are aiming to interview 600 parents/carers whose children received Energy Matters education, by telephone.

* We will only ask parents/carers for home phone numbers and names. We do not need any address details to carry out these interviews.

Two members of staff from each of 15 schools to take part in semi-structured interviews, lasting about half an hour;

A group of four/five children from each of 15 schools to take part in a group discussion, lasting no more than a hour.

You may not be able to help with all these groups but we would like to hear from you if you can help us with any of these.

We are offering:

A reward of £500 for the school that provides the highest number of consent forms for telephone interviews (minimum 30).

Participating schools (up to a maximum of 45 schools), providing feedback through at least two of the required groups above, can select from the following options:

One day of support from an Energy Educator, providing further help with energy education;

One day of support on energy saving advice in the school;

A fun energy day run by an Energy Educator.

CSE is confident that this monitoring will show that energy education has an impact beyond the walls of the classroom where learning has taken place, on the reduction of energy wasted, and therefore a reduction in CO₂ emissions, in schools and homes.

We will feedback through:

Specific feedback on our findings to each participating school for use in their own publicity; case studies and findings in a report, available for circulation.

The Monitoring Timetable

We are sending out information to all schools who participated in Energy Matters during the week of November 4th 2003 and would like to hear from schools within two weeks as to whether you are able to help us with this monitoring exercise.

We will provide copies of letters with consent forms for schools to send out to parents/carers via the pupils during the weeks of November 11th, 18th and 25th.

(The form will have a FREEPOST address for return to CSE direct, but schools may want to collect these and send them on CSE).

We will be gathering names and phone numbers up until December 13th.

We may contact you during this period to ask for another copy of the letter to be sent

home to encourage more parents/carers to return the forms.

The telephone interviews will be carried out by a reputable independent monitoring agency after Christmas and early in the New Year.

We will carry out staff and pupil sessions either in early December, if this can be arranged, or in the first two weeks of the spring term.

The report and feedback information will be written by the end of January and will be finalised and sent out in February 2003.