



THE UNIVERSITY of York

Promoting Science

www.ciec.org.uk

Update 2011



Pupils from Lynnfield Primary School helping with a mesh screen at Exwold Technology, Hartlepool

NEWS

Welcome to the **CIEC Promoting Science** Update 2011. This expands the coverage of our previous newsletters, which focused predominantly on our flagship primary school project, **Children Challenging Industry (CCI)**. The reach of **CIEC** goes far beyond the primary classroom, which I hope you will appreciate when reading this update.

The **CIEC** has always had at its heart, the promotion of science and all it offers to children and their teachers. And to answer the frequently asked question 'Why do we do science, Miss?' we focus on teaching science in context; science for a reason. We encourage children to explore the world around them, both through the natural and built environment. We champion science being taught through stories, both real and fictitious. Fiction and poetry provide the inspiration for our 4-7 year olds, whilst the world of work, of our scientists, engineers and technicians, provides the bulk of our real stories for older children.

The **CIEC** team of teachers is in a unique position to provide continuing professional development (CPD) for science teaching. Our experienced and well-regarded advisory teachers continue to have regular classroom input, maintain a proactive overview of curriculum development, provide CPD to teachers and industrialists, and keep up to date with changes in educational policies.

And the impact of our work? In addition to the in-depth research and evaluation carried out, which continually proves the efficacy and long-lasting impact on school children and their teachers*, we are now receiving anecdotal evidence of 17-18 year olds choosing to study science or placements in industry as a result of being involved in our programmes. Visit our homepage (www.ciec.org.uk) to see and listen to one young student talking about his chosen science A-levels and planned degree in Chemistry.

*To read the research or executive summaries, go to www.cciproject.org/research.htm

“Through our employees and our ongoing work with CCI we want to provide support to enhance science education which will encourage young people to build a career in science in future years.”

CHRIS WALKER, HR MANAGER, JOHNSON MATTHEY CATALYSTS, BILLINGHAM

Industry support for Children Challenging Industry

The **Children Challenging Industry (CCI)** project would not be successful without the support of our industrial partners. Participating companies support **CCI** in various ways; many provide site visits for primary pupils, giving their time and expertise to plan an exciting programme of activities for the children. The companies benefit from the social and economic impact of the **CCI** project via the improved perception of their industry in their communities, stakeholders and future potential employees.

Companies provide in-kind support by offering their conference facilities as a venue for the **CCI** team to deliver science training for local teachers, or for the training of industrial ambassadors to work in primary classes. The trained ambassadors can then work alongside the advisory teachers in schools, using their unique skills and knowledge to enthuse and inspire young scientists. Others share with local companies their experience of organising pupil visits, offering advice and support, and providing copies of their risk assessments or presentations.

Several companies have bought sets of Personal Protective Equipment specially suited to primary children, whilst others have used community budgets to provide transport for the children to their site.

Companies in the North East have contributed financially to **CCI** for many years, and companies in other regions have done so in the past, prior to funding being received from regional development agencies. We now seek similar financial support in the North West and Yorkshire and Humber regions to ensure the project's continuation beyond 2010.

Together we will continue this unique work, in raising the profile of industry and inspiring the scientists and engineers of tomorrow.



Pupils kitted out in their personal protective equipment (PPE)

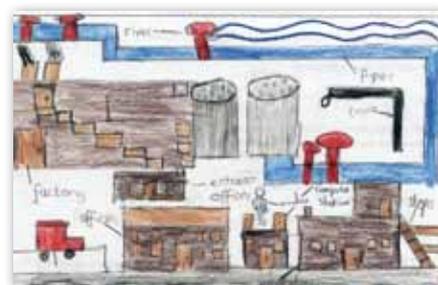
Industry and school science

CIEC aims to enthuse pupils with a tangible love of all things science whilst changing their perceptions of industry both locally and nationally.

To make this happen, **CIEC** have a team of dedicated advisory teachers who deliver the **CCI** project in schools and work alongside interested industrialists to ensure the next generation of scientists is nurtured and schools are equipped to teach in relevant and exciting ways.

"In my ten years of teaching, this was without doubt the best programme that has been delivered by an outside agency. The lessons were thoroughly planned, the children were on task throughout and they responded with great excitement to the practical activities on offer. I would recommend this workshop to any school interested as I know that all children will gain a great deal from it - we most certainly did." Feedback like this, from Michael Mashiter, Assistant Headteacher, Simonstone St Peter's Primary School, Lancashire, is very common.

The project involves class lessons, staff development, teaching resources and



Children's drawings of site visits after **CCI** intervention demonstrate enhanced understanding of industry

linking schools with local industry. The classroom sessions emphasise a practical problem-solving approach to science, in which the children work collaboratively in teams on industrial challenges. They are encouraged to challenge each other's ideas and to take responsibility for their own decisions. Following the classroom sessions the children visit a local industry where they are amazed to see familiar science in the 'real world'.

"Anything that can encourage our children to see science as a worthwhile and fulfilling career and a vital part of the local economy is a good thing. Children Challenging Industry was an excellent forum for the kids to see our industry up close and perhaps dispel some of the negative views which pervade society regarding our manufacturing sector. Our staff really enjoyed the opportunity to interact with the kids and both parties seemed to get a lot out of the day."

CRAIG MORGAN, FINE ORGANICS, MIDDLESBROUGH



Cheetham Community School in Manchester took part in **CCI** for the first time. After the trip to see PZ Cussons the children have not stopped talking about it and the children say it was the best trip ever.

Erin McIlroy, the class teacher, added, *"The children are really interested in now becoming scientists. They have seen a different side and their ideas have really changed."*

NEWS

CIA Special award



CIEC were delighted to be presented with a special award for their services to education;

bringing together school children, teachers and industry to improve science teaching and perceptions of industry. Joy Parvin and Gayle Pook attended the CIA awards dinner held in Liverpool on 24 June where they accepted the surprise award.

CIEC would like to extend their thanks for the support that has been provided by the CIA membership enabling this work to continue for the past 22 years. We look forward to maintaining links that may

facilitate future liaison with chemical companies and also a broader range of associated industries.

CSciTeach award

Congratulations to **Children Challenging Industry** Advisory Teacher, Nicky Waller, who has just been awarded Chartered Science Teacher status by The Association for Science Education (ASE).

CSciTeach is a chartered designation which recognises the unique combination of skills, knowledge and understanding required by individuals involved in the specific practice and advancement of science teaching and learning.

Congratulations also go to Nicky following the birth of her daughter, Libby, in September.

SECONDARY

The Essential Chemical industry

The new edition of *the Essential Chemical Industry* provides the A level student, and high achieving GCSE students, with all the information they need about industrial processes and chemicals.



With over 70 units covering such topics as distillation, iron, nanoparticles and ammonia production not only are syllabus topics fully covered but many other areas that the interested student will find fascinating. Each unit has had input from an appropriate industrial expert.

Every unit covers manufacturing methods, uses and production figures. The photographs show uses and production and the diagrams illustrate some of the complex processes involved in production. A level students have given it a most enthusiastic reception, "... the use of photographs and the brilliant diagrams really helped me understand how chlorine is produced."

"There is no other publication on the market which does what "The Essential Chemical Industry" does. It captures key facts and figures about the chemical industry and presents them in an informative, attractive and accessible way. Whether you are a teacher or student, this resource is not only the starting point; it is possibly the only place you need to look."

John Walker, Professional Development Leader, National Science Learning Centre, York

Price £25 per copy, discount on multiple orders. To reserve your copy of this new edition contact:

CIEC Promoting Science,
Department of Chemistry, University of York, Heslington, York, YO10 5DD

Tel: 01904 322523 Fax: 01904 324460, email: ciec@york.ac.uk

RESOURCE DEVELOPMENT

CIEC web resources

Where do you go if you want to find something out? The chances are many of us would turn straight to the World Wide Web – though I still enjoy finding the answer in a book while my children attempt to 'Google' for it.

As well as a source of incidental information and images, schools especially value sites that tackle subjects in greater depth, are based in real life and are pitched at the right level for their classes. For some years now **CIEC** has been developing web resources to complement classroom science activities, give structure and relevance to topics or provide materials to extend pupils' understanding at all levels.

Several web-based resources have been produced to support both **Children Challenging Industry (CCI)** and the **Primary Science Enhancement Programme (PSEP)**, and these are in the process of being combined and updated to give wider access. In addition curriculum linked subjects in secondary education such as catalysts and environmental issues are available as part of our suite of web sites.

For links to all **CIEC** web resources take a look at: www.ciec.org.uk

PRIMARY

Figures for Continuing Professional Development September 2009 – September 2010

	Yorkshire and Humber	North West	North East
CCI Schools	53	52	43
CCI Children	1385	1501	1195
CCI Teachers	336	550	268
CCI Staff CPD	27	44	22
General CPD Teachers*	409	79	173
CCI Site Visits**	23	40	41
Ambassador and site visit training sessions	2	6	29
Site Personnel CPD	10	55	81
Ambassador led activities	4	44	4
Pupils with ambassadors	131	2824	116

*This includes LA courses, NSLC & SLC courses, Millgate House (Puppets CPD), PSQM

** This figure includes visits to two university chemistry departments in the North East

SECONDARY



Understanding Food Additives

The BBC series on E-numbers did an excellent job at explaining the use of additives in food. However, the **CIEC** was there before them with the web site, Understanding Food Additives. With support from the Food Additives and Ingredients Association (FAIA), the web-based resource contains information, interactives and classroom activities for secondary school students and their teachers. A searchable database of E-numbers allows users to quickly gather information on additives and their applications.

Cliff Porter, **CIEC** project officer said, "We wanted to give a balanced and informed view of food additives. We covered the different groups of additives and their applications. Also, we did not shy away from controversial issues such as intolerance and hyperactivity." The materials are an excellent fit with GCSE specifications and illustrate how science works.

The site is currently second only to Wikipedia when using the term 'food additives' in Google. This is a remarkable achievement considering the number of alternative sites dealing with issues around food additives. "We are really pleased with how well the site has been received. There were over 82,000 unique visitors during the last school year," says Cliff.

The last word goes to a student who left feedback. "Thank you so much for this site. It was very easy to understand, has a clean interface and includes useful examples of the use of additives in real life. You saved my biology grades!"

Visit the web site at:
www.understandingfoodadditives.org

RESOURCE DEVELOPMENT

Enjoying the trial run of *Renewables Don't run Out* – a recently published **CIEC** teaching resource



CIEC create teaching and learning resources

We have vast experience of developing resources for schools, with over 100 hard copy and web-based resources for primary and secondary schools being created in the past 22 years. The success of these resources can be seen in the continued use of resources first written over a decade ago, since revised and in the second, third or further editions.

The development process for a new resource usually takes 6-12 months. Once the focus of the resource has been agreed with the commissioning organisation, dates for development workshops are agreed. These workshops bring together technical and educational experts to enable a 21st century industrial story to be woven through the science curriculum which faces today's school children.

The workshops are often quite intense but stimulating and enjoyable for all. A brainstorming approach is used, with all ideas being discussed including those which seem unworkable, as they often lead to new interesting workable ideas.

Following the workshop, a dedicated member of the **CIEC** team is tasked with gathering together the array of semi-drafted ideas, to write a structured sequential set of activities for schools to trial in the coming months. During the writing process, ideas are tested out in the kitchen, and constantly re-drafted.

Teachers are keen to try the new activities and send feedback, often including photographs of children carrying out activities and samples of their work. Where possible, these are incorporated in the resource during the editing stage, ready for publication and use by schools across the UK.

If your company would like to share your industrial story with school children, via their science curriculum, please contact ciec@york.ac.uk

"SABIC UK Petrochemicals are proud to be able to host CCI visits and have recently adapted their programme to make them more interactive and fun for the children. It is great to see the enthusiasm shown by the young students and to give them a greater understanding of our industry which is sometimes mistakenly seen as unattractive. In recent weeks one of SABIC's fourth year apprentices has worked with the CCI team as he would like to give others the opportunity he didn't experience as a young student. Encouraging youngsters to select Maths and Sciences subjects is important to the future of our business; good engineers are an important factor in our industry."

JANET JONES, SABIC UK PETROCHEMICALS, WILTON, REDCAR

PRIMARY

Primary – Secondary Transition Activity

At St Michael's Catholic and Church of England High School in Barnsley we work closely with our main primary feeder schools and support them in their science lessons. We run **CIEC** activities in our feeder schools and as part of the *Medicines from Microbes* activity we arranged a visit to the University of Sheffield. This has in turn helped us to develop a wider relationship with the University; both St Michael's and our feeder schools have benefited from this. We have had a number of pupils accepted onto 'SOAMS' (Sheffield's Outreach and Access to Medicine Scheme), and we were also invited to take 35 of our primary pupils to a workshop led by Professor Sir Harold Kroto (a former Nobel prize winner). The pupils had a great day finding out about polymer slime and the carbon fullerene molecule (the 'buckyball'). These experiences have proved that the relationships made through **CIEC** can develop and bring much wider benefits in the longer term.

Keith Sawyer, Co-ordinator of Science Input for local feeder schools, St Michael's High School, Barnsley



Children from Wilton Primary School trying on PPE during their visit to Ensus...



...and later concentrating in the labs

“By hosting CCI visits Exwold gains by raising our profile in the locality, showing the local people we are a caring chemical company and demonstrating what we actually do behind the iron railings.”

PETER WEBB, TECHNICAL DIRECTOR,
EXWOLD TECHNOLOGY, HARTLEPOOL

PRIMARY

Fine Organics in Billingham encourage young scientists

Many thanks for the visit yesterday to Fine Organics. Everyone was so welcoming and enthusiastic with the children and staff. It was a pleasure to tour the plant and see people enjoying their work and encouraging the children to be involved in science work. The company provided an excellent insight into science in their everyday work and showed the children how important science is in our lives.

Clare Hall, Year 6 teacher at St Paul's Primary School, Billingham



Fine Organics showing St Paul's Primary School some enthralling science!

Our involvement in Children Challenging Industry is a real example of how the company's vision to be involved and have commitment to our neighbours is actually put into practice. Furthermore, the personnel on site who are actively involved in the visits most certainly feel a degree of satisfaction in knowing they have helped to support the learning of the young students of today.

CHRIS ARUNDEL, CRODA, HULL

Understanding Food Additives is excellent and concise, the resources are fabulous and suitable for a range of ability students. I will share the site and its resources with my colleagues. If only there were more sites like yours, lesson planning would be a breeze.

ROTHERHAM SCIENCE TEACHER.

PRIMARY

Sunflowers, biofuels and Fiddler's Ferry Power Station

We invited pupils from Hale CE Primary School to Fiddler's Ferry Power Station as part of their **CCI Renewables Don't Run Out** activity.

Fiddler's Ferry is a coal-fired power station producing up to 200MW from renewable biomass.

In school, pupils examined hay, straw and wood shavings as potential fuels, to see how well they compressed and burned. They also extracted biofuels from seeds.

At the station pupils experienced how electricity is made, then saw a range of energy crops and biomass by-products. They removed paper clips from corn using magnets, simulating how magnetic separators are used to clean biomass, before completing a quiz and site tour.



The visit was a wonderful opportunity to show our local community how we provide energy in a reliable and sustainable way. The visit was well worth hosting because the interest and enthusiasm of the pupils will be communicated back at school and at home.

Rawdon Jones, Environment Centre Manager, Fiddler's Ferry Power Station

Continuing Professional Development

CIEC has a team of experienced and successful advisory teachers working throughout the UK. We work with schools to support class teachers, science subject leaders and head teachers to improve the quality of science teaching and learning. Our long standing association with industry enables us to provide unique opportunities to demonstrate the purpose of science within the real world. This serves to motivate and engage pupils in science and provides opportunities to develop professional aspirations amongst the workforce of tomorrow.

We offer a range of continuing professional development (CPD) opportunities including classroom based training and staff meetings through our highly successful **Children Challenging Industry (CCI)** project. Other out of school CPD is offered through our award winning **Primary Science Enhancement Programme (PSEP)** now merging with **CCI** and local authority support through a range of bespoke activities such as conferences, whole school training and subject leader support.

In addition to our direct training opportunities we offer a wealth of online resources via the **CIEC** website. Teachers and schools wishing to develop science within real life contexts will find material to support and develop their practice within the classroom at www.ciec.org.uk.

Our knowledge and experience of both education and industry enables us to support a range of organisations. The **CIEC** Ambassador programme enables individuals from industry to expand their expertise and share their experiences with teachers and pupils alike. This level of support ensures that successful relationships between schools and companies are maintained from one year to the next.

Working at one of the Science Learning Centres



Science Learning Centre Network

We have established excellent links with the Science Learning Network and are heavily involved with the development and delivery of courses at the National Science Learning Centre. Our advisory teachers also work with the regional Science Learning Centres to deliver their core programme and develop bespoke training opportunities for individual schools.

CPD in action



“Lucite are involved with CIEC because we want to contribute to the local community. If we can get young people switched on to science and engineering at an early age, they may well consider the chemical industry when they are older and deciding on careers.”

TRUDY MORRICE, HR MANAGER, LUCITE INTERNATIONAL

“The children benefited from seeing how the things they learn at school are relevant to the real world. Hopefully, we have inspired some of them to study science further in the future and who knows, maybe one or two could come and work here in ten years time.”

DARREN BENTHAM,
MD OF PERRY PROCESS IN NEWTON AYCLIFFE

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