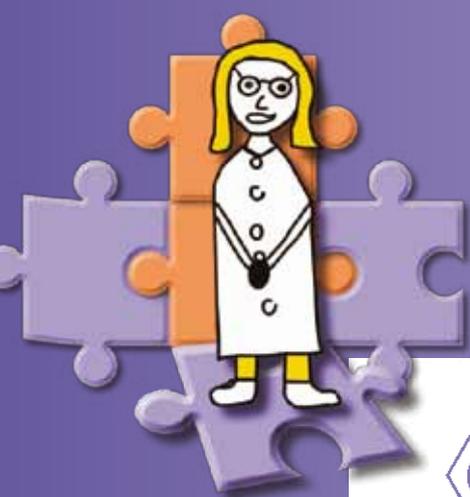


CIEC Promoting Science



science

primary

industry

STEM

schools

research

investigate

secondary

Welcome to Update 2012

Welcome to our 2012 Update where you can read about the publication of new written and online interactive resources at primary and secondary school level, the development of exciting new links with an expanding number of higher education institutions in the North West, the second year of our primary-secondary school transition project in the North East, and the initiation of new curriculum development projects which will be available to schools and companies in 2012.

Our 2011 *Children Challenging Industry (CCI)* event in the North East featured Year 7 children who were involved in this project, as part of the primary-secondary school transition element, entitled 'Future Scientists'. It was met with great enthusiasm and a heightened understanding of the programme's aspirations and highly positive outcomes. This was particularly so for our industrial colleagues who knew

about the programme, but had not previously met the children involved. As a result, we are now taking the project to the Houses of Commons, to gain further support for this well-established and highly regarded programme. What does that mean? Well, children, teachers and industry ambassadors from the North East will visit the Houses of Commons in January to share their enthusiasm with a select audience of industrial and government representatives... so watch this space!

We welcome Jenny Harvey to the team (see the team details on the back page) to work with Nicky Waller in the North East on *CCI*, but sadly say goodbye to Jonathan Barton and Michele Smale (*CCI*, Cumbria and Yorkshire, respectively). Jonathan and Michele have both worked with *CIEC* for many years, and we wish them well in their future endeavours.



A pupil from St Michael's School, Billingham, is captivated by his mentor at the North East Celebration event held at Johnson Matthey

New Children Challenging Industry website

For those familiar with both the **CCI** and **PSEP** websites you will immediately notice that the two have now been combined in a freshly developed resource.

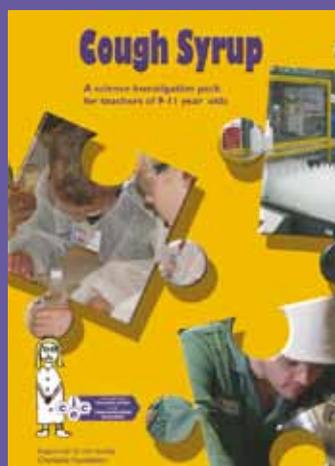
The structure has been reworked to provide easy access to support materials that relate to the wide range of **CCI** topics, professional development resources and research reports. The update has also extended to the Challenge Club, a revitalised version of the **PSEP** Club, containing the on-line activities for children that extend the classroom investigations.

If you are new to the site do explore it at: www.cciproject.org.

And while you are there why not look at our blog at <http://ciecyork.blogspot.com/>

50% off all primary science resources!

Available from www.ciec.org.uk/resources.cfm



CIEC Promoting Science wins prestigious American Chemical Society Award

www.acs.org

CIEC Promoting Science and the Green Chemistry Centre of Excellence, both working within the University of York's Chemistry Department, have been selected as one of the four winners of the 2012 American Chemical Society's Award for Incorporating Sustainability into Chemical Education. The American Chemical Society (ACS) is the world's largest scientific society with over 160 000 members. The award seeks to 'recognise those individuals and organisations that have made exemplary contributions to the incorporation of sustainability into chemical education'. Particular attention was given to the **Children Challenging Industry** project and to the recently published new edition of the post-16 publication *The Essential Chemical Industry*. The primary school resources under scrutiny included *Renewables Don't Run Out*, *Plants for Products* and *Feel the Force*.



Working with the National Science Learning Centre

When I was asked to run courses for teachers at the National Science Learning Centre in York, as part of my role within **CIEC Promoting Science**, I felt it really important to provide top quality continuing professional development for others, ensuring that each event is interesting, fun, memorable and useful.

Most recently I have led and hosted two quite different courses for teachers which have resulted in excellent feedback from participants. The first, 'Teaching and Understanding the Tricky Bits of Science' was a course for under confident teachers, without a specialist background in science. The theme running through this course is how to make science real and to ignite a spark for science which will enthuse pupils into secondary school and beyond. This three day residential course ensures that participants are able to uncover misconceptions they may have about areas such as Forces, Electricity, Materials, Plants and the Environment. Within some of these sessions, teachers are introduced to **CIEC** resources aimed at supporting both their own and children's understanding of more challenging concepts, and providing industrial



Teachers exploring their homemade balance as part of a professional development course

contexts to motivate young learners and their teachers.

On quite a different note, 'Science and the Creative Arts' involved talented artists from the world of music, writing, dance, drama, animation and photography. They all showed how science and arts can be linked, how science can be creative, and offered practical ideas for the primary classroom.

Children Challenging Industry

Key Stage 2-3 Higher Education STEM project

This new **CIEC Promoting Science** project in the North West communicates the excitement of STEM¹ related subjects, shows where career opportunities exist, and aims to raise aspirations of pupils from disadvantaged backgrounds (evidence shows that career choices are considerably influenced before children reach secondary education). Effective science support is being established for primary teachers via partnerships between Higher Education Institution ambassadors and school clusters.

To date, the advisory teacher, Sue Andrews, has provided training for more than thirty

HEI ambassadors from six universities across the North West (MMU, Manchester, Liverpool, Liverpool John Moore's, Chester and Bolton), to ensure high quality interactions with children during their visits to schools.

Continuing Professional Development has been provided in ten high schools and almost fifty of their feeder primary schools to enable the implementation of **Children Challenging Industry** classroom activities. HEI ambassadors working with the teachers provide enrichment in the classroom and opportunities for primary children to visit industry or a STEM based HEI department.

The project has been so successful, that further funding from the HE STEM initiative has been made available to expand its reach and provide additional support for those already involved. Thus, the ideas will become embedded, existing cluster relationships enhanced, and the likelihood increased of the clusters continuing to inspire children about science beyond the funded period.

If you would like more information or to get involved in the project, please contact ciec@york.ac.uk.

¹Science, Technology, Engineering and Maths



An ambassador from Chester University who is supporting feeder primary schools to Rudheath High School in Cheshire



CIEC Promoting Science and Croda UK collaboration

CIEC Promoting Science is delighted to be developing educational resources with Croda UK. Croda has supported the **Children Challenging Industry** project for many years by providing site visits for their local schools, and this current collaboration is proving to be very exciting and fruitful. The classroom practical investigations and interactive web based materials will provide opportunities for 8-11 year olds to carry out investigations set in real contexts based upon Croda's processes. The activities will focus on the research, development, production and marketing of 'ingredients' in soaps, sun cream, bath foams and shampoos, and will suggest roles for ambassadors supporting the project in schools.

Members of the CIEC team and representatives from Croda's UK sites recently spent two



Croda employees learn about primary science during the resource development workshop

productive days developing ideas for the resource. Mike Hindley, Lead Application Scientist, sums up the feelings of the Croda team, "It was a fantastic challenge to come up with ideas which describe the company but which are also applicable to a classroom environment and fit the primary school curriculum."

The CIEC team is able to draw upon its wealth of experience in delivering continuing professional development for teachers in order to offer training, advice and support for company personnel wishing to offer site visits for primary children or to work as ambassadors in schools. We continue to develop educational materials tailored to contextualise school science within the stories of companies large and small across the UK.

If you are interested in piloting this resource or would like more information, please contact ciec@york.ac.uk.



A still taken from the new website which shows how sun block is an important part of avoiding sunburn

"Investment in our community is an important activity for Croda... particularly the educational support we can offer to schools, colleges and universities in the areas in which we operate.

Our partnership with CIEC will help us develop a programme more aligned to our chemistries and to the educational needs of children across the National Curriculum, as well as developing the skills and competencies of our employees."

DR NICK CHALLONER, MANAGING DIRECTOR, SUN CARE AND BIOTECHNOLOGY, CRODA EUROPE

Delivering CIEC Promoting Science through Science Learning Centres

Tanya Shields works with teachers from all over the UK through the Science Learning Centre (SLC) network. At the heart of all the courses is the recognition and understanding from teachers that science should be practical, meaningful and relevant to the environment in which the children live. Her work as an advisory teacher on the **Children Challenging Industry** project has equipped her with the skills and knowledge to enable teachers to make the most of their local environment.

CIEC Promoting Science's long standing

association with industry enables the team 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. Teachers engaging with continuing professional development at the SLCs are always keen to use the resources developed by CIEC and frequently feedback on the positive impact the lessons have had on the quality of teaching and pupil engagement in science.

Industrialist turns teacher

"I was employed in the chemical industry for 22 years, working my way up from a shift chemical operator to training officer. I also completed my Engineering degree in 2001, a big achievement for a person that left school without a great academic record!"



I have always been passionate about being able to pass on information and guide people in the process of learning new skills within their job. As training officer I was asked to liaise with Sue Andrews, and I was impressed by her enthusiasm for the Children Challenging Industry (CCI) project. During the first school visit, I witnessed the impact that CCI had on these young minds. I decided I wanted to be part of it.

This dream became a reality when I was made redundant in 2009 and I applied to go back to university to study for a PGCE in Science. I had fantastic support from Sue in my job applications, and I am now a newly qualified teacher at Neston High School. I work alongside the primary liaison teacher for Neston High School helping to produce activities for the feeder primary schools!"

BY TONY HICKMAN

THE ESSENTIAL CHEMICAL INDUSTRY

The Essential Chemical Industry (ECI) continues to receive very favourable reviews. Feedback tells us it is being used most effectively with many A level classes and industrial personnel.

It is available from CIEC for £25 (plus p&p) with a discount for multiple copies.



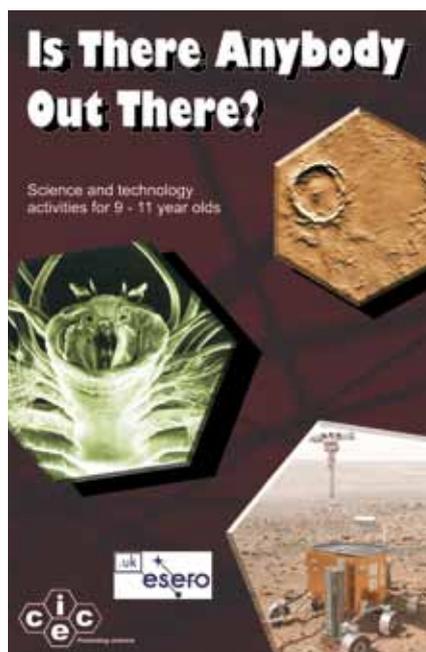
CIEC Promoting Science is the established science education centre in the Department of Chemistry at the University of York. CIEC Promoting Science supports the teaching of science, school links with industry and science based careers.

CIEC Promoting Science in collaboration with the UK Space Agency

A new resource will be available by summer 2012 for teachers of 9-13 year olds. Funded by the UK Space Agency, it focuses on the quest to discover more about our solar system through space missions seeking to gather evidence of life on the planet Mars. The children take on challenges, as space scientists and engineers, which require the use of scientific enquiry, mathematical skills, discussion and problem solving.

The activities are organised into three themes: Life, Landscape and Landing. The children consider the kind of evidence of life that might be found on Mars and compare and test samples of soil, identifying properties that indicate characteristics of Martian soil. They study images from Mars to note significant landscape features and carry out practical tasks to mimic crater formation, lava flow and the creation of channels and deltas. Finally they consider data from the viewpoint of scientists or engineers to identify the best landing site for a Mars rover.

If you are interested in piloting this resource or would like more information, please contact CIEC at ciec@york.ac.uk.



The new resource developed by CIEC Promoting Science and the UK Space Agency

Future Scientists

Children Challenging Industry moves to secondary schools

Ambassadors from Johnson Matthey Catalysts have been working closely with the science department of St Michaels Secondary School, Billingham, to help Year 7 students to experience first-hand the application of science and the challenges faced by industry. Based upon 10 years of collaboration between Johnson Matthey and CIEC Promoting Science, and a shared vision to build a continuous education programme, the Future Scientist programme was piloted in 2011.

The Johnson Matthey team of ambassadors were drawn from five business units within the company. This meant that there were a wide range of suggestions made for classroom activities and each team could provide expert knowledge. The team enjoyed rising to the challenge of working outside their normal brief, and the new relationships that came about as a consequence.

The remit was simple: Make a difference to the perception these children have about local industry, and help them to realise that scientists and engineers working in local industries are ordinary people like the

children themselves, with the same ideas about what the future may hold.

Seven classes totalling 158 pupils were involved in the project, receiving three hours of input and practical support from the ambassadors during three weekly lessons.

The staff at St Michaels indicated that the ambassadors had exceeded expectation through their professionalism, commitment and enthusiasm, and the pupils were unanimous in their appreciation.

The success of the first year has resulted in two further companies joining this transition project, to allow a very large secondary school and its feeder primary schools to take part. There is no doubt that this is a long term commitment that has huge benefits for both the children and the companies involved.

“It’s important to learn science in school so we can broaden our imagination and if we want to be scientists it’s a great opportunity for us to learn.”

ABBIEY, YEAR 7 STUDENT

North East Celebration Event



Children from St Michael's School at the North East Celebration event

The North East Celebration Event was held to showcase Children Challenging Industry's transition project, Future Scientists, sponsored by Johnson Matthey.

There were 80 attendees representing local industry, staff and pupils from St Michael's School, Billingham, and several feeder primary schools. The children were able to participate in activities provided by local companies and the industry representatives were able to exchange views on how best to engage their workforce with the local community and local schools in particular.

Adel Neale of Johnson Matthey gave industry's perspective on the impact of the collaboration with CIEC Promoting Science, which was met with great interest by industry representatives in particular.

Inspirational talks from the children who had participated in the project followed. Primary school pupils from Year 6 presented their scientific findings from CCI activities and secondary school pupils described recollections of both their experiences of CCI in their primary schools and the extension work they had carried out with Johnson Matthey ambassadors in Year 7. They radiated confidence and all had a very positive attitude to the science they had encountered and their contacts with industry.

CIEC Promoting Science and the Primary Science Quality Mark

Sue Andrews, Advisory Teacher in the North West, has mentored eight schools successfully in a Primary Science Quality Mark (PSQM) hub. All the schools received their certificates in recognition of excellence in science teaching and learning at a ceremony in June.



Sue Andrews (third from left, front row) at the Primary Science Quality Mark awards ceremony



Children Challenging Industry visit to Wilton Power Stations



Children from South Bank Community Primary School in GDF Suez' control room where they met and questioned operations personnel at the power station

Generating Electricity was the topic chosen by South Bank Community Primary School, who were invited to see how electricity is generated at Wilton. These Year 6 children enjoyed a tour of GDF Suez to see the turbines, boilers, cooling towers and control room where they met and questioned operations

personnel. They also saw the preparation of wood from various sources used to power the Sembcorp Biomass Power Station. Both staff and pupils asked many questions throughout the visit, and they are now planning a school display to share their experiences with other classes and teachers.

Mighty oaks from little acorns grow

Television presenter and gardener Christine Walkden planted the seeds of interest in gardening when she visited the children of Pinfold Primary School, Lancashire, to open the school's sensory garden. Christine also ran a workshop with the children to demonstrate the wide variety of fruit and vegetables which can be grown.

The garden was the inspiration of art coordinator Sue Fielding, who attended a course for Teaching Assistants at the National Science Learning Centre last year, led by one of *CIEC Promoting Science's* advisory teachers. Sue's action plan was selected for a

Special Merit Award in the Rolls Royce prize. Schools can enter this competition through the Science Learning Centre network. The £1000 prize was used to develop science teaching throughout the school and develop a garden that would enable all children, including those with special educational needs, to hear, smell, see and touch the plants. The garden incorporates a mirror, running water, wind chimes and plants of different colours, textures and fragrances. They have also developed a food growing project called 'Growing Gourmet Grub', an after-school activity that includes cooking the produce grown by the children.



Gill Gillison, Headteacher at the school, added: "We are thrilled to be the only school in Lancashire to be awarded this science prize. We will be able to enhance the children's scientific skills and knowledge of biodiversity in a practical and developmental way."

Christine Walkden cuts the tape to open the sensory garden at Pinfold Primary School

Rough Guide to Gas: new practical and online resource for Key Stage 2

Do you know where we store most of our natural gas?

When developing our latest resource with support from Centrica Storage (who store this gas), I was amazed to discover that it is stored in porous rocks under the sea bed. In fact, the very rocks from which oil and gas are extracted! I have since asked many people the same question, and this is clearly a well-kept secret that this new resource exposes, via our primary children and their teachers.



Teachers and Centrica Storage personnel try the new activities in the *Rough Guide to Gas*

The sequence of hands-on enquiry driven activities provides teachers with an innovative way in which to teach that old chestnut 'properties of solids, liquids and gases' (especially gases), which can be challenging in the primary classroom.

The accompanying lively interactive website (www.roughguidetogas.org.uk) allows children to carry out additional activities, to enhance their scientific knowledge, but predominantly to increase their awareness of the applications of science in this area of industry. For example, they 'look for gas' using an animation to mimic sonic testing of the sea bed, learn about the formation of oil and gas over millions of years, lay pipelines from a boat, control the flow of gases through pipelines, and look at the environmental impact of piping gases for miles along the sea bed.

To complete the experience, roles for industry ambassadors are recommended for each activity. *CIEC Promoting Science* welcome your enquiries regarding becoming an ambassador, or inviting an ambassador in to school.



The CIEC Promoting Science Team

Gayle Pook (left) and Joy Parvin

Directors



Joy and Gayle are responsible for the overall strategy, business planning, finance and fund raising, direction and management of **CIEC Promoting Science**. In addition, they participate in the delivery of continuing professional development of teachers, writing and editing of curriculum materials, and dissemination of **CIEC's** work at national and international conferences.

Nicky Waller

Advisory Teacher



My current role with **CIEC** has evolved since starting as an advisory teacher for the **Children Challenging Industry** project seven years ago. Teaching the **CCI** project is now just one part of what I do. I also plan, lead and present a vast range of exciting courses for primary teachers, mainly at the North East Science Learning Centre and the National Science Learning Centre. In addition to this I write and edit educational resources for teachers, many of these linking with industry and making the real world accessible to Primary aged children.

Sue Andrews

Advisory Teacher



I am based in the North West and I have worked for **CIEC**, as an advisory teacher for the last 11 years. I coordinate the **CCI** project across the region, training industrialists to plan exciting site visits for children and to work as ambassadors in local schools.

Other responsibilities include writing new curriculum materials, professional development leader for the National Science Learning Centre, hub leader for the Primary School Quality Mark and coordinating a project building sustainable relationships between high school teachers, feeder primary schools and University STEM departments.

Tanya Shields

Advisory Teacher



I am one of the **CIEC** Advisory Teachers and I work mainly with the National Science Learning Centre and the Science Learning Centre Yorkshire and the Humber. I am responsible for course development and delivery in all areas of primary science including subject leadership, the use of ICT and provision for gifted and more able pupils. I am also part of the team developing innovative industry focused teaching materials.

Jenny Harvey

Advisory Teacher



I recently joined Nicky to deliver the **CCI** programme in the North East. My role in this well-established programme is to provide CPD in schools for the whole staff on effective science-industry links; classroom-based CPD for one teacher in each school; arrange site visits to science-based manufacturing companies.

I provide training for new companies joining the programme to ensure high quality, curriculum-relevant visits to the workplace.

Valmai Firth

Administrator



I act as the link between all members of the team, who are out and about in schools and delivering courses. My admin duties include liaising with the **CIEC** team, the University and the public and I am the first point of contact if you speak to or mail **CIEC**.

I am also involved in every stage of producing our printed resources, especially with the design and layout.

Mike Dunn

IT Co-ordinator



I work on educational material in **CIEC**, in particular implementing web-based resources for use by teachers and children. Being from a science teaching background, I am keen to devise new ways of communicating real-life science to young learners.

I create online activities which can be used individually by pupils or as a class-teaching resource by teachers, to demonstrate principles, both scientific and technical, which may otherwise be quite difficult to understand. So hopefully while they are learning a lot of science they are also having fun!

Lizzie Hubbard

Reference Editor



My main responsibility is publicity where I try to let as many teachers, industrialists and the public at large know all about what we do at **CIEC**! I produce the **CIEC** Updates, write articles about our work and keep the team up to date regarding conferences and other events.

I also look after reference publications. Most recently I was involved with editing *The Essential Chemical Industry*.

Contacts:

If you would like to know more about the work of CIEC Promoting Science, please contact:
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01904 322523 ciec@york.ac.uk



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