

KIT CLUB NEWS!

Introducing the EcoBox

An exciting new resource, the Ecobox, will be available for schools to borrow from September 2010. We have produced four of these kits, in partnership with Norfolk City Council, Norfolk County Council and Norwich 21, with the help of grants from CUE East and Norfolk Climate Change Panel. They are designed to promote teaching and learning about Sustainable Living in secondary schools, using a cross-curricular approach. The activities in the kit are suitable for use in science, geography, english, citizenship and PE lessons and a booklet of suggestions for further cross-curricular links is included. A brief summary of the kit contents is given below – further details will appear on the TSN website soon.

- 10 sets of 'Global Steps' cards – a simple game that enables students to estimate their personal ecological footprint.
- 'Where's the Impact' – a card game in which students investigate how much land and energy is used to make consumer goods by analysing the different stages of the production cycle.
- 30 Ecosaver Power Meters – easy-to use-devices that allow students to check the energy consumption of everyday electrical appliances.
- '5-A-Day : How Far Away?' – a resource to help students think about the environmental impact of the food they and their families buy and eat.
- 30 Pedometers and a set of associated activity sheets.
- 'Hitting the Headlines' – an activity based on photographs and cuttings from recent EDP articles related directly and indirectly to climate change.
- 2 wireless Energy Monitors for real-time recording of electricity consumption.
- 10 CABE Green Day Booklets with suggestions for a fully cross-curricular approach to teaching about sustainability.
- DVD 'Designs That Hold Water' – an introduction to SUDS (sustainable urban drainage systems). Much more interesting than it sounds!
- Comprehensive Teachers' Notes and additional activities on our website.

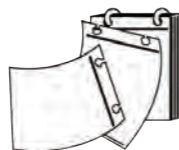
The resources have been piloted in a number of Norwich city schools and have been very well received. Many teachers commented on the excellent work produced by students in response to the Ecobox activities. Please pass on this information to colleagues in other departments who may also be interested in using the kit and then book early to avoid disappointment!

Information about ALL TSN kits at www.tsn.org.uk, under Kit Club, or contact tsn.kits@bbsrc.ac.uk - email is our preferred method of kit booking. Alternatively telephone Carol Hince on 01603 450619, (Wednesday - Friday inc.)

Dates for your diary

TSN Annual Meeting 2010 - JIC - Tuesday 28th September

- June - July 2010 - EPOCA Spitzbergen experiment - follow online
- 14th July - TSN Primary Pizza & Pudding evening
- 28th Sept - TSN Annual Meeting 2010
- 3/4th Nov - NNUH schools outreach event



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Spitzbergen Blog

EPOCA's ocean acidification experiments in the arctic are well under-way, with scientists in Ny Alesund in Spitzbergen eager to share their experiences with schools. You & your students can follow their scientific adventure until mid-July at <http://epocaarctic2010.wordpress.com>

Find out more about a unique cooperation between Greenpeace and a scientific research institute (MPI, Jena). Watch Greenpeace's 4 minute movie introducing Ocean Acidification and showing the Esperanza installing the 'mesocosms' at <http://www.youtube.com/watch?v=phyqlbBsUP4>



New Members - Welcome

Teachers

- Mrs. Rachael Garrod, Gt. Hockham Primary School
- Ms. Lisa Ryans, Thorpe St. Andrew High School
- Miss Marion Kerr, Glebeland CP School, Beccles
- Mrs. Katie Foster, John Grant School, Caister-on-Sea
- Mrs. Sue Chater, Edgar Sewter Primary School
- Mrs. Linda Walsh, Aldburgh with Denton Primary
- Mrs. Lisa Othon, Swaffham, Hammonds High Sch.
- Mr. Richard Williams, Rackheath Primary School
- Mrs. Kim Haynes, Lingwood Primary School
- Mrs. Lucie Harrowing, North Denes Jnr. School
- Mrs. Chris Aitken, Cantley Primary School
- Mr. Matthew Palmer, Admirals Jnr. School, Thetford
- Mrs. Anna Oliveri, Dussindale Primary School
- Mrs. Hayley Strivens, Fen Park Primary, Lowestoft
- Mrs. Donna Eke, Queensway Jnr. School, Thetford

Scientists

- Dr. Mark Banfield, John Innes Centre
- Dr. Shaun Stevens, University of East Anglia
- Dr. Jie Song, John Innes Centre
- Miss Anke Arkenberg, University of East Anglia
- Dr. Tove Jorgensen, University of East Anglia
- Miss Sarah Shailes, John Innes Centre
- Miss Jennifer Hodbod, University of East Anglia
- Mr. Stuart King, John Innes Centre
- Mrs. Lydia Rickett, University of East Anglia
- Dr. Liz Lund, Institute of Food Research
- Mrs. Sara Hamouda, University of East Anglia
- Dr. Henrik Buschmann, John Innes Centre



TSN News

TSN now one-stop STEM shop - for all links with real-life STEM

At the end of last year TSN took over the Norfolk contract to deliver the STEM Ambassadors programme on behalf of STEMNET. So now we are looking to work with ANYONE who has a background in Science, Technology, Engineering or Maths (STEM). We had previously limited ourselves to Science and Maths given our base at the John Innes Centre within the Norwich Research Park (itself a life-science hub).



What do Ambassadors do?

Ambassadors can be people in TSN partnerships, this is just one way in which Ambassadors can be 'active'. For those people who would prefer more occasional interactions we can help provide those opportunities whether it's helping at an after-school STEM club, giving a one-off talk or contributing to careers days.

We are very keen to hear ideas from teachers about ways in which YOU might use our pool of Ambassadors. You provide us with the opportunities, and we'll

provide the Ambassadors, regardless of whether or not you have an existing TSN partnership.

Ambassadors may be great way to start-up a STEM-Club or take part in one of the STEM-challenges. For more details about these initiatives and others supported by STEMNET see their website or make contact with the 'STEM-broker for Norfolk', Angela Carpenter, who is based at the University of East Anglia (angela.carpenter@uea.ac.uk) She is keen to engage with all schools in the county, and can broker links with a range of STEM Enrichment and Enhancement opportunities of which Ambassador activity is just one.

Who are STEM Ambassadors?

Ambassadors have wide ranging backgrounds, from PhD students to project leaders, from apprentice engineers to medics, from people working in the financial services industry to those working in the renewable energy industry - anyone with a passion for their subject who would like the opportunity to help inspire young people, and support teachers by showing real-life applications of the STEM subjects.

<http://www.stemnet.org.uk/ambassadors.cfm>

Record numbers of scientists across



Norfolk

>100 scientists into 139 schools from nursery to post-16 nearly all on 1 day ... full story p.3

What does this mean for existing partners?

Very little - TSN scientists are urged to register as STEM Ambassadors on the STEMNET website. ... *continued on p.2*

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From front page: This can be viewed as a way of gaining a national badge for what you do already. The STEMNET website can also be used as a way of recording what you do already and helping you keep track of your schools' engagement activities.

It will NOT mean you have to do any more activities - you will still receive details of these events but you are under no obligation to take part. However, your registration and participation will help TSN financially, as we are paid to deliver

this contract!

We will arrange a CRB check for you (presently TSN partners are asked to arrange these through their schools, if their school deem it appropriate). Full details will be sent to you by email.

Teachers

You can request additional support from STEM Ambassadors at any time BUT now our remit clearly goes beyond just supporting your science lessons and so as

science teachers reading this, please make your colleagues in Maths and D&T aware of what we can offer. We want to support you and your teaching, at the same time creating as many opportunities as possible for 'active Ambassadors'.



Partnership Activity: Genetic Modification and Floral Dipping

Kath Elliott (IFR) and Helen Banfill (Acle High School)



Helen asked Kath to work with Year 11 Triple Science students. They were studying the Biotechnology unit, which includes Genetic Modification. Kath came in over a series of 4 lessons to give them experience of the techniques used for Genetic Modification of plants based on some of her research experiences. The students were set the challenge to compare 2 transformation techniques and decide which was 'best'. - the floral dipping technique in *Arabidopsis* and the use of leaf discs of oil seed rape.

The techniques involved the use of genetically modified *Agrobacterium* so for safety reasons, Kath 'replaced' the bacterium with sterile water/sucrose solutions (unknown to the students!). They went through the process and Kath transplanted some 'living' plants onto their antibiotic plates giving the impression some had survived and were therefore transgenic.

Kath took plates of 'transformed' plant material back to the lab to grow them in tissue culture facilities. Unfortunately, 10 days later, they were covered in fungi - so much for the aseptic technique of "grubby Y11's"! So Kath also gave them some of her data to analyse and pictures of what they should have looked like!

For Kath's final visit, immediately after the IFR Christmas lunch (talk about dedication!!!), she took with her seeds the students had surface sterilised and plated onto agar

plates - the students counted how many had germinated and how many were antibiotic resistant. From this they were able to calculate an efficiency percentage for the technique which allowed the students to compare the two techniques in their write up.

Partnership Activity: Alfresco PCR!

Giulia Morieri (JIC) and Julian Thomas, Paston College



It was half-term and so in preparation for an all day theory and practical class on "PCR and electrophoresis" to 50 A' level students at Paston College, North Walsham the science teacher (Julian) proposed testing the experiment at his house instead of the school. In fact, it was such a sunny day Julian suggested doing the experiment on the table in his garden!

It seemed quite unusual to perform molecular biology at home rather than in a lab, but I thought to myself "Right, if I can do a

PCR in a lab, why should I not be able to do it outside?" So I set up the PCR machine, the pipettes, tips and electrophoresis tank on the table in a beautiful garden surrounded by very curious chickens!!! All of this was then filmed to produce an educational video about PCR.

While the PCR was running we ate a delicious lasagne prepared by Julian and his partner. Finally the experiments worked, unbelievable! It was one of the most unusual, surreal and enjoyable scientific days of my life! *Editor's culinary post-script, this is an Italian scientist describing a homemade English lasagne as 'delicious' - what a partnership!*



Record numbers of scientists all over Norfolk

TSN's Countdown 439 kicked National Science and Engineering Week in Norfolk off in fine style back in March. By the end, over 100 scientists visited almost 140 schools across the county in the course of the 'week'. Much of the activity was focussed on Friday 12th March but we heard of some people who were making re-scheduled visits during May. A huge thank you to all who supported this high-profile event and for your contributions of pictures, stories and pupil/teacher/scientist feedback. This has been catalogued at

<http://www.jic.ac.uk/mediaschools/NSEW2010>.

Take a look - we reached nursery aged children in Earlham, special schools, almost 50% of Norfolk's 52 high schools and managed to provide scientists to each and every one of the 75 teachers who sent specific requests in response to our pre-Christmas e-mail shot. We also received highly positive feedback in the form of thank you letters, pictures and emails.

THANK YOU ALL! - SHOULD WE DO IT AGAIN??



Urban Heat Island Experiment

Would you like to be part of a fun and informative experiment that supports your science, geography or environment curriculum?

Weatherquest (www.weatherquest.co.uk), a private weather forecasting company based in Norwich and whose staff present the weather on BBC Look East and regional BBC radio stations, is looking for volunteers for "The Big Norwich Urban Heat Island Experiment". Building on work by the Royal Meteorological Society (www.metlink.org) and with funding from CUE East (www.cueeast.org), this experiment will involve participants measuring air

temperature in Norwich and the surrounding countryside over a series of days in the upcoming Autumn term. The project aims to:

- demonstrate the link between air temperature and waste energy
- identify weather conditions which magnify the urban effect on air temperature

The experiment will be supported with some public talks in the run-up period and weatherquest can provide digital thermometers for you to carry out the measurements. Schools, clubs and the general public will be involved, with the opportunity for further projects using the collected data. To register your interest please email info@weatherquest.co.uk with 'urban heat island' in the subject line.



theWeather Club

You are invited to join The Great British Weather Experiment - an attempt to record the arrival of Autumn across the British Isles using thousands of simple recordings by schools, the general public and weather observation stations. You will be required to

undertake simple outdoor fieldwork, making a daily record of basic weather observations including rainfall, temperature and general weather conditions between 13/09 and 13/10

To register your interest, email: Your name, School Name & Address, Contact Number and email to info@theweatherclub.org.uk Further details, www.tsn.org.uk/news.htm

CarboSchools - UK

As we come towards the end of this three year, EU-funded, project I am delighted to report that Flegg High School, Martham have installed their CO₂ monitor on the school roof along with a weather station that compensates the meter for humidity and temperature as well as providing a whole heap of meteorological data (<http://www.flegg.norfolk.sch.uk/Weather/FleggHig/Flegg.htm>).

Soon the atmospheric CO₂ levels above the school will be available for all to share, compare and analyse via the School CO₂ web area of the carboschools website, www.carboschools.org

Here you can also access a library of 'hands-on' activities related to CO₂ and its role in climate change (primarily for KS3 and 4) that have been developed by scientists across Europe working closely with their local teachers.

We intend to showcase CarboSchools activity at this year's TSN Annual Meeting. Anyone who has used these resources or others or is an EcoSchool will be most welcome to showcase their work. Please contact us to let us know.

