Teacher Scientist Partnerships

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Carbo-Europe Education Workshop, Die: 21-24th March 2005
Teacher Scientist Partnerships

- A teacher / school led initiative to enhance science teaching across Norfolk
- TSN does not tell partners what to do; we provide what teachers ask for
- “Bottom-up” approach
- NOT mentoring / supervising
- A Partnership
PARTNERSHIPS

TEACHER < > SCIENTIST

- One
- Primary, Middle, High
- Voluntary
- Classroom management
- Language
- National Curriculum
- Support

- One
- RA, PhD, Post-Doc, PL
- Voluntary
- Scientific knowledge
- Current Science
- Planning Experiments
- Support

NETWORK
Norfolk as a County
The Norfolk Situation

- **Teachers**
  - Norfolk LEA, 453 sch
  - N, F, P, M, H
  - Many rural locations
  - Middle schools

- **Scientists**
  - Central location, NRP
  - IFR, 255
  - JIC, 394
  - UEA, 400
  - N&NH
  - Few industrial links
Ten years ago ....

- National Curriculum ‘new’
- Primary - support
- High - ‘out-of-date’
- American scheme ....

Chunnell opened

UK Lottery begins

Senna killed in car crash

Mandela becomes President
TSN in Norfolk

- Formed in 1994
- Steering Group
- Funded by Gatsby Charitable Trust
- Chairman, Coordinator, Resources Officer
- ‘Bottom-up’ approach
- 70 active partnerships
A reason for each to get involved …

• *Responsibility of research scientists to communicate to the rest of us the excitement of making new discoveries and the importance & implications of their work*

  (House of Lords Science Committee – Science & Society, Feb. 2000)

• *Science Education in schools can only benefit when teachers and pupils have direct contact with professional scientists and the world of work*

  (David Moore, ASE Chief Executive, EiS, June 2002)
How children view scientists

10-year-olds’ drawings
How children view scientists

10-year-olds’ drawings From children’s book
How children view scientists

10-year-olds’ drawings

From children’ book

15-year-old:

“I know all about elements, compounds and mixtures and that atoms have little circles and dots and how to use a Bunsen burner but I don’t know what that has to do with anything.”
Problems

• Many children hold a negative view of science and scientists.
  – They think classroom science is not real science, and has little to do with everyday life.
  – These children will become adults who are likely to mistrust science.
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• All children from 5 to 16 must learn science
  • Nat Curriculum: biology, chemistry, physics + investigations.
  – Primary school teachers need help.
    • Science training, time, investigations.
  – High school teachers need help
    • Teach all disciplines + investigations
    • Little time to keep up to date with new science.
How it works

TSN Ltd

Charitable status

• Trustees
• Steering Group
• Coordinator
• Resources Officer
• Network of teachers and scientists
Explaining ‘your’ science

How can a Molecular Plant Pathologist work in a primary school?

The development of a STS marker linked to a yellow rust resistance derived from the wheat cultivar Moro
The scientist in the classroom

- Role Model
- Professional Person
- Dispel the stereotype
- Trained Scientist
Trained Scientist

- Planning an investigation / test
- What is the purpose of the test
- We will change …. “factors/variables”
- We will measure …. 
- How will we make it a ‘fair test’?
- What we think will happen?
- Recording Results
- Presentation of results
- Planning > Obtaining Evidence > Analysis > Evaluation
Direct Support for Partners

- Induction
- Planning time (supply cover for teacher)
- Expenses (travel etc. for scientist)
Our survey says …
Advantages to Teachers

- ideas
- equipment / kits
- up-to-date research
- knowledge & understanding
- facility for grp discussion
- linking professional person
- enhances science lessons
- motivating / teachers & pupils
- science & scientists are real
- lab visits
- OFSTED
- higher profile
Our survey says …
Disadvantages to Teachers

- Time
- None
- National Curriculum
- Not a whole school thing
Our survey says …

Advantages to Scientists

- reality check
- good to see how kids see science
- Buzz/Motivating
- Enjoyable/Fun
- Change of scene
- Importance of communication
- Interact with YOUR child
- Broaden Horizons
- Positive image of science
Our survey says …
Disadvantages to Scientists

- **time**
- **logistics**
- **got to work!**
- **none**
Additional Activities

- Kit Club
- Master Classes
- Primary Science Workshops
- National Science Week
- Newsletter
- Website
Kit Club

Full size torso and skeleton

Pond dipping

‘Flexicam’

Spectrophotometer

‘Germs’

Forces and motion

Forces
What have we learnt?

- Importance of being teacher/school led
- Induction is vital
- Continually Evolving
- Partnerships are not guaranteed to work
- Scientists & Communication!
- Identify deficient/difficult to teach areas > novel approaches & resources
- Time consuming BUT highly rewarding
Business reasons

- Staff Morale
- Additional Skills
- Community Commitment
- Boost Local & National Image
- Improve standards in science >> recruitment
Are we unique?
NO! but we were the first!!

- Clifton Scientific
- Techniquest
- Pupil Researcher Initiative (PRI) based at Sheffield Hallam University (RinR)
- Royal Society
- Biotechnology & Biological Science Research Council, BBSRC
Conclusions

- Pupils encounter a “real” scientist
- Pupils see science can be fun!
- Partnerships offer the potential to draw on two sets of diverse and potentially complementary experiences to benefit pupils and their schools
- Raises both the profile of science and the school
With grateful thanks -

Maxine
Frank Chennell & TSN
Prince Avenue & Hockley Primary Schools
BBSRC
The Crooked Billet, Leigh-on-Sea
Practicalities 1 & 2
Practicalities 3

• Time …

- 1 hr in school = 2 hrs (inc. travel time)
- 1 day = 8 hrs
- 4 visits per year, for 1 day’s time
Our survey said …

Teachers

- All age groups covered, 4 - 18yrs
- Over 50% primary
- 3.5 years in network
- On average between 3 & 4 visits/yr

Scientists

- Government-funded
- Based at NRP
- 1 - 20 visits per year
- On average they do a 30 mile round-trip to visit their partner
Personal Experiences

- Science in the Home
- Cell City
- Mobile Microbe Roadshow
What do Partnerships do?

See also www.tsn.org.uk
A thought from a teacher …

We can all learn from each other. Teachers need to continue to add to their own knowledge. Children too benefit from contacts outside the rather sheltered world of school.

Mark was down on his hands & knees talking to 4/5 yr olds, opening up the world of nature to them in a way I am not able to do.