

Earth Science Education Forum (England and Wales)

Minutes of the thirty seventh meeting

Held in the BGS meeting room at the Natural History Museum, Exhibition Road, London at 1.30pm on 19 October 2010.

Present: Chris King, Chairman (Earth Science Education Unit)
Diane Aston (IOM3 Grantham)
David Bailey (British Geological Survey)
Steve Brace (Royal Geographical Society with IBG)
Martyn Bradley (Geology Trusts)
Susan Brown (Geologists' Association)
Chris Carlon
Nikki Edwards (OCR)
Natasha Lee (Gloucestershire Geology Trust)
Cally Oldershaw (ESTA)
Peter Warren
June Wright (British Geological Survey)

Speaker: John Cowley, Kay Stephenson (RSC) and Laura Cowley (see Appendix to these minutes).

1 Apologies for absence

Apologies for absence were received from Grace Kimbell (Natural History Museum), Jacqui Malpass (Clwydian Range AONB), Hazel Rymer (Open University), Niki Whitburn (ESTA), Roger Trend (Geographical Association), Graham Woodrow (IOM3), John Reynolds (GeoConservation UK).

2 Minutes of the 36th meeting 8 June 2010

The minutes were amended as requested and then accepted as a true record of the meeting and will be placed on the ESEF website.

Action: David Bailey

3 Matter arising

There were no matters arising.

4 Finance report

As IOM3 had charged us to use their facilities for the last meeting, the future of the ESEF finances were discussed and Diane Aston agreed to investigate whether IOM3 are happy to continue to hold our monies without charge or not. Communication before the next meeting was agreed.

Action: Diane Aston

5 ESEF website (www.esef.org.uk)

David Bailey reported that the number of hits to the website was steady at approximately 1200 per quarter with 10 downloads of the minutes from meetings per month.

6 All-Party Parliamentary Group for Earth Sciences update

6.1 Cally reported that the party has reformed with a new name — the All-Party Parliamentary Group for Earth and Environmental Science — and a new chair in Martin Caton (Labour MP with special interest in the environment).

6.2 Cally is part of a group looking at changing how the groups are structured and how they undertake their duties. The plan is to perhaps have an enquiry over several meetings, report on their findings and then present them to a wider audience. This is all in the planning stage and Cally will report further at the next meeting.

6.3 Cally to confirm alterations to website to David Bailey.

Action Cally Oldershaw and David Bailey

7 Potential collaborative projects

7.1 Susan Brown mentioned a Festival of Geology on 6 November at University College London; admission is free.

7.2 ASE conference is at the University of Reading from 5 to 8 January 2011

7.3 Herefordshire and Worcestershire Earth Heritage Trust are holding a Rock & Fossil day with 4 activities at 3 locations for local secondary school children.

7.4 BGS will be running their Science week activities at two local secondary schools who are inviting their feeder Primary schools. The Rockwatch event will also run on Saturday 19 March 2011.

7.5 The recent 175th symposium run by BGS was a success and there is discussion taking place about taking it into a school arena.

7.6 GCSE and A- level: numbers of students studying geology are increasing

7.7 IOM3 structure, with regard to working with children, is in a state of flux and Diane Aston is looking into how they can take their involvement forward.

7.8 The Geological Society have postponed their careers day as it was forecast to run at a loss this year. They hope to hold a reshaped event in spring 2011.

7.9 This week is the first ever national "Visit Our Schools & Colleges" week (www.visitourschools.org) run by the Education and Employers Taskforce and administered locally through EBPs and similar organisations.

8 AOB

8.1 The venue for future meetings was discussed and Diane Aston agreed to look into the possibility of using the IOM3 rooms, with no charge, again from our March 2011 meeting. If not Chris Carlon would explore the possibility of using the Anglo American rooms at the NHM or the larger BGS room could be used if enough notice could be given. **Action: Diane Aston, Chris Carlon and June Wright.**

8.2 David Bailey informed the meeting that the contact for STEMNET had changed and is now Kirsten Bodley. David Bailey has forwarded contact details to Chris King to enable an invitation to future ESEF meetings to be extended. June has added their details to distribution list.

8.3 The next ESTA conference is to be held in Durham in July 2011.

8.4 The Gloucestershire Geology Trust and the Herefordshire & Worcestershire Earth Heritage Trust held a successful stall at the ESTA conference.

8.5 Nikki Edwards is working on fieldwork sites with Geological Trusts.

9 Dates of future meetings

7 December 2010 Grace Kimble to convene a discussion on 'Earth science in a museum environment' to be held at the Natural History Museum.

Action June Wright to check venue for meeting.

8 March 2011 Martyn Bradley and Natasha Lee to convene discussion on
 'Geoscience in Adult Education'.
 7 June 2011 Cally Oldershaw to convene presentations on 'Geoscience Careers'.

Chris King thanked everyone for their attendance.

Agreed actions:

Agenda Item	Subject	Owner	Due date
37.2	Minutes to be added to ESEF website.	David Bailey	ASAP
37.4	Facilities and financial charges from IOM3 re ESEF future.	Diane Aston	December 2010 meeting
37.6	All Party alterations to be communicated to David Bailey for Web update.	Cally Oldershaw	December 2010 meeting
37.8	Venue for future meetings. Either IOM3 at Carlton Terrace, or Anglo American room at NHM or BGS room at NHM.	1. Diane Aston 2. Chris Carlon 3. June Wright	ASAP but NHM to host December 2010 meeting
37.9	June to confirm NHM venue with Grace for December meeting.	June Wright	As soon as possible

Appendix

How should Earth Science be a part of Mainstream Education?

Report on a debate held on Tuesday 19 October, 2010 in the BGS Meeting Room at the Natural History Museum, Exhibition Road, London

- Present:** Chairman of debate, Peter Warren
- Lead speakers:** Kay Stephenson (Science Education Consultant*)
John Cowley (Minerals Development Consultant)
Laura Cowley (Earth Science Teacher)
- ESEF members:** Chris King, Chairman (Earth Science Education Unit)
Diane Aston (IOM3 Grantham)
David Bailey (British Geological Survey)
Steve Brace (Royal Geographical Society)
Martyn Bradley (Geology Trusts)
Susan Brown (Geological Association)
Chris Carlon
Nikki Edwards (OCR)
Natasha Lee (Gloucestershire Trust)
Cally Oldershaw (ESTA)
June Wright (British Geological Survey)

In his **opening remarks** the **Chairman** drew attention to his background paper. This took as three givens:

- that school curriculum subjects should be taught more in terms of developing life skills and capacities and teaching fundamental understandings drawn from bodies of knowledge rather than in imparting content
- that earth science was no exception to the premise that every subject has elements through which skills and understandings for life can most effectively be learned
- such components of earth science should be taught at all levels in school education as a means of enabling pupils to become better informed about the world that we inhabit and from which we derive our health, wealth and happiness

The aim of this debate/discussion was to identify such key earth science components and how best — by whom in what context — they should be delivered.

In the **opening presentation** **Kay Stephenson** made the following key points:

- The curriculum was too content- not context-driven
- We do not want packaged pupils even less those who have received merely a mass of disconnected science “facts”; alas, educational coherence was all too often missing
- The current science curriculum represents a piecemeal approach; primary science includes the extraction of salt, etc. from rocks, water, *et al* but nothing on how it got there; GCSE science covers oil refining and use, but nothing on its origin, distribution etc.
- The prime role for earth science could be in providing the ‘big story’ (of all or parts of the Earth) thereby providing a backbone and a coherent route through fundamental concepts and contemporary contexts for all the sciences

John Cowley outlined the concerns of those in the minerals industry regarding both a failing supply of well-trained manpower and, no less critically, the lack of a balanced understanding by environmentalists, decision-makers and the public of the vital role of mineral resources for society. Earth science education should be playing a stronger role. In particular:

- In countering the current focus on resource extraction as ‘bad’ with early pupil understanding of society’s dependence on resources and of the concepts of time , space and evolutionary change (*qua* Darwin) as natural components of ecosystem development and renewal.
- In delivering fieldwork which can explode a host of misconceptions and help exemplify real relationships.
- In making science teaching relevant and interesting.

Laura Cowley opined that the key to better earth science education lay in the approach and who was teaching. The present situation was unacceptable:

- Very few earth science teachers had a background in earth science
- Many teachers actively avoided teaching earth science components in KS3 and KS4 courses; some even argue it is not real science.
- Unlabelled rocks and fossils gather dust in cupboards while the rock cycle is taught without tactile, practical or field experience.
- The limited nature of earth science assessment encourages teachers to neglect earth science components; teachers with limited knowledge teach only to exam board specifications and stock answers.
- One Board’s answer to its earth science examination question is simplistic and unsatisfactory, but an adequate answer would require students to have synthesised a broad spectrum of earth science knowledge, develop skills necessary to analyse evidence, theories, views and perceptions and place them in a real world context — and they have not had that experience!

In open discussion, the following main points were made:

- If we are to retain some elements of earth science in mainstream education we need to pick some “winners” and ensure that they can be taught, and taught well.
- There are not enough earth scientists as teachers to show how the Earth works; earth science is better taught in Chile than in the UK.
- Teachers and pupils need inspiration – models and fieldwork engage pupils.
- The current focus on improving examination results not providing better scientific understanding , along with curriculum and examination biases , tell against desirable earth science components.
- CPD for (earth) science teachers should involve short periods in a research and /or industrial setting.
- There is a lack of understanding of the value of geology to everyday life — “coal comes from B&Q”!
- There is a body of informed geography teachers wanting the chance to teach earth science.
- Development of a new national curriculum affords an opportunity to earn a place for earth science.

The Chairman, in closing the debate, thanked the Opening Speakers, in particular, and all contributors for their observations and views on desirable action. He hoped the report of this occasion might stimulate discussion both within the earth science community and between it and teachers in other sciences, and their professional bodies, on the way in which components of earth science could be included in any revised National Curriculum in such a way as to

inspire pupils to gain an understanding of the world they inhabited and give them relevant and helpful contexts for much teaching of other science.

He recognised that to see such an aspiration successfully realised would need re-thinking at levels from scientist/teacher to policy makers on content, teacher training, CPD requirements, and above all on appropriate examinations, pupil assessment and teacher accountability. Such changes were keenly sought in many fields; earth science had a strong case for leading the way.

PTW

22 November 2010

*Kay is now Manager, Schools & Colleges at the Royal Society of Chemistry (RSC) but her presentation and the views she expressed at this meeting were her own and should not be taken as representative of the RSC's.