

ESTA Chair's report

Another busy year with lots of promoting of ESTA to the public, and liaising with geological societies.

I am delighted to report that we have now have MOUs (memoranda of Understanding) with the Geologists' Association and the Geographical Association. That with the Geological Society was held up by the unexpected need to recruit appoint an Executive Secretary, but is in progress. Pete Loader is now Chair of the GSL Education Committee which I also attend, and I am a vice-president of the Geologists' Association, so ESTA is well-positioned in both the professional and amateur sectors of our subject.

In January I attended a local group meeting of the Geological Society and heard about the revised criteria for Chartered Geologist status. Outreach and education play an important part in this, and in the future we should find even more support from local Earth Science organisations and industry.

During the year there have been several meetings which I attended, led by Prof Chris King, to discuss the BESER initiative to support teachers of Earth Science. Close collaboration and probably incorporation with ESTA will create a more pro-active organisation not only in teacher support but also in liaison with industry and academe. This is a happy conjunction of thinking with that of the GSL Chartered Geologist criteria.

I was on the Geologists' Association stall at Lyme Regis Fossil Fest in April. The GA Rock Boxes attracted many teachers and home-tutors, and of course I promoted ESTA membership and resources. It was very gratifying when a teacher passing by overheard me praising ELL, and chipped in to say that it was a great source of brilliant ideas.

Although there was plenty to do this year, there was less stress on Council (and Awarding Bodies of course), than last year, when the new A-Levels were in development. As ever in the world of education, and more particularly Earth Science education, this is only a brief respite before more battles must be fought. Economic stress is causing some geology courses to be axed, and we cannot take this lying down. I'll still be on Council next year, and will make it my aim to get recognition of GCSE Earth Science as an equivalent science with the usual three, which hopefully might even see an increase in take up once curriculum managers realise that our subject gives a broad overview of all the sciences. If we can thus increase the numbers of students studying GCSE Earth Science, then there may well be greater demand for the A-level.

As I live within easy access of London, I have been involved with the planning of the 2018 ESTA conference. Everyone we have approached has been happy to help, and it will be very pleasing to be able to share ideas with those who teach miles away from decent rock exposures, and also show the more fortunately placed centres that geology is everywhere – although of course they know that anyway!

Sadly, this is my last report as Chair of ESTA. It has been a real privilege to have worked with such a dedicated and knowledgeable team as is the ESTA Council. Do have a think and see if you would like to join a group of talented people with a common purpose and where everyone is listened to and valued - a team which also enjoys and appreciates the help and support of a caring and enthusiastic president. It is only by skill and dedication and the active support of its members that ESTA has been active for fifty years, so come and make your contribution to a successful start to the next half century.

Some ESTA members may have retired from their jobs, but never from the subject. As a 'retired' professor once told me, geology is an addiction. Let's hope that they never find a cure!

Nikki Edwards, ESTA Chair

ESTA Treasurer's report 2015/16

Income

Income from subscriptions total £9,613.5 and shows a slight decrease since last year (£10,550.24). Thanks are due to Elouise Gill, Membership Secretary who has dealt with subscriptions.

A generous donation of £6500 towards the 2016 ESTA Annual Conference was made by the Petroleum Exploration Society of Great Britain (PESGB).

The advertising income total £190 is lower than last year (£360). Thanks to Maggie Williams for assisting Jen Noble with the role during the financial year.

Income from the Publishing Licensing Society (PLS) was much lower this year generating £468.96 (£1576.76 in 2015/16).

Expenditure

Publications (Magazine and Newsletter) costs are lower (£7,413.75) than last year (£8,992.72). Costs are lower because *ESTA News* (the ESTA newsletter) is now distributed electronically.

Council expenses are lower this year (£3805.1) compared to £6542 in 2015/16). Council expenses include the costs of Council meetings, attendance at external events, Secondary meetings and workshops, Primary meetings and workshops and the upkeep of the website.

Publicity costs (£1152.62) are mainly incurred by attendance at conferences and careers fairs. ESTA presence at conferences serves to publicise the association to a wider audience.

ESTA Conference expenditure includes the transfer into the Conference account of the £6500 donation from PESGB. It also reflects some attendees paying conference fees into the main account. These fees were subsequently transferred into the Conference account.

In the 2015/2016 financial year PESGB donated £8500 towards ESTA's 'Geo Skills' fieldwork skills project. This project was completed on budget in September 2016. Thanks to Maggie Williams for managing the project.

The current subscriptions no longer cover the Association's expenditure. In accordance with Rule 8 at the ESTA AGM, on 25 September 2016 at the University of St Andrews, Council proposed that the Ordinary/Institution membership of ESTA will become £40 and Student/Retired membership will become £20. The increases took effect from 1 October 2016.

ESTA first adopted a Reserves Policy during 2006-7 and a contingency sum is held to bridge cash flow problems and ensure, firstly, continuity in the production of *Teaching Earth Sciences* in the event of a large variation in income and, secondly, payments towards specific future projects under the PT Carr Award scheme. I wish to record that the level of reserves held on the last day of the financial year was £10,000.

I wish to place on record my thanks to Peter Williams and Julia Kungu for inspecting the 2015/2016 accounts with guidance from John Reynolds. I also wish to thank past ESTA Treasurers Maggie Williams and John Reynolds for their continued help and support with treasuring activities.

At the time of writing this report the accounts for 2016/2017 have not been inspected.

Carole Rushall, ESTA Treasurer

EARTH SCIENCE TEACHERS' ASSOCIATION – Accounts and Treasurer's Report for 2016-17			
		Current Account	
Income		2015-16	2016-17
	Adverts	£360.00	£190.00
	Conferences	£400.02	£0.00
	ESTA Conference 2016	£3921.60	£320.00
	Gift Aid	£0.00	£0.00
	PESGB Conference Sponsorship for 2016 conference.	£0.00	£6500
	PESGB Donation for Educational Projects	£8500.00	£0.00
	Promotions	£205.65	£0.00
	Publishers Licensing Society	£1576.76	£468.96
	PT Carr Fund	£0.00	£0.00
	Sponsorship/ donations (other than from PESGB)	£0.00	£0.00
	Subscriptions - ordinary	£10550.24	£9613.5
	Transfer from deposit	£5000	£5000
	Total Income	£30514.27	£22092.46
Expenditure		2015-16	2016-17
	Bank charges	£50.69	£101.83
	Conferences & Publicity	£1806.27	£1152.62
	Council expenses	£6542.00	£3805.1
	Data Registration	£35.00	£35.00
	ESTA Conference 2015/16/17	£7563.27	£7123.48
	Promotions	£151.65	£0.00
	PESGB Projects	£4849.77	£8146.37
	PT Carr Award	£0.00	£0.00
	Publications	£8992.72	£7413.75
	Public Liability Insurance	£201.52	£167.54
	Subscriptions to other organisations	£825.00	£425.00
	Refunds	£80.00	£312.00
	Transfer to Deposit account (deposit interest paid into main account until 2016/17)	£323.17	£0.00
	Total Expenditure	£31421.06	£28682.69
		Deposit Account	
		2015-16	2016-17
	Start	£35,773.62	£31096.79
	Interest	£323.17**	£256.56
	Transfer in/out	-£5000.00	-£5000.00
	End Balance	£31096.79	£26353.35
Total Accounts		2015-16	2016-17
	Start	£49564.33	£44303.88
	End	£44303.88	£32970.21
Total Accounts include a reserve of £10,000.00			

Additional Information

Designated Funds			
PT Carr Legacy - Interest on the invested sum of £3003.05			
21 05 2009 £3003.05 invested for 5 years, Halifax Stepped Income Reserve Fund			
		Interest	Balance
	2009		
2009/2010	2010	£96.10	£1,284.08
2010/2011	2011	£99.06	£1,383.14
2011/2012	2012	£102.73	£1,485.87
2012/2013	£500 awarded to J Marion	£112.92	£985.87
Account closed 17/06/13, balance and interest in current account. closing balance £3123.17			
2013/2014		£112.92	£1098.79
2014/2015		£120.12	£1218.91
2015/2016		£31.22	£1250.13
2016/2017		£29.25	£1279.38
Total PT Carr Legacy including amount available for awards	£3003.05 + £1279.38 = £4282.43		

ESTA Conference Account Summary		2015-16	2016-17
Income			
	Sponsorship	£6500	£6500
	Fees received	£19,565.40	£7654.00
	ESTA (float)	£1,500.00	£1,500.00
	Leicester Uni	£300.00	£300.00
	*SRK Consulting (paid directly to St Andrews in 2016 so not included in 2016 total)	£300.00	*£300.00
	Adverts		£40.00
	Total income	£28165.40	£14494.00
Expenditure		2015-16	2016-17
	Accommodation & Catering	£15,060.20	£4059.95
	Insurance	£171.72	£177.40
	Staff fees	£5918.10	£6307.19
	Printing, postage & sundries	£450.91	£108.44
	Transport (paid by St Andrews in 2016)	£1230.00	£0.00
	Contributors accommodation & travel	£0.00	£198.00
	Fieldwork expenses (paid by St Andrews in 2016)	£0.00	£0.00
	Conference 2016 (paid from 2015 accounts but added to 2016 costs)	£483.64	£0.00 (£483.64)
	Total expenditure	£22,830.93	£11334.62
	Retention of ESTA priming for 2016	£1500.00	£1500.00
	Conference Surplus	£3350.93	£3159.38

ESTA Secretary's report 2015/16

Three Council meetings were held during the year: on 12 November 2016, 4 March 2017 and 24 June 2017. Council is grateful to Keele University for allowing us to use their facilities in the Sustainability Hub and the School of Geography, Geology and the Environment.

Jo Conway was elected (in her absence) as Chair Designate at the 2016 AGM in St Andrews. Following the AGM, Dan Boatright and Mandy WInstanley volunteered to share the role of ESTA Promotions and Display Manager. Many thanks to all of them for contributing to the continuing success of the Association.

Topics discussed by Council have included:

- Updates to the ESTA Rules
- The future of earth science education and ESTA's role in it
- Professional development in fieldwork
- Website developments
- Planning for future ESTA Conferences and participation in other conferences and careers events
- Copyright issues
- Initiatives to mobilise the geoscience community
- Liaison with the BGS, Geological Society of London, Geologists' Association, Geographical Association, Palaeontological Association, the Institute of Quarrying, MinSouth, English Geodiversity Forum, UK Groundwater Forum, University Geoscience UK and other organisations. An approach has been made to the Institution of Civil Engineers.
- ESTA signed a Memorandum of Understanding with the Geographical Association during the year. We already have a similar agreement with the Geologists' Association and another with the Geological Society of London is under discussion.

Council is planning to meet on 11 November 2017, 3 March 2018, 23 June 2018 and 10 November 2018. Any member interested in becoming a member of Council is invited to attend a meeting to observe business (travel expenses will be met).

At the 2016 AGM it was proposed that ESTA should establish a Facebook page for members to provide a platform to communicate, share resources and improve earth science teaching. The page is open to all ESTA members – if you would like to join in the discussion, go to <https://www.facebook.com/groups/EarthSciTeachersAssociation/> and request to be added (please make yourself known if you operate under a pseudonym online).

ESTA also operate an email distribution list to circulate ESTA News and other items likely to be of interest to members, such as new teaching resources and vacancies for geology teachers. Please make sure we have your email address so that you receive these, as well as subscription reminders and notification of changes to the website password. In the past 12 months there have been 27 ESTA mailings – if you haven't seen them, we probably don't have your current details.

Finally, a new BGS Bedrock Geological Map of the UK and Ireland at 1:1 250 000 scale, developed with input from ESTA and the Geographical Association and intended principally as a teaching resource, was published in April this year.

David Bailey, ESTA Secretary
ESTA.Secretary@gmail.com

Membership Secretary's report

Current membership – 300

	July 2016	July 2017
Complimentary	22	22
Student	9	7
Retired	63	57
Ordinary / Institutional	242	196
Agency	18	18
	354	300

We have had 17 new members since 1 October 2016.

78 members have not renewed their subscription (2016-2017).

7 members have actively cancelled their membership.

Elouise Gill, Membership Secretary

ESTA Higher Education Coordinator's report

Higher Education Network Annual Meeting (Monday 17 January, 2017)

The HEN annual meeting was held at Burlington House, London, hosted by the Geological Society, with keynotes from Helen King and Gordon Curry giving an outline of the Teaching Excellence Framework (TEF) and exploring aspects of teaching practice. Among a number of interesting talks, one study that stood out was a series of insightful surveys of undergraduate student perceptions of which aspects of their university teaching were the most/least important. This revealed some surprising, even shocking, assumptions about university teaching, especially concerning the expertise and teaching qualifications of the university staff.

The next **annual meeting** will be hosted by Plymouth University (Alison Stokes) on Tuesday 16 January 2018, followed by a workshop on the theme of Employability (17 January). We are planning a mix of presentations and interactive sessions, and welcome contributions both on the theme of employability, and around any aspect of geoscience education. The intention is to hold a panel discussion rather than a keynote, inviting panel members from industry and policy as well as academia.

In addition to the annual meeting and employability workshop, we are aiming to offer an EDINA-run half-day geospatial course on the afternoon of the 15 January.

Most of the presentations from this and past events are hosted here:
<https://www.geolsoc.org.uk/hen-resources>.

International Geological Congress (27 Aug-4 Sept 2016, Cape Town)

An excellent Education theme, with a large number of varied presentations on different topics, was presided over largely by Chris King, who is far better placed to summarise proceedings (especially as he managed to avoid food poisoning...). Chris has circulated notes on the plenary session at the end of the symposium, which drew together some of the main themes arising from the symposium. Among these were: *calls for more discussion and demonstration slots at the next Education symposium; gender balance of graduates; over-specialisation of graduates feeding into the mining industry; a call for a workshop on digital resources; why do Earth Science graduates not pursue ES careers?; teaching geoscience to people of faith; transferable skills for graduates; call for a session on career stories.*

Goldschmidt conference (14-18 Aug 2017, Paris)

For the first time, an Education, Outreach and Career Opportunities theme was convened at the Goldschmidt geochemistry conference. Organised by Simon Kelley (formerly OU, now Edinburgh), Chris King and Ariel Anbar, this represents a welcome addition to this academic meeting.

The theme consisted of two sessions of oral presentations and posters:

23a: Outreach – Promoting Geoscience in Schools and the Community

23b: Technology Enhanced Learning in Geoscience Teaching

Early careers workshop (Nov 2016, RGS London)

This re-invention of the HEA Early Careers workshop ran successfully under the aegis of the RGS and Stephanie Wyse, who liaised with me in the lead up to the event. Gordon Curry (Glasgow, HEN and UGUK) ran two workshop sessions: (Session 2 Curriculum co-design and student/research-led teaching; Session 4 Fieldwork teaching/Teaching fieldwork), and it is hoped that this event will become a regular fixture.

'Mobilising Geoscience' (17 Nov 2016, Geological Society, London)

Along with other members of ESTA council I attended a discussion meeting aimed at mobilising the geoscience community in the UK, to raise the profile of Earth Science as an important discipline and part of everyday life. A number of possible initiatives were considered, among them a 'Geology Day' along similar lines to the 'Geolodia' in Spain and a nationwide drive to create Earthcaches through the numerous local and regional groups around Britain.

OCR Consultative Forum (9 Mar 2017, OCR Cambridge)

I was invited to join the OCR forum and attended this meeting. A number of issues related to the new A Level curriculum were discussed. Earth Sciences is at risk of falling between Geography and Science with the shift to Science; the worry is that each will assume the other is covering ES material. Declining Geology numbers were ascribed partly to timetable clashes. Chris King offered a curious stat that the gender ratio at A Level is 2:1 M:F, yet this is not nearly so unbalanced at HE level – why is this? (The Athena Swan scheme is focusing minds on gender equality at HE level; perhaps this will filter down to school level as promotional material, for instance, is adjusted.)

All this despite a deficit of geoscientists in the UK (Govt report) – where will they come from? Europe...?

Geological Society

The 2017 Earth Science Week (<https://www.geolsoc.org.uk/earthscienceweek>) will take place on 7–15 October, over 2 weekends. The theme this year is 'Our Restless Earth'. The GSL is encouraging anyone holding events in this week to 'badge' them as ESW events.

I attended the Geological Society's Joint Higher Education Committee meeting on 15 June (following my not entirely lucrative 'transfer' from the more concisely-named Education Committee). Pete Loader gave an update on A-Level Geology (remotely), highlighting the problems of declining student numbers, teacher retirements and schools dropping the subject. Nic Bilham suggested that the change of curriculum provided an opportunity to promote Geology as a science, and potentially to debunk the myth that a Geology degree led inexorably to a job in oil and gas... On this theme, it was reported that Peter Burgess at Liverpool had suggested a competition for students/graduates to produce 3-minute videos showcasing why they are doing/did the subject. Perhaps the problem is that Geology is developing into a 'stealth science'; since it's not taught explicitly in many schools, it is simply not on many students' radar and they don't recognise how much geoscience they have done from KS2 (KS1?) onwards.

Florence Bullough reported on the Higher Education and Research Act (Apr 2017). A brief summary:

- Results from the Teaching Excellence Framework (TEF) cannot be linked to tuition fee increases until 2020-21 academic year
- The 7 research councils will operate under a single strategic research body, UK Research and Innovation (UKRI), along with Innovate UK and the research arm of HEFCE.
- A new body, Research England, will be responsible for QR-related research funding and the REF
- A new regulator/funding council for universities, the Office for Students (OfS), will be created next year. It was noted that this body would be able to approve applications for new universities (title and degree awarding powers) – opening the door for institutions like, say, Shell UK to offer degrees in, say, 'Working for Shell UK'...
- OfS will also administer the TEF and fairness of access.
- 'Accelerated degrees': universities may now charge higher annual fees for courses condensed into shorter periods of time (e.g. 2-year degrees)
- An amendment to define the functions of a university was NOT accepted (!)

Another issue discussed was industry-HE links, in the context of degree apprenticeships and the general tension between universities, industry and government on HE curricula. While both industry and, increasingly, government would prefer universities to churn out graduates trained for specific jobs, HE is sensitive to the diversity of student backgrounds and future careers. A geoscience degree may lead on to any number of careers, including merchant banking, fish-gutting, politics...

Virtual fieldwork

A Daden Ltd-led project investigating the feasibility of a 'virtual field trip service' was awarded further funding for a Phase 2 project (development), which will run until Nov 2016. A number of trials with schools, mainly run through the FSC, have been organised, showcasing a new prototype aimed more squarely at schools than Virtual Skiddaw was, based in Shropshire

(Cardingmill Valley) – the idea is to produce virtual environments that could be used for a range of disciplines: Geography, Ecology, Environment, Archaeology, History... as well as Earth Science.

Tom Argles, H.E. Co-ordinator

ESTA Secondary Co-ordinator's report

Geology teacher training

- The fourth 'Teaching and Learning in Geoscience Education' Summer School, supported by eight £1500 industrial bursaries, was successfully run at Keele in July 2017. All places were filled – so eight science and geography teachers have been trained to teach A-level geology through the Summer School this year. Keele University has offered to host the Summer School annually for the foreseeable future, through the School of Geography, Geology and The Environment, so now further bursaries for the next three years must be sought.
- The OAKS SCITT linked with Keele University trained three geography/geology teachers with government bursaries.

Professional development in fieldwork weekend, Pembrokeshire 7–9 July, 2017

23 people took part in the course, which was offered free of charge. Accommodation was offered by the Field Studies Council centre at Orierton for a reduced price and participants paid their own travelling expenses. £500 was promised by the Geological Society £400 and £150 by the Tomlinson Trust to offset part of the leaders' expenses. The course feedback was excellent and consideration is now being given to running future courses.

A-level and GCSE Geology in England, Wales and Northern Ireland

The OCR A-level geology and WJEC Eduqas A-level and GCSE geology specifications will be taught for the first time beginning in September this year. Both awarding bodies have produced a range of supporting materials, including, in the case of the OCR specification, a new textbook.

Representation at Conferences

- At the ASE Annual Conference at Reading University (6–9 January, 2017) ESTA ran a stand and a range of workshops. Similar representation is planned for the ASE Conference in Liverpool next year.
- ESTA ran a stand and a workshop session at the Geographical Association Annual Conference at the University of Guildford (20–22 April, 2017). ESTA will be similarly represented at next year's conference in Sheffield.

ESTA Secondary Working Day – Saturday 20 May, 2017

This ran at the Sustainability Hub at Keele University, A similar day is planned for next year.

International Geoscience Education Conference, 22–27 July 2018

GeoSciEd VIII will run at Campinas, near Sao Paulo in Brazil.

Earthlearningidea

Earthlearningidea's success is continuing; we have exceeded 3 million downloads, currently averaging more than 40,000 per month.

Our International Year of Earth Science Educator Stories

67 stories have been published at: http://www.igeoscienced.org/?page_id=396 during 2016/17.

Earth Science Education Unit activities

These are continuing with the support of the Building Earth Science Education Resilience initiative, kindly hosted by Oil and Gas UK. 48 workshops ran in 2016/17 and a further 50 are planned for 2017/18.

Mobilising the geoscience community - behind an outreach/education initiative

This initiative is continuing, with plans being developed for a launch in the summer of 2018.

Chris King, ESTA Secondary Co-ordinator

ESTA Primary Co-ordinator's report

There is very little to report on behalf of the Primary Team. We have not attended any of the usual conferences (ESTA 2016, ASE or GA 2017) because the team is very small, with each member having many other commitments and priorities. The team needs more new members to help to continue developing their successful practical activities. The increased amount of Earth Science in the primary curriculum is the next challenge and the team would welcome volunteers to help push this forward, building on a very firm foundation.

Maggie Williams and David Bell both wrote articles for the Primary Matters section in the last two issues of Teaching Earth Science and Peter Kennett has also contributed to the next issue with a follow-up piece; the Primary Team is very grateful for this input and help.

The team is based at the National Stone Centre, which could be an ideal centre from which to present their Primary Workshops to groups of teachers, as INSET days, especially as it has been recently refurbished. We hope to develop this over the next year and advertise it to neighbouring education authorities.

Tracy Atkinson, ESTA Primary Co-ordinator

Teaching Earth Sciences Editor's Report

- *TES* 42.1 was produced and distributed in April. This issue was mainly concerned with items from the St Andrews Course and Conference.
- Problems with the address labels have been discussed with the Account Manager at Hobbs.
- *TES* 42.2 is in the production process and is on course for September publication.
- A new back inside cover has been designed and will be used in the forthcoming issue.
- Copyright issues are being discussed at Committee meetings.
- Thanks to all people who have written articles and proof read the drafts.
- Please keep material coming in to tes.esta@gmail.com

Hazel Clark (Editor *Teaching Earth Sciences*)

ESTA News (EN) Editor's Report

- *EN* 8.1 was the first edition of the newsletter to be sent to ESTA members electronically. My thanks go to David Bailey for ensuring that this edition was emailed to members on 30th May 2016.
- *EN* 8.2 was circulated to members in December 2016 so that members should have received this publication before the end of the Autumn term.
- The copy deadlines for *ESTA News* continue to be 15 May and 15 November.
- If you have ideas for new sections that you would like to see included in *ESTA News* or sets of photographs that could be used as illustrations in *ESTA News*, then please let me know via hiatus@liv.ac.uk
- I would also be interested in receiving information about new field guides & courses, items of news, details of workshops, meetings and geological events that could be mentioned in the newsletter.
- We do not have email addresses for all ESTA members, so some members did not receive electronic copies of *ESTA News*. I have arranged to include the newsletter on the members' section of the revised ESTA website. (Earlier issues of *ESTA News* have also been included in this section of the website).

Maggie Williams, Editor *ESTA News* and *ESTA Briefing*

ESTA Project Manager's report

During 2016/17 three PESGB-funded projects were completed. These projects were the 2016 ESTA Annual Course and Conference at the University of St Andrews, the 'Fieldwork Skills' project and the PESGB-ESTA Competition to celebrate Earth Science Week 2016. A project to celebrate Earth Science Week 2017 was also launched in March 2017.

2016 ESTA Annual Course and Conference

The Association's 49th Annual Course and Conference, was held at the University of St Andrews from 23–25 September, 2016. Aimed at those teaching Earth Sciences in the U.K. at all levels, this course and conference had the theme: 'Geological fieldwork'. The event formed part of ESTA's contribution to the national 'Year of Fieldwork', celebrating the value of out of classroom learning opportunities as tools in raising school standards and skills. The event was convened by Dr Ruth Robinson (University of St Andrews) and held in the Department of Earth and Environmental Sciences at St Andrews.

During the first day of the conference ESTA members had the opportunity to tour the new St Andrews Isotope Geochemistry (STAiG) laboratories that were opened in March 2016. During the evening, Professor Peter Cawood (Head of the Department of Earth and Environmental Sciences) officially welcomed ESTA to the University. After this welcome, the keynote presentation was given by Dr Hermione Cockburn, the Scientific Director at 'Our Dynamic Earth', which is the only science centre in the British Isles dedicated to the story of our planet. Following Hermione's talk on "Dynamic Earth, James Hutton and Scotland's inspirational landscape" there was a visit to the Museum of St Andrews (MUSA) followed by a drinks reception sponsored by the Department of Geology in the University of Leicester.

On the second day of the conference there was a range of inset events and activities. The primary workshop was held in the Museum and looked at fieldwork in outer space and the search for life in the universe. Secondary workshops, held in the School of Earth and Ocean Sciences, provided a choice of sessions that covered a range of topics including items on teaching geological fieldwork skills, mega-selfies (how to use the latest imaging techniques in teaching geology), lab- and field-based exercises to explore metamorphic geology, carbon capture and storage and acid attack (a guide through the oceans' chemistry).

Dr Tim Raubs gave his keynote lecture "Climate masterpieces of British geology" after the inset events and activities. Tim related some artistic masterpieces to the geology of the area and discussed what contributed a landscape. Tim's lecture was followed by an open forum discussion chaired by Chae Cruickshank (OCR) and Dave Evans and Pete Loader (WJEC/Eduqas) who updated members on the changes to the curriculum.

One of ESTA's "Bring and Share" sessions completed the day and, for the final two hours, delegates shared a wide range of teaching ideas. Examples of the ideas shared included:

- 'Where does offshore oil come from? An activity to dispel misconceptions about the source of oil'. (Presented by Peter Kennett)
- 'A visual aid to show how ammonites change their volume'. (Presented by Mike Tuke)
- 'Voyages in deep time'. (Earth science apps being developed by Julie Harrald, Herefordshire & Worcestershire Earth Heritage Trust)
- 'Google tectonics'. (Presented by Pete Loader)

On the last day of the conference there were fieldwork excursions to locations that reflected the variety of geology close to St Andrews. The locations visited included The Rock and Spindle and sedimentary successions along the coast south of St Andrews, the Barrovian metamorphism and Dalradian terrane near Stonehaven and Aberdeen and field geology in the footsteps of James Hutton.

The ESTA Course and Conference 2016 provided delegates with opportunities to learn from 'experts' at the University of St Andrews. The event also gave ESTA members opportunities to share teaching ideas with other geology teachers and to explore new field localities that could possibly be used to enhance their teaching. PESGB's sponsorship significantly reduced the cost of ESTA's Annual Course and Conference and made a huge difference to those

teachers able to attend this event. After the event, ESTA published an exciting range of new teaching resources, ideas and articles in a 'conference-themed' edition of ESTA's magazine: *Teaching Earth Sciences* 42.1 so that PESGB's sponsorship also produced indirect benefits to an even greater number of teachers. Students taught by ESTA members will ultimately benefit from the dissemination of these new and exciting learning and teaching ideas.

Geological fieldwork skills project

Towards the end of 2015 PESGB generously provided funding for a geological fieldwork skills project aiming to produce online materials and videos for a new section of ESTA's website. Fieldwork skills are essential skills for professional geologists working in the field, are highly prized by industry) and it is vital that students master these techniques if they are studying geology at GCSE, GCE or at undergraduate levels. The Fieldwork Skills project was completed by the end of August 2016 and launched at the ESTA Conference in September 2016. This resource was developed by a team of students and staff from the University of Liverpool. For this project, students Jack Aldritt and Jess Bayliff worked as script writers and presenters, Lis Rushworth was the team's geoscience educational advisor, Maggie Williams acted as project co-ordinator and director and Peter Williams worked as videographer and web designer.

The resource is essentially a series of 16 video clips featuring undergraduates demonstrating their fieldwork skills at different field exposures. It was filmed on Wirral, in North Wales, on Anglesey and in Ceredigion. Examples of field work skills demonstrated include locating geological features in the field using traditional navigation skills; using compass-clinometers to measure dip and strike; recording observed geological structures as field sketches; visualising the 3D structure of 'hidden' geology; constructing graphic logs for exposures of sedimentary rocks and producing rock descriptions of field exposures.

Geological fieldwork resources are included in Fieldwork Skills to help students develop skills in keeping a systematic record of activities carried out in the field. Resources include information sheets that can be printed off as field recording sheets or to be used as aide-memoires. There are also links to virtual fieldwork sites and to sites where there are self-study packages on fieldwork safety, information about field sketching and details of sampling techniques that may be used in fieldwork. This resource is available from <http://www.esta-uk.net/fieldworkskills/>

ESTA-PESGB Competitions to celebrate Earth Science Week

To celebrate **Earth Science Week 2016** (8–16 October), PESGB and ESTA ran a national competition for UK schools linked to the event's theme: "Earth science in action". This competition was open to individual students in the age categories 14–16 and 16–18. The challenge was for students to produce a 3-minute video (maximum length) to show geological fieldwork in action and demonstrate how the fieldwork has helped them to understand the geology of the place they have visited. Entries were judged on originality, impact and the level and quality of information provided.

The two competition winners (students from Sherborne School, Dorset and Whitchurch High School, Cardiff) and their teachers were invited to attend an award ceremony as part of the PESGB's GEOLiteracy Festival in Lyme Regis on Sunday 9 April so that the students would be able to receive their awards from Ken Lacovara during this prestigious event. (Prizes of GoPro cameras for the competition winner and the winner's school were kindly provided by PESGB.

To celebrate **Earth Science Week 2017**, PESGB and ESTA are running another national competition with the title "Naming the dinosaurs". This competition is open to pupils in primary and secondary schools and entry forms were made available during the first week of March 2017.

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