

## Scottish Science Education Conference 4-5<sup>th</sup> March 2011

			How useful was this session in supporting your:								How likely is it that you will use the information/resources from this session?			
			Professional Development				Personal Development							
			high			low	high			low	high			low
			1	2	3	4	1	2	3	4	1	2	3	4
1	Keynote Address: Bubbleology: - The Art, Science and Technology of Bubbles	Dr Paul Campbell	4 (7%)	23 (40%)	19 (33%)	12 (20%)	15 (25%)	30 (51%)	11 (19%)	3 (5%)	5 (9%)	20 (35%)	19 (33%)	13 (23%)
2 A	Let's Make those Biology Experiments Work!	Tricia Geraghty	18 (100%)	0	0	0	16 (89%)	2 (11%)	0	0	18 (100%)	0	0	0
2 B	The Busy Technicians' Easy Guide to using Alba	Derek Walker	3 (50%)	2 (33%)	1 (17%)	0	1 (17%)	5 (83%)	0	0	6 (100%)	0	0	0
2 C	Bringing Science Alive	Hester Binge	19 (73%)	5 (19%)	2 (8%)	0	18 (69%)	7 (27%)	1 (4%)	0	20 (77%)	4 (15%)	2 (8%)	0
2 D	Talking, Smoke and Mirrors	Brian Redman	8 (80%)	1 (10%)	1 (10%)	0	6 (60%)	3 (30%)	1 (10%)	0	10 (100%)	0	0	0

2E	Measuring Compensation Points using Immobilised Algae	Paul Beaumont	7 (100%)	0	0	0	6 (85%)	1 (15%)	0	0	6 (100%)	0	0	0
2F	Antioxidants: Tastes good, good for you?	Andy Boswell	9 (69%)	3 (23%)	1 (8%)	0	6 (50%)	4 (33%)	2 (17%)	0	8 (62%)	2 (15%)	2 (15%)	1 (8%)
2G	Ideas and Experiments for Researching Physics	Stuart Farmer & Gregor Steele	6 (60%)	4 (40%)	0	0	6 (55%)	5 (45%)	0	0	8 (89%)	1 (11%)	0	0
3A	Something for Everyone – Come along and be Inspired!	Lucienne McCallum	2 (17%)	7 (58%)	2 (17%)	1 (8%)	2 (17%)	6 (50%)	3 (25%)	1 (8%)	3 (25%)	5 (42%)	3 (25%)	1 (8%)
3B	Let's Make that Chemistry Experiment Work	Liz Palmer	9 (64%)	5 (36%)	0	0	9 (64%)	5 (36%)	0	0	12 (86%)	2 (14%)		
3C	e-Bug project	Dr Donna Lecky	14 (82%)	3 (18%)	0	0	14 (82%)	2 (12%)	1 (6%)	0	17 (100%)			
3D	Using Scientists and their Stories in Science	Rosemary Feasey	11 (92%)	0	1 (8%)	0	10 (84%)	1 (8%)	0	1 (8%)	11 (92%)	0	1 (8%)	0
3E	Washbag Chemistry – Bringing the Cosmetics Industry to Life in the Classroom	Shona Scheuerl	4 (29%)	8 (57%)	2 (14%)	0	3 (21%)	11 (79%)	0	0	4 (29%)	8 (57%)	2 (14%)	0

	Scheuerl													
3F	Frontier Science in Scotland: Why is Quantum Mechanics so Strange?	Professor Miles Padgett	4 (27%)	8 (53%)	2 (13%)	1 (7%)	12 (75%)	4 (25%)	0	0	4 (31%)	4 (31%)	5 (38%)	0
3G a	Curriculum for Excellence: Partnership Working	Peter Macklin	2 (25%)	4 (50%)	2 (25%)	0	2 (25%)	5 (62%)	1 (13%)	0	4 (50%)	3 (37%)	1 (13%)	0
4A	Beyond Basics: Building on the Introductory Physics Course	Gregor Steele	8 (66%)	4 (34%)	0	0	8 (66%)	4 (34%)	0	0	8 (66%)	4 (34%)	0	0
4B	Curriculum Development Seminar: Good Practice in Science: The national perspective.	Elizabeth Cole, HMle	9 (50%)	9 (50%)	0	0	10 (56%)	8 (44%)	0	0	8 (47%)	9 (53%)	0	0
4C	Curriculum Development Seminar: National Qualifications 4 & 5, and Advanced Higher Developments	Alison Plummer, SQA	13 (42%)	12 (39%)	5 (16%)	1 (3%)	12 (38%)	11 (34%)	8 (25%)	1 (3%)	19 (63%)	7 (23%)	2 (7%)	2 (7%)

5	Keynote Address: Everything is Everywhere...or is it? Microbial Diversity and the Global Ecosystem	Kevin Purdy	9 (24%)	10 (26%)	14 (37%)	5 (13%)	16 (41%)	14 (35%)	8 (21%)	1 (3%)	11 (29%)	5 (13%)	16 (42%)	6 (16%)
6	Bloodhound SSC Engineering Adventure – Confront and Overcome the Impossible using Science, Engineering, Technology and Mathematics	Richard Noble OBE	32 (68%)	13 (28%)	2 (4%)	0	41 (27%)	5 (11%)	1 (2%)	0	33 (70%)	13 (28%)	1 (2%)	0
7A	Teaching the Physics of Sound	Tom Clark & Neil Taylor	11 (65%)	6 (35%)			12 (71%)	4 (24%)	1 (6%)		15 (88%)	2 (12%)		
7C	Inheritance for Primary Teachers	Teresa McErlean	8 (89%)	1 (11%)			6 (67%)	2 (22%)	1 (11%)		7 (78%)	2 (22%)		
7D	Practical Work for new Higher Biology	Fiona Stewart	16 (80%)	4 (20%)			16 (80%)	4 (20%)			17 (85%)	2 (10%)	1 (5%)	
7E	Royal Society of Chemistry Classic Chemistry and New Tricks	Phil Taylor	13 (72%)	5 (28%)			11 (61%)	6 (34%)	1 (5%)		15 (88%)	2 (12%)		
7F	Bloodhound SSC: A Vehicle	Ian Galloway	8 (57%)	6 (43%)			9 (56%)	7 (44%)			10 (71%)	4 (29%)		

	for STEM												
8 A	It's Not Fair: Beyond the Fair Test	Brenda Keogh and Stuart Naylor	11 (85%)	2 (15%)			11 (78%)	2 (14%)	1 (8%)		10 (77%)	3 (23%)	
8 B	BodyWorks : A Springboard To Active Cross Curricular LEarn Rooming	Lynn McMahon	7 (78%)	2 (22%)			7 (78%)	1 (11%)	1 (11%)		7 (78%)	2 (22%)	
8 C	Ultraviolet – Dangers and Discussions	Kate Andrews	4 (44%)	4 (44%)	1 (12%)		5 (55%)	2 (21%)	1 (12%)	1 (12%)	5 (56%)	4 (44%)	
8 D	The Optoelectronic s College: Colour Vision and Displays	Bob Kibble	14 (82%)	3 (18%)			14 (82%)	3 (18%)			15 (88%)	2 (12%)	
8F	Using Royal Society of Chemistry Web Resources	Dr Lorna Thomson	6 (60%)	4 (40%)			6 (60%)	4 (40%)			8 (80%)	2 (20%)	
8 G	New Practical Work for the New Advanced Higher Physics	Gregor Steele	7 (88%)	1 (12%)			7 (88%)	1 (12%)			7 (88%)	1 (12%)	
9 A	Science and the WOW Factor: Making Science Extraordinary	Rosemary Feasey	12 (80%)	2 (13%)	1 (7%)		11 (73%)	4 (26%)			13 (87%)	2 (14%)	

9 B	Engineering: Science and Technology in Action	Ernie Spencer	4 (80%)	1 (20%)			3 (60%)	2 (40%)			5 (100%)		
9 C	A Gift to the School: What shall we do with the Garden?	Paul Beaumont	3 (43%)	3 (43%)	1 (14%)		2 (28%)	4 (57%)	1 (15%)		3 (43%)	4 (57%)	
9 D	Gene Jury: Engaging in Modern Genetics	Fiona Stewart	5 (83%)		1 (17%)		5 (83%)		1 (17%)		4 (67%)	1 (17%)	1 (16%)
9E	Frontier Science in Scotland: Drug Discovery in a University Setting - Fighting Neglected Tropical Parasitic and other Orphan Diseases	Professor Alan Fairlamb CBE	missin g										
9F	Real Graphs with Real Data	Stuart Farmer	14 (88%)	2 (12%)			12 (80%)	3 (20%)			14 (93%)		1 (7%)

1	Keynote Address: Bubbleology: - The Art, Science and Technology of Bubbles	Dr Paul Campbell	<ul style="list-style-type: none"> <li>• Very interesting talk but difficult to see the value in covering in conventional lesson.</li> <li>• Science research very interesting.</li> <li>• Very interesting but does not relate to my job/profession.</li> <li>• Fascinating listen to science connected with cure of cancer cells.</li> <li>• Inspirational stuff to me as a physicist.</li> <li>• Interesting and motivating for secondary schools.</li> <li>• Interesting but not of use in primary class x2</li> <li>• Brilliant presentation. First Class!</li> </ul>										
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			<ul style="list-style-type: none"> <li>• Excellent example of science in action.</li> <li>• Fascinating. Reaffirms the creativity and awe in science.</li> <li>• Often hard to hear and read x 2</li> <li>• Very well presented – a great science communicator.</li> <li>• An inspirational example of the value of interdisciplinary learning in schools.</li> <li>• Hard science made to sound simple.</li> <li>• Needed a presenter’s remote laser pointer.</li> <li>• Great to see the current research across the sciences.</li> <li>• Fascinating and interesting but not of practical use to me in my post.</li> </ul>
2A	Let’s Make those Biology Experiments Work!	Tricia Geraghty	<ul style="list-style-type: none"> <li>• Very informative and well organized x 5.</li> <li>• Loved it. Most impressive</li> <li>• All experiments interesting and useful x 5</li> <li>• Good to put a face to a name. Expect a call</li> <li>• Brilliant session. Hands-on, helpful staff. Good ideas/equipment /websites to use.</li> </ul>
2B	The Busy Technicians’ Easy Guide to using Alba	Derek Walker	<ul style="list-style-type: none"> <li>• Enjoyed using the biology equipment.</li> </ul>
2C	Bringing Science Alive	Hester Binge	<ul style="list-style-type: none"> <li>• Super ideas x 13. Plenty of hands on x 3</li> <li>• Good but wanted technology. Much enjoyed the session.</li> <li>• Fantastic presentation. Lots of ideas for school x 9. Inspired. Must persuade headteacher to buy Discovery Dog.</li> <li>• Brilliant. Helped to bring science to life.</li> <li>• Great for linking ideas to real life. Easy to implement.</li> <li>• Very helpful and useful ideas for planning.</li> <li>• Excellent presenter. Planning ideas great. Entertaining.</li> </ul>
2D	Talking, Smoke and Mirrors	Brian Redman	<ul style="list-style-type: none"> <li>• Really useful. I am using ideas and had some advice.</li> <li>• Thanks for all the great ideas x 4</li> <li>• Brilliant as always.</li> <li>• Excellent and full range of activities/demos. Well explained. Very helpful.</li> <li>• Looking for and found some good, novel approaches.</li> </ul>
2E	Measuring Compensation Points using Immobilised Algae	Paul Beaumont	<ul style="list-style-type: none"> <li>• Very good. Can definitely apply and use in classroom.</li> <li>• Excellent. Fabulous combination of practical and resources ideas. I’ll be trying with Higher.</li> <li>• Liked the use of beads. Well worth signing for this session</li> </ul>

2F	Antioxidants: Tastes good, good for you?	Andy Boswell	<ul style="list-style-type: none"> <li>• Very enjoyable x 2. Good clear practical that pupils will enjoy and relate to every day experiences x 2.</li> <li>• Good to try practical experiments. Super job Andy.</li> <li>• Useful opportunity to try this – would never have had the time in school.</li> <li>• Excellent. A huge number of applications with S1 – S6</li> </ul>
2G	Ideas and Experiments for Researching Physics	Stuart Farmer & Gregor Steele	<ul style="list-style-type: none"> <li>• Showed how to use equipment in the new higher x 2.</li> <li>• Great to think about the new Higher – won't be so daunting. Good Session x 3. Some time-saving tips.</li> <li>• Lots of potential in some of the examples.</li> <li>• Audacity with stereo microphones for measuring speed of sound very interesting. Thought provoking.</li> <li>• Can't wait to deliver investigations which won't patronize the kids or insult their intelligence.</li> <li>• Could have done with longer x 2.</li> <li>• Enhances the learning and teaching of physics – brilliant.</li> </ul>
3A	Something for Everyone – Come along and be Inspired!	Lucienne McCallum	<ul style="list-style-type: none"> <li>• Could use some of the science toys in outreach work.</li> <li>• This session was fun – good insight into some interesting things x 2. Excellent presentation x 2. I really enjoyed this.</li> <li>• Very informative. Great to see science gadgets and how they work. Lucienne made spending money really fun.</li> <li>• Loads of lovely toys! Will def. use some of these in courses.</li> <li>• Session fine but didn't see anything new.</li> </ul>
3B	Let's Make that Chemistry Experiment Work	Liz Palmer	<ul style="list-style-type: none"> <li>• Very interesting and informative x 2.</li> <li>• Excellent presentation, informal and knowledgeable.</li> <li>• Very useful.</li> </ul>
3C	e-Bug project	Dr Donna Lecky	<ul style="list-style-type: none"> <li>• Super job – bubbly and friendly. Interactive &amp; interesting x 3. Great ideas for practical activities x 4.</li> <li>• I will use the ideas straight away x 4. A brilliant job you and HPA are doing. I'll be in touch about resources.</li> <li>• I look forward to checking out the website.</li> <li>• School has been looking for appropriate microbiology unit.</li> <li>• Fantastic presentation/practical.</li> </ul>

3D	Using Scientists and their Stories in Science	Rosemary Feasey	<ul style="list-style-type: none"> <li>• Great workshop. Full of ideas to use in school x 6.</li> <li>• Wish session had been longer. Fantastic.</li> <li>• Very inspiring and engaging session.</li> <li>• Excellent reminder of scientists we can investigate in school.</li> </ul>
3E	Washbag Chemistry – Bringing the Cosmetics Industry to Life in the Classroom Shona Scheuerl	Shona Scheuerl	<ul style="list-style-type: none"> <li>• Very good practical session x 2. Very relevant.</li> <li>• I might use these selectively. Pupils will want to take things home and this isn't advised.</li> <li>• Messy always fun! Resources excellent. Easy experiments</li> <li>• Useful to have opportunity to speak to package writer.</li> <li>• Enjoyed sessions. Appreciate practical application of materials.</li> </ul>
3F	Frontier Science in Scotland: Why is Quantum Mechanics so Strange?	Professor Miles Padgett	<ul style="list-style-type: none"> <li>• Entertaining and interesting x 5. Not much use in school at the moment. Well paced and useful for the future x 2.</li> <li>• Need time to digest x 3. Great to hear from someone in Physics research. Useful ideas to share with AH pupils x 2.</li> <li>• More questions than answers.</li> <li>• A good mental work out for after lunch.</li> <li>• Move aside John Bell.</li> </ul>
3Ga	Curriculum for Excellence: Partnership Working	Peter Macklin	<ul style="list-style-type: none"> <li>• Will def. consider using STEM ambassadors in school x 2.</li> <li>• Excellent x 2. Very useful. Informative and interesting x 2.</li> <li>• Many ideas highlighted along with sources of funding.</li> <li>• Very worthwhile.</li> </ul>
4A	Beyond Basics: Building on the Introductory Physics Course	Gregor Steele	<ul style="list-style-type: none"> <li>• Very informative session.</li> <li>• A more advanced Physics course would be very useful x 4</li> <li>• Really informative; not so afraid.</li> <li>• Liked this brief overview more than the book course.</li> <li>• Setting up experiments and using new equipment was excellent.</li> </ul>
4B	Curriculum Development Seminar: Good Practice	Elizabeth Cole, HMIE	<ul style="list-style-type: none"> <li>• Good to hear of some good practice and highlight some areas of development x 2. Good to get straight from "horse's mouth". Enjoyed question &amp; answer session but presentation rather got in way. Very helpful x 2. Great ideas x 2.</li> <li>• Interesting to see what teachers want to fit the resource packs to their needs. X 5.</li> </ul>

	in Science: The national perspective.		<ul style="list-style-type: none"> <li>• More opportunities to discuss issues with other delegates</li> </ul>
4C	Curriculum Development Seminar: National Qualifications 4 & 5, and Advanced Higher Development s	Alison Plummer, SQA	<ul style="list-style-type: none"> <li>• Thought provoking. Answered honestly x 3</li> <li>• Worried about intro of external practical assessment at Nat.5. Materials given out informative and useful.</li> <li>• Excellent. Lots of info. Too much info not enough time x2</li> <li>• Thanks for the clarity. Still need to know more x3.</li> <li>• Thanks for the info update, really helpful x 3. Worthwhile.</li> <li>• A great deal to cover but useful. Still confused.</li> <li>• So many issues regarded as matters for centres not SQA/government. Shame it was presented on defensive.</li> <li>• Major issues with fallback plan for level 5 failures.</li> </ul>
5	Keynote Address: Everything is Everywhere... or is it? Microbial Diversity and the Global Ecosystem	Kevin Purdy	<ul style="list-style-type: none"> <li>• Really good x 2. Excellent informative talk on microbes x3. Useful background info x 2. Needs adapting for primary.</li> <li>• Perhaps a more active session at the end of a long day would have been better x 2. Broadened my understanding of science.</li> <li>• Very interesting talk x 9. Enthusiastic speaker.</li> <li>• Presentation very good x 2. P/point had too many colour variations. More emphasis on wider implications of microbes. Inspiring stuff.</li> <li>• Importance of microbes can be used to improve students understanding x 3.</li> <li>• Fantastic speaker, easy to understand x 2. Highlight of my day.</li> <li>• Too specialized for keynote address. Slides too detailed.</li> </ul>
6	Bloodhound SSC Engineering Adventure – Confront and Overcome the Impossible using Science, Engineering, Technology and Mathematics	Richard Noble OBE	<ul style="list-style-type: none"> <li>• Extremely Inspiring x 18.</li> <li>• Come and speak to our pupils. Brilliant x 5.</li> <li>• An ideal example of how a keynote speech should be delivered.</li> <li>• Fantastic opportunity to create real interest in engineering/science.</li> <li>• Awesome.</li> <li>• Took me back to my childhood – moon-shots, Concorde etc.</li> <li>• An unexpected delight. Super presenter.</li> <li>• Full of potential to hook youngsters on STEM.</li> <li>• I will certainly get my school involved.</li> <li>• Great presentation. Very informative.</li> <li>• Will definitely promote this to schools.</li> <li>• Excellent! Fabulous! I just wanted to get involved.</li> </ul>

			<ul style="list-style-type: none"> <li>An excellent lecture. Enthusiasm reigns.</li> </ul>
7A	Teaching the Physics of Sound	Tom Clark & Neil Taylor	<ul style="list-style-type: none"> <li>Great ideas. x2</li> <li>I enjoyed seeing the variety of sound making devices and will use a number of these with my class in the near future.</li> <li>Excellent demonstrations and very interactive!</li> <li>Great ideas – will definitely use some when I get back to the classroom!</li> <li>This workshop made me speak to colleagues about sound I have taken some ideas and it was good ideas.</li> <li>Great ideas, entertaining, getting the CD is very much appreciated.</li> <li>Super ☺ really informative and interactive hands on- and opportunities to explore. Thanks for the CD ☺</li> <li>Fun, informative and a CD to take away. What more could a primary teacher ask for!</li> <li>Good ideas, very helpful.</li> <li>Full of great ideas that I will use straight away in the classroom: many of which are new to me, even as a physics teacher. Good job!</li> <li>Excellent, informative and fun. Thanks very much.</li> <li>Excellent presentation with lots of ideas to use in classroom immediately as well as considerable personal/professional development.</li> </ul>
7C	Inheritance for Primary Teachers	Teresa McErlean	<ul style="list-style-type: none"> <li>Good ideas to introduce genetics &amp; vocabulary into class x2</li> <li>Really useful-demystified inheritance outcome</li> <li>Very interesting and I will certainly use these and pass on to teachers the intro. and links</li> <li>Excellent resources, which I will use in my school. Great activities-I will pass on to my colleagues in junior school. I will love my reebop!</li> <li>I'm looking forward to checking website for the PPT and resources. I'm sure these will be helpful in supporting my colleagues. Liked the practical approach- again pupils and staff will enjoy!</li> <li>Really enjoyed this session. Lots of good child friendly ideas to teach children this difficult concept.</li> </ul>
7D	Practical Work for new Higher	Fiona Stewart	<ul style="list-style-type: none"> <li>Good background info. (re future workshops) on school activities-I work at a science centre.</li> <li>Very informative/ useful/informative/ relevant x4</li> </ul>

	Biology		<ul style="list-style-type: none"> <li>• Excellent, thoroughly enjoyed the practicals and explanations, thanks.</li> <li>• Will make use of the brine Shrimp kit in school.</li> <li>• Excellent. X3</li> <li>• Resources will be used soon.</li> <li>• Well presented x2, clear use of ppt. Well set up and organized practical activity.</li> <li>• Lots of useful tips to make things work. A lot to fit into the time-it would be good to have a bit more time for discussion and questions.</li> </ul>
7E	Royal Society of Chemistry Classic Chemistry and New Tricks	Phil Taylor	<ul style="list-style-type: none"> <li>• Very enjoyable. X3 I was familiar with some, some were new.</li> <li>• Good opportunity to try out experiments that I haven't had a chance to practice. X3 (and motivate pupils) Excellent, very entertaining and experiments easy to replicate-fantastic resources.</li> <li>• Good fun activities, especially for a physicist.</li> <li>• As a physicist it is always useful to get tips and help on the attention catchers.</li> <li>• Great expts. X5</li> <li>• Been out of the classroom for a while so it as great to have some 'hand-on' experience again!</li> <li>• Thanks for the resources. X3</li> </ul>
7F	Bloodhound SSC: A Vehicle for STEM	Ian Galloway	<ul style="list-style-type: none"> <li>• Clear well paced, enthusiastically presented.</li> <li>• Good, but will have to do outside! We can't switch off our smoke detectors!</li> <li>• Good session x2-enjoyed the demos. Speed of sound from headphones was good but the rocket was brilliant!</li> <li>• Very interesting. Now to go try measuring sound with y classes.</li> <li>• Excellent ideas, will certainly try to start a STEM club and build our own rockets!</li> <li>• Excellent session. X4</li> <li>• Good use of IT.</li> <li>• Speed of sound expt.-real potential for pupils to try out at home with own laptops.</li> <li>• Great ideas for classroom activities☺</li> <li>• More on force meter and measurements with engine how set up?</li> <li>• Very interesting and exciting, thanks.</li> </ul>
8A	It's Not Fair: Beyond the Fair Test	Brenda Keogh and Stuart Naylor	<ul style="list-style-type: none"> <li>• Good revisiting concept questions for me! Thanks.</li> <li>• Lots of interesting ideas that are easy to introduce in the classroom.</li> <li>• Like all the practical ideas! Your book sounds very useful too.</li> <li>• Really so refreshing, great ideas- thank you.</li> <li>• Really enjoyed this session-lots of great ideas that I'm looking forward to sharing with colleagues..</li> <li>• Thank you very much, really helpful and interesting for our practice in the centre.</li> </ul>

			<ul style="list-style-type: none"> <li>• Really interesting ideas for how to realize that science is everywhere and it doesn't have to involve expts. Useful tips on how to get children thinking and interested.</li> <li>• Excellent.</li> <li>• I'm hoping to start teacher training and found this really interesting. Thank you for letting me join in!</li> <li>• Very good ideas-made me appreciate range of expts. In class.</li> <li>• Interesting and informative-inspired confidence that I'm doing the right thing.</li> </ul>
8B	BodyWorks : A Springboard To Active Cross Curricular LEarn Rooming	Lynn McMahon	<ul style="list-style-type: none"> <li>• Thanks, very good to see first-hand good ideas.</li> <li>• Very good presentation, ideas to take back to class-felt there was some cross-over with other workshops on Sat e-bug and SSERC sunscreen.</li> <li>• Very informative workshop with lots of ideas to use in the classroom immediately. Great mix of active learning, science and ICT.</li> <li>• Very good, I particularly liked the mind ball.</li> <li>• Will be using the web resources, thank you!</li> </ul>
8C	Ultraviolet – Dangers and Discussions	Kate Andrews	<ul style="list-style-type: none"> <li>• Good ideas, thank you☺</li> <li>• Not necessarily the exact same thing, but we are keen to promote more discussions in our workshops.</li> <li>• Excellent workshop, effective practicals and activity. UV pack appears extremely useful for this topic.</li> <li>• Very interesting and useful session. Links to health and Well being really helpful. Planning to use with S2 already!</li> <li>• Very nice activity, well presented. Useful link to H&amp;W outcomes.</li> </ul>
8D	The Optoelectronics College: Colour Vision and Displays	Bob Kibble	<ul style="list-style-type: none"> <li>• Very informative and fun x3</li> <li>• White light and colour mixing very relevant to my Y7-Yr8 teaching. I was lost at polarization???</li> <li>• Great kit.</li> <li>• Excellent ideas for S1/S2 and some fantastic expts.</li> <li>• Excellent concept, high quality kit, very clear and helpful pedagogy.</li> <li>• Excellent equipment, good use for the future.</li> <li>• Excellent workshop material and lecture brilliant. White light explained, thanks.</li> <li>• Excellent x2 best of the day, well done!</li> <li>• Great ideas, especially pleased with the quality of the ppts for concept cartoons and the research metacognition lesson.</li> <li>• Just what I needed!</li> <li>• Excellent workshop. Really good ideas and supported by excellent equipment.</li> </ul>

			<ul style="list-style-type: none"> <li>Brilliant, really good ideas and the materials are fantastic. Well worth coming for.</li> </ul>
8F	Using Royal Society of Chemistry Web Resources	Dr Lorna Thomson	<ul style="list-style-type: none"> <li>Really looking forward to using the labskills USB stick.</li> <li>A useful resource-looking to becoming even better.</li> <li>Brilliant resource-will be used!</li> <li>Very helpful.</li> </ul>
8G	New Practical Work for the New Advanced Higher Physics	Gregor Steele	<ul style="list-style-type: none"> <li>Thanks for the new ideas.</li> <li>Good ideas, thanks for taking the time to explain the expts.- I feel more confident about using the kits now.</li> <li>Excellent workshop with lots of good ideas I will certainly make use of.</li> <li>Good ideas.</li> <li>Always something new and useful.</li> </ul>
9A	Science and the WOW Factor: Making Science Extraordinary	Rosemary Feasey	<ul style="list-style-type: none"> <li>Some good ideas for lesson starters/early years science.</li> <li>Very good/great session with easy to use ideas x4</li> <li>One of the best science sessions I've attended!</li> <li>A great way to approach science teaching and engage pupils.</li> <li>Very good, loved the skeleton activity using bones-interactive- super session, Time flew by😊</li> <li>Brilliant, definitely not a graveyard session! Lots of ideas to take back to the science centre and also to share with colleagues and teachers, thanks😊</li> <li>Great hands-on session. Good ideas to take back and use, thank you. X2</li> <li>Definitely has the WOW factor!! X2</li> <li>Fantastic, brilliant ideas which will be used often!x2</li> </ul>
9B	Engineering: Science and Technology in Action	Ernie Spencer	<ul style="list-style-type: none"> <li>Shame there wasn't more people there –there were some good ideas that I can use at home.</li> <li>Have started using tracker for motion analysis, will now develop engineering type applications for this (emphasize engineering links).</li> <li>More great ideas, thanks!!</li> <li>Excellent ideas to use in class.</li> </ul>
9C	A Gift to the School: What shall we do with the Garden?	Paul Beaumont	<ul style="list-style-type: none"> <li>Looking forward to going away and looking at this resource in more detail and sharing with the school.</li> <li>I believe I could use this resource for STEM P6/7 and transition programmes linked to a biodiversity project.</li> <li>I had misunderstood and though this session involved ideas and advice about what we could do with the school's garden. I will, probably use the SAPS booklets but maybe not the CD rom.</li> </ul>

9D	Gene Jury: Engaging in Modern Genetics	Fiona Stewart	<ul style="list-style-type: none"> <li>• Excellent resource-a vast improvement on currently available material on genetics.</li> <li>• Good fun and informative☺</li> <li>• Very well put over and practical.</li> <li>• Another useful session! Several activities which will be great in class.</li> <li>• Excellent!</li> </ul>
9E	Frontier Science in Scotland: Drug Discovery in a University Setting - Fighting Neglected Tropical Parasitic and other Orphan Diseases	Professor Alan Fairlamb CBE	Evaluations are missing, sorry.
9F	Real Graphs with Real Data	Stuart Farmer	<ul style="list-style-type: none"> <li>• Very good/ Excellent</li> <li>• Not sure right now when I would use this but found it very interesting and definitely something to keep in mind for the future!</li> <li>• Excellent, simple but effective ideas and spot-on the needs of teachers and pupils. X2</li> <li>• A great idea that will certainly help with uncertainties, Thanks!</li> <li>• Very simple ideas, well explained!</li> <li>• Very interesting yet simple ideas.</li> <li>• Excellent, very helpful!</li> <li>• Useful ideas and resources.</li> <li>• Very good session. I can see this as being very useful for many levels of class. X2</li> <li>• Simple yet elegant, really chuffed I came.</li> <li>• Great idea. I will adapt it to put into practice.</li> <li>• Fantastic illustration of introducing graphs to pups. I will definitely be using this with all my classes.</li> <li>• I came to this session because I was a bit rusty on graphs and the terminology used-it was excellent.</li> </ul>

### 36 Evaluation forms returned

#### 1. What was your principal expectation in attending the Scottish Science Education Conference?

Obtain new ideas for teaching and learning	Update/acquire specific subject knowledge	Update on national initiatives	Network with other colleagues
27 (75%)*	10 (28%)	6 (17%)*	9 (25%)
Other-please specify: <ul style="list-style-type: none"> <li>• All of the above really, but there's nothing like coming away with an idea you really like and can implement quickly and cheaply</li> <li>• Educate, inform and inspire teachers about chemistry and biology in drug discovery</li> <li>• Attending as presenter and exhibitor</li> <li>• *Both equally of the two marked X above</li> <li>• Also to present a new workshop on light</li> <li>• I was only allowed to attend on the basis of free equipment covering my cost</li> <li>• All of the above (and all about equally)</li> <li>• To assist Bob Kibble and Stuart Farmer in providing workshops on Colour Vision and Displays.</li> <li>• To Promote company, events, partners, and resources to teachers</li> </ul>			

#### 2. Was the balance of activities about right?

	too much	about right	too little
Lectures	1 (3%)	30 (97%)	

Lab/Workshops	1 (3%)	30 (91%) **	2 (6%) *****
Discussion	*	28 (85%) ***	5 (15%)
Social activities	3 (11%)	23 (85%) ****	1 (4%)

\*SQA-questions no answers

\*\* Especially the Saturday physics options

\*\*\*Lab workshops

\*\*\*\*spot on

\*\*\*\*\*not enough chem.

Further comments:

- Yes, very useful, Only attended Friday
- As I had chosen more workshops, I did feel that I was always rushing to get somewhere and then hurrying back for the bus again
- Good Venue for the conference, great to have mind stretched by the keynote speeches
- The Ceilidh is probably not necessary
- Felt that it was well balanced. Sometimes difficult to decide which activity to attend
- Excellent variety throughout and very interesting lecturers
- More specified time (not just for refreshment area) or emphasis to be placed on visiting stands in the exhibition area
- I was unable to attend the whole event so I cannot really be certain in my view that there was too little time for discussion
- A disappointingly low turn out for my lecture in the final session on Saturday, but good discussion generated from those who did attend made it worthwhile
- Possibly too much time for breaks and exhibition, although this is obviously required when many delegates need to visit the exhibition area. Possibly could have slightly shorter breaks and an extra session in the day
- By social, I'm interpreting this as time for lunch, refreshments. Lectures seemed to be secondary focussed, so I didn't attend
- Excellent workshops, but a lot to fit into the time
- Saturday programme better balanced than Fridays – too much in the way of 'lectures' on Friday

### 3. How would you rate the organisation/communication leading up to this event?

Very good	Good	Average	Poor
29(81%)*	5.5(15%)	1.5 (4%)	

\*Excellent

\*Perfect- my application was dealt with at such short notice I couldn't fail to be impressed

\*Yes-organisation overall was excellent, well done.

#### 4. Please comment on the standard of accommodation / facilities at Crieff Hydro

Venue	Very good	Good	Average	Poor
Bedrooms	18 (82%) ****	2 (9%)	1 (5%)	1 (5%) +
Conference rooms	17 (50%) *****	11 (32%)	5 (15%)	1(3%) ***
Food	8 (24%)	18 (53%)*	6 (18%)	2 (6%) **

\*Conference dinner. Too little veggie options on Saturday

\*\*Lunches VERY poor. I was hoping for something more substantial/ healthy

\*\*\*Black curtains made room rather dull

\*\*\*\*Rooms on paper were excellent

\*\*\*\*\*Spot on for purpose

+ Rooms were actuality roasting

#### Additional comments about the accommodation?

- I do not get to go to hotels very often so this was a great treat.
- Buffet lunch was nice, but a little more variety wouldn't have gone amiss. Also, was difficult to get water when not in the conference rooms
- Workshop rooms too far from commercial stand / coffee area. Time wasted going back and forward for coffee etc.
- Lunches a tad below par. Some rooms not really suitable for practical work e.g. Ferntower upper
- Some rooms had free jelly beans, water and nice toiletries, others did not. Yet we all paid the same.
- The finger buffet on Saturday was full of fatty pastry. Not a single green shoot, tomato, salad etc.
- Breakfast and dinner fine, lunch with soup and sandwiches satisfactory but seating a bit limited. Saturday lunch very disappointing. While I can enjoy the items on the lunch menu not like this as a whole meal. It suffered from large scale cooking and at times was soggy, greasy and lacked flavour.
- Again, my stay was brief and so I am not in a good position to comment. I thought the use of the Sports Hall as the exhibition area was excellent. I was a little disappointed by the lunch compared to the last SSE Conference held at the hotel. If I had had a full breakfast at the hotel, the finger buffet would have been

adequate, but I was there effectively as a day delegate who had had to set off early in the day with little breakfast. So the lunch was rather less than I had hoped for. Some salad-y stuff/crudités to go with the savoury items would have been a welcome addition.

- I was very impressed by the changes in the hotel which now looks bright and inviting. All the staff with whom I came into contact were very helpful – and smiling, a big improvement over three years ago!
- Would have liked a choice of water or juice alongside the tea and coffee
- Did not like standing or having to sit outside for lunch
- Did not stay overnight.
- Had to have the ensuite bathroom re-cleaned as the tiles in the shower hadn't been cleaned properly. The dinner was disappointing. For the first two courses there were big differences in the quantity of food on each plate – some of the lamb had been cut very thinly, on other plates very thickly. My meat was dry around the edges – I assume it had been under the heat lamps for too long. The dessert was gritty.
- Very helpful staff at the hotel
- Not about accommodation but about food: I put on my form that I was wheat – free/ Gluten intolerant, but there was no option available for lunch that I could eat. I asked the chef, but he shrugged his shoulders. A member of staff in the conference room had to ask the chef to make up a chicken salad for me. Wheat – free biscuits were not available at coffee times, so I was rather hungry.
- All good, but slightly let down from the usual Crieff Hydro standard, with lack of coffee on the Saturday morning, and no water available in the exhibition area for breaks and lunch. Also quite cold in the exhibition hall
- I did not stay at Crieff Hydro as my employers found it too expensive. B&B less than 10 mins walk away was £30 per person per night and was lovely

**5. How would you rate the overall experience of the Scottish Science Education Conference?**

Very useful	Useful	Of some use	Of no use
26 (72%)*	8 (22%)	2 (6%)	

\*Excellent

\*Definitely! I have lost of super ideas to use with my colleagues at school – every workshop was excellent. Seeing exhibitors were useful too

**6. Have you any suggestions about how we might run better conferences in the future?**

- They are getting rather expensive and there is no longer a discount for ASE members. I think that will become more of a problem in the current economic climate
- I preferred big name speakers like in the past
- Keep up the good work - and keep the conference as a two day event with the current mix of activities and the current standard of accommodation
- Not really. Experience has led to a good format for both the conference and the exhibition
- It was very well organised. I will consider going again
- The ASE/SSERC link didn't seem to work very well. In the past the organisation has been flawless. This year, for the first time, there were some problems that we experienced. Accommodation for Brenda and myself had been organised in two separate rooms. Numbers for our session weren't accurate, so we cancelled one of our sessions – unnecessarily, as it turned out

- Certainly need more chemistry input and if possible it would be good if the day events were less expensive to encourage a wider turn out. The keynote lecturers could have been more general for a mixed science (and primary) audience OR made clear that they were aimed at each of the specialist areas
- The hydro is a very plush and sophisticated location, but it comes at a high price that is making the cost of the conference prohibitive. I know of a few people who would have attended, but were out off by the cost. Some of them are young teachers with modest incomes and high overheads due to being at the bottom of the scale. I think it's time to investigate cheaper models of delivery. For example a Saturday/ Sunday conference or a Saturday with a later finish to avoid supply costs associated with a Friday. Cheaper hotel with alternative catering opportunities to keep accommodation costs down, perhaps basing the conference in a school with an adjacent cheaper hotel e.g. Premier Inn type.
- My school could only afford to send me to the Saturday, and my colleague on the Friday (her non teaching day) as there would be no costs for cover. A Saturday/ Sunday conference might be a good idea, even though it would take my whole weekend. There were good numbers in all the sessions I attended on the Saturday.
- 1) Less time between workshops – either finish earlier or add another workshop. 2) Better food
- I really enjoyed the conference, its content and range of activities, and will certainly be planning to attend next year!
- It would be useful to have a plan of the hotel, especially such a large one, to help in finding one's way round. Where possible the booking confirmation with details of sessions booked could include locations, though I realise this can change at short notice
- Keep the partnership between ASE and SSERC. It really has made a difference
- They are getting rather expensive and there is no longer a discount for ASE members. I think that will become more of a problem in the current economic climate.

## 7. How did you find out about this course?

ASE Scotland Website **x11**      SSERC website **x8**      LTScotland cpdfind website **x1**

School Mailing **x2**      Local Authority Adviser

Other (please advise)

- Direct ASE mailing **x2**
- Scottish ASE communication
- Colleague's recommendations
- ASE members email
- Invited but through ASE website **x1**
- Invitation to present **x3**
- I am an ASE member and now on the ASE Scotland committee
- Internet search on science education ( NB I hope now that I've attended this that you will keep me up to date with other events, by mail please!)
- SPUTNIK
- Attended past years event and through company

## 8. External Evaluation

Occasionally SSERC engage external evaluation teams to review their workshop and conference provision. As part of the review process, external evaluation teams will, on occasions, wish to contact participants to discuss your experiences. If you are willing for us to pass on your e-mail contact details to external evaluators please tick the box below and sign the declaration. We will not pass on your e-mail address to any third parties other than the external evaluation team.

I give permission for my e-mail address to be passed to a member of an external evaluation team. **x 18**

### Comments on Keynotes

**Friday 4<sup>th</sup> March 2011**

Bubbleology: Dr Paul Campbell

- Fascinating and enjoyable. I filled in a comment sheet at the time
- Very interesting and although quite technical at times it was explained well
- Enjoyed it, very interesting but felt it went a bit over my head at times
- Paul Campbell was really good, and gave a very interesting talk. It was great to find out about current research in this field
- Fascinating presentation pitched at a very accessible level. Although I find physics scary, I found this not just interesting, but I understood the principles being presented. This was definitely down to the speaker engaging with his audience.
- This was a new topic to me but as I am very interested in Biological Sciences I found it extremely interesting
- The use of microbubbles as a non-invasive surgical tool was fascinating, but still rather academic. How one uses a Laguerre-Gaussian beam that non-invasively penetrates the human body to behave as an optical tweezer, was left obscure
- Great to see a new use for ultra sonic Fairly stretched the mind. Have told my S6 about it as well
- An enjoyable way to start the conference. Very interesting
- Enjoyed it, very interesting but felt it went a bit over my head at times
- Fascinating and enjoyable. I filled in a comment sheet at the time.
- Fascinating, and well presented
- Fascinating subject but presenter could have been a bit more animated
- Very interesting and well explained to the non physicists
- Very interesting **x2**
- Very interesting material, good to find out about cutting edge science, slightly disappointed by the presentation – not as exciting as it could have been and quality of the powerpoint was not as good as it could have been. I had to work at concentration – what kept me going was the clever approach of the research and not really the presenter
- Very interesting but not overly useful to take back to school
- OK, but rather death by powerpoint. Not a very engaging speaker
- Very interesting
- Very interesting although not relevant to my work
- Excellent
- I enjoyed the overall message of this talk. The problem, solution and the examples were all very interesting. It did tend to become a little

specialised at some points and the lighting was not good for seeing the slides well.

- This was a new topic to me but as I am very interested in Biological Sciences I found it extremely interesting
- May have been ground breaking stuff but visual aids VERY poor, delivery far from dynamic – a talk better aimed at work colleagues than an audience of teachers. Disappointing

#### **Friday 4<sup>th</sup> March 2011**

Curriculum Development Seminar- Primary: Elizabeth Cole

- Interesting , helpful and Elizabeth was very good
- Presenter very approachable but discussion slow. People perhaps unwilling to be too controversial in front of HMle.
- More information on the details or means of developing good practice would have been useful
- Didn't say very much. Examples of 'good practice' quoted with insufficient detail to be of much use. Disappointing

#### **Friday 4<sup>th</sup> March 2011**

Curriculum Development Seminar- National 4&5/Advanced Higher: Alison Plummer

- Advanced Higher was not discussed. Everything about National 4&5 seemed to be either a government decision or a matter for individual schools – it doesn't come across well. Good to have the update but SQA seem to have lost sight of the reality of the situation in schools
- Very informative and well handled presentation on a subject people have very strong views on
- Interesting and explained some of the changes coming into place
- It was useful to learn a bit more about timescales and the two differing updates going on at present for science courses
- Waste of time, they are ham – strung from above and simply could not answer the questions important to the group
- Good Presentation – though still did not get all the answers
- Nat 4 and Nat 5 was disappointing. Didn't come away with any new information. Came away with more questions than answers. Quite frustrating
- It was useful to learn a bit more about timescales and the two differing updates going on at present for science courses.
- Advanced Higher was not discussed
- Everything about National 4&5 seemed to be either a government decision or a matter for individual schools – it doesn't come across well. Good to have the update but SQA seem to have lost sight of the reality of the situation in schools
- Useful information and good discussion
- Came away a bit frustrated, seemed to be an exercise in buck passing
- They were not open to discussion. They had their set responses to every comment and question and just trotted them out. Far too little shouldering of responsibility
- Very useful
- Interesting but it turned into a political debate
- Very useful seminar – and both presenters answered questions as honestly and fully as they could/
- Raised more questions than answers and the presenters seemed very defensive and evasive with their answers

- Useful though not a lot more information than had previously been given to the press. Speakers from the SQA were appreciated as their attendance validated the conference
- Rather confusing. I had hoped for more detail on the proposed curriculum changes, such as new units and their content

#### **Friday 4<sup>th</sup> March 2011**

##### **Microbial Diversity/Global Ecosystem: Dr Kevin Purdy**

- Good Lecture – filled in more Knowledge
- Very interesting. It was pitched at a good level for non-Biologists like myself
- Interesting – but hardly mind blowing
- Very interesting, a pity more people did not stay for it
- This again provided me with further knowledge on what were to me some unknown microorganisms and their survival
- Such an interesting presentation, unfortunately scheduled for late on a bust tiring day. Wish it had been earlier in the day as I would have felt more able to concentrate, sorry
- This again provided me with further knowledge on what were to me some unknown microorganisms and their survival
- Made something on the surface very interesting seem dull. Poorly considered. As a physicist I thought this would be interesting but I felt like I knew all the ‘surprising’ facts.
- Excellent
- Excellent. Good information about importance of microbes to humans and the extreme environments they are found in.. And to know there is a square bacterium out there!
- OK, but not outstanding. It was a very big room for the five of us!
- Really interesting (I am a microbiologist!) Excellent presentation in a very accessible style
- Very interesting x2
- Too specialised for a general audience and as a keynote speaker

#### **Saturday 5<sup>th</sup> March 2011**

##### **Bloodhound SSC: Richard Noble OBE**

- Wow! Enthusiasm and passion were infectious – I wish my 8 year old son could have been there too!
- Good speaker. Very interesting. Good that there is an opportunity for schools to link in now
- Excellent and inspiring
- Richard Noble was a very enthusiastic speaker on his topic. The project for schools will I am sure encourage a lot of young people to become more involved in the sciences and engineering
- Excellent, all round entertainment that shows the application of engineering and how it can be applied in school settings

- Inspirational. I really enjoyed this session
- Richard Noble was a very enthusiastic speaker on his topic. The project for schools will I am sure encourage a lot of young people to become more involved in the sciences and engineering.
- Fabulous speaker delivering a very interesting presentation on an exciting project. I have already talked about this to some of my classes and they are equally enthusiastic about it. We will be investigating the possibility of starting up a rocketry club, and will be keeping a close eye on developments with the attempt
- Very Motivation Talk by someone who just loves his job – we were left really fired up about the project. Hoping to get my school on line soon. Some of my S6 already knew about it as they had surfed the internet and found it by themselves
- Informative, interesting, inspiring
- Brilliant. Great speaker. Great motivator. Great visuals
- Inspirational **x2**
- Fantastic talk and very interesting to learn more about this project. I plan to tell teachers about it and hopefully get more of our schools involved. Richard was very engaging and fun to listen to
- Excellent, inspiring presentation. Very enjoyable. Pity it wasn't video recorded for any of the ASE/SSERC websites
- Brilliant! As a primary teacher with a good knowledge of Biology and some Chemistry, I thought I wouldn't understand this, but I was fascinated. A superb speaker, light touch and very entertaining
- To pioneer engineering in safety critical situations is a great aspiration of mankind and indicative of imagination and courage. Sometimes, unhappily, it does not end well. I just hope that the Bloodhound venture is a success
- Frankly perfect. Just the ticket. Injected some much needed enthusiasm for me at this point
- Most entertaining and informative for a non-specialist. The links with primary and secondary education were clearly presented
- I have been telling my class all about this and showing them the race simulation. Very impressive but informal talk. I would really like to include some of these activities within the *CfE* course. Something like this can grab you (people interest and (hopefully)hold it for years
- Most entertaining and informative for a non – specialist. The links with primary and secondary education were clearly presented
- Fun, interesting, and good material to use with students
- This was an inspiration talk. Richard Noble has an easy style but he was making a lot of salient point's about the state of British Engineering. We need more of this kind if inspirational project and more exposure given to this kind of speaker. Very enjoyable and very informative. A lot of good teaching material included as well.