

2012 UK-JAPAN YOUNG SCIENTIST WORKSHOP

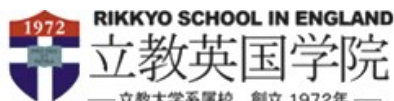
22nd to 28th July 2012 hosted at the University of Cambridge
Patron The Rt Hon the Lord Jenkin of Roding

A Report

Eric Albone, Clifton Scientific Trust



Rolls-Royce



Kaetsu Centre



BARCLAYS

TOSHIBA
Leading Innovation >>>



National Taiwan University
Alumni UK Association

The 2012 UK-Japan Young Scientist Workshop was supported by grants and charitable donations from Rolls-Royce plc, Barclays Bank, Mitsubishi Electric Europe, Toshiba Research Europe, and the National Taiwan University Alumni UK Association. We particularly thank the Kaetsu Centre, the Rikkyo School in England and the scientists & engineers of the University of Cambridge for all they have done to make this Workshop such a success; We thank Professor Fumitaro Sekine, Kyoto University of Education, for his invaluable support for the Stirling Engine project.

with

Students and Teachers from Kyoto from

Kyoto University of Education attached Senior High School, Kyoto Rakuoku Senior High School, Ritsumeikan Moriyama Senior High School, and Kyoto Momoyama Senior High School,

Students and Teachers from Tohoku from

Fukushima Senior High School, Fukushima Soma Senior High School, Miyagi Sendai Daini High School, Miyagi Furukawa Reimei Senior High School and Fukushima Shinchi Senior High School

Students and Teachers in England from

County Upper School Bury St Edmunds, Heanor Gate Science College Derby, Hinchley Wood School Esher, Wellington College, Watford Girls' Grammar School, and The Rikkyo School in England;

Clifton Scientific Trust

is registered as a charity in England and Wales 1086933
eric.albone@clifton-scientific.org, www.clifton-scientific.org
Member of STEMNET; Member of the Parliamentary & Scientific Committee

I FORMAT & OBJECTIVES

1.1 As in previous Workshops, the 2012 UK-Japan Young Scientist Workshop brought together school students from Britain and Japan to live together in the University of Cambridge for a week, and to work in small UK-Japanese teams with professional scientists and engineers, “toe dipping” areas of cutting edge scientific and engineering exploration and innovation. Each of the student teams was given a challenge by the lead scientist/engineer related to their field of work to challenge them to think for themselves and work as a team. At the end of the week each team gave a 15 minute presentation of its achievements and answered questions in front of an audience including invited guests. The school students, who had to be aged 16 or over, were accompanied by teachers from their schools, who did not take part in the science programme but were invited to observe.

1.2 By living and working together, the Workshop aimed to give school students from both countries a real-life experience of science or engineering

- as a team challenge, where school work was given meaning and context, where answers were not known, where questioning and debate were encouraged, and where student achievements were valued.
- as a cultural bridge where by working together the students learnt to value each other and see their own futures in a global perspective
- as a science-based context for debate, discussion, questioning and collaboration where students enhanced their interpersonal skills and grew in confidence and international awareness
- as an opportunity to foster continuing international friendship, dialogue and collaboration between the students, the teachers and their schools.

Throughout the term “science” is used loosely to include areas such as engineering, medicine, mathematics and any field which depends on or relates to a grounding in science in school.

1.3 The 2012 Cambridge UK-Japan Young Scientist Workshop was the tenth Workshop in the series run by Clifton Scientific Trust in this format and the third UK-Japan Young Scientist Workshop hosted at the University of Cambridge. This includes Workshops organised in Japan by Japanese colleagues in association with the Trust and following the Trust’s model.

1.4 As in 2011, the 2012 Cambridge Workshop was based at Murray Edwards College and the Kaetsu Centre, with projects taking place across the University of Cambridge and with the final Celebratory Dinner hosted at Corpus Christi College. The Pre-Workshop for the Japanese students was hosted at the Rikkyo School in England, Rudgwick, just south of Guildford.

2 PARTICIPANTS

2.1 In 2012 a total of 50 post-16 students (25 male and 25 female) and 16 teachers from 15 schools split between the UK (21 students, 6 schools), Kyoto (17 students, 4 schools) and Tohoku (12 students, 4 schools) took part. Clifton Scientific Trust has been working with Super Science High Schools in Kyoto since 2004, and with schools in Tohoku following the March 2011 Great East Japan Earthquake and Tsunami.

1. County Upper School, Bury St Edmunds
2. Fukushima Senior High School
3. Fukushima Soma Senior High School
4. Heanor Gate Science College, Derbyshire
5. Hinchley Wood School, Esher
6. Kyoto Momoyama Senior High School
7. Kyoto Rakuhoku Senior High School
8. Kyoto University of Education attached Senior High School
9. Miyagi Furukawa Reimei Senior High School
10. Miyagi Sendai Daini Senior High School
11. Rikkyo School in England
12. Ritsumeikan Moriyama Senior High School, Shiga
13. Watford Girls’ Grammar School
14. Wellington College

An additional teacher from another Tohoku school, Fukushima Shinchi Senior High School, attended as an observer. The names of students are listed according to their projects in **#6.2**

Dr. Eric Albone
Director
Clifton Science Trust



宮城県古川黎明高等学校

Dear Dr. Albone

From the bottom of my heart, thank you for inviting three Miyagiken Furukawa Reimei high school students to the 2012 UK-Japan Young Scientist Workshop. We truly appreciate of being given such a wonderful opportunity. The three students, who are deeply interested in science, couldn't be more excited to go to England.

The three attending students, one girl and two boys, are very positive in all activities. The girl, Ayano, is very active and belongs to the chorus club. She is eager to study applied sciences in the university. One of the boys, Takaki, is interested in physics, especially astrophysics. He wants to study them in the university and specialize in technology in the future. The other boy, Tomoki, is the president of our student council and likes challenges and new things. He is interested in physics, especially quantum mechanics, and wants to do research in that field. Although the all have their difficulties when speaking English, they are very enthusiastic about studying in Cambridge.

It has been about one year since The Great East Japan Earthquake on March 11, 2011. Some signs of the damage caused by it still remain. We are now, however, making progress in the course of recovery and will certainly overcome the difficulties. This opportunity will give students something meaningful to look forward to, and will no doubt help.

Through this marvelous experience, we hope our students will broaden their horizons and play major roles in our future. Thank you for this opportunity, and on behalf of Ayano, Takaki, Tomoki, thank you, again.

Yours sincerely,

Kazuhiko Sasaki
The Principal
Miyagiken Furukawa Reimei High School

2.2 Special thanks are due to Rolls-Royce plc, Barclays Bank and the National Taiwan University Alumni UK Association for the support they gave to enable students and teachers from the communities in Tohoku afflicted by the 2011 Earthquake and Tsunami.

3 **PRE-WORKSHOP PROGRAMME FOR JAPANESE STUDENTS**

3.1 **Pre-Workshops in Japan for Tohoku students** organised as part of their continuing support for communities afflicted by the 2011 Earthquake and Tsunami by -

3.1.1 **Rolls-Royce Japan** who generously hosted a "Send-Off Reception" for the at the British Embassy in Tokyo at which Prof Nakasuka of Tokyo University's Aerospace and Aeronautics Dept delivered an inspirational speech on space satellites, and the students asked many questions.



Tohoku Students and Teachers at the Rolls-Royce "Send-off Reception" in Tokyo

3.1.2 Barclays Capital who invited the Tohoku students to spend two days as their guests in Tokyo on June 29th and 30th. This included a visit Barclays offices at Roppongi Hills Mori Tower and a visit to their trading floor, as well as a Boat trip from Asakusa to Odaiba and its entertainments, time at Tokyo Skytree and overnight accommodation at the Courtyard Marriott Ginza Tobu Hotel.

DAY 1 – Friday 29 June

Time	Description
13:24	Bullet train to arrive at Tokyo Station (Yamabiko 52)
	Taxi transportation from Tokyo Station to Roppongi Hills Mori Tower (driveway "C")
14:10	Welcome at Roppongi Hills Mori Tower (driveway "C")
14:40	Seated in the office
14:45	Start of welcome session
14:45	Welcome speech
14:55	Introduction of each high school
15:35	Introduction of Barclays
15:45	Trading floor tour
16:15	Mori building tour
18:30	Dinner
20:30	End of dinner and head to accommodation in Ginza (via taxi)
21:00	Arrive at accommodation and stay

DAY 2 – Saturday 30 June

Time	Description
06:15	Breakfast at accommodation
10:00	All meet up at reception of Courtyard Marriott Ginza Tobu Hotel Leave accommodation via chartered bus
10:45	Tokyo Skytree
12:00	Lunch in Asakusa
13:20	Boat trip from Asakusa to Odaiba
14:20	Free time in Odaiba (Fuji TV, Desks Tokyo Beach, Aqua City Odaiba etc.)
15:50	Leave Odaiba and head to Tokyo Station
16:20	Arrive at Tokyo Station
16:40	Bullet train back (Yamabiko 69)

3.2 Pre-Workshop in England for all Participants from Japan organised by the Rikkyo School in England



On arrival in England, the Japanese students and teachers were hosted for three nights at the Rikkyo School in England, Rudgwick, south of Guildford and in easy reach of London. A very extensive programme was organised by Dr Toru Okano, Deputy Head at the School. Dr Okano has worked with the Clifton Scientific Trust for many years and we thank him for his, and the Rikkyo School for their continued support.

2012 PRE-WORKSHOP TIMETABLE FOR STUDENTS & TEACHERS FROM JAPAN 2012 UK-Japan Young Scientist Workshop: Hosted and organised by the Rikkyo School in England, Rudgwick, West Sussex

2012	Breakfast 7.30-8.30	Morning session	Lunch	Afternoon session	Supper	Evening
Thu July 19				Arrival at Heathrow Airport EK001 12:15(Kyoto) BA006 15:30 T5(Tohoku)	at <u>Rikkyo</u> School	
Fri July 20	Breakfast 7:00 Dining Hall	Leave to London 08:00 University College London Gower Street <u>Prof. Ohnuma</u> 11:00	Lunch at Piccadilly Circus/ Leicester Square 12:30-14:30	15:00-16:00 The Royal Society Rupert Baker Library Manager 16:30-17:30 The Royal Institution Prof. Frank James	Supper at Piccadilly Circus/ Leicester Square 1800-19:50	Leave London 20:00 Piccadilly Est. arrival time at Rikkyo 22:00
Sat July 21	Breakfast 7:30 Dining Hall	Leave to London 08:30 Natural History Museum 10:30-12:00	Lunch At British Museum	British Museum 14:00-16:00 After 16:30 Free Time London Bridge/Tower Bridge	Supper at London Bridge/ Tower Bridge	Leave London 20:30 Tower Bridge <u>Est</u> arrival time at Rikkyo 22:00
Sun July 22	Breakfast 7:30 Dining Hall	Tour Guildford and Vicinity	Lunch At Guildford	14:00 Leave to Cambridge <u>Est</u> arrival time at Cambridge 16:30	supper Murray Edwards College Cambridge	Follow the Workshop Programme

Special Visits were once again arranged at UCL, the Royal Society and the Royal Institution thanks to the good offices of Professor Shinichi Ohnuma, Mr Rupert Baker (Royal Society Librarian) and Professor Frank James respectively.



- 1 Professor Shin-ichi Ohnuma welcoming Japanese teachers and students University College London.
- 2 Japanese teachers and students posing before the UCL Japanese Monument which honours “the pioneers who came to UCL in 1863 and 1865 and returned to lay the foundation of modern Japan”. They were the first Japanese to study in the West.

4 WORKSHOP PROGRAMME IN CAMBRIDGE

4.1 Participants arrived in Cambridge on July 22, the Japanese schools from their Pre-Workshop Programme with the Rikkyo School in England and followed the programme outlined below.

2012	breakfast 8.00-9.00 Murray Edwards	morning session 9.15-	lunch (with project)	afternoon session ends approx 16.30-17.00	dinner 18.00- 19.00 Murray Edwards	evening 19.00-22.30 <small>Kaetsu Centre Conference Room available from 18.30 We have the room free of charge on condition we clear up the room for use next day at the end of evening</small>
Sun July 22	participants arrive ~4pm at Murray Edwards College dinner in College 18.00, followed by meeting up in <u>Kaetsu</u> Centre Conference Room					
Mon July 23	B	Welcome and Orientation (<u>Kaetsu</u> Lecture Theatre)	L	Projects	D	Let's Communicate in Japanese (led by students from Japan)
Tue July 24	B	Projects	L	Projects	D	Gift Exchange and Cultural Evening
Wed July 25	B	Projects	L	Projects (Teachers Forum <u>Kaetsu</u> Lecture Theatre)	D	Outdoor Games (informal relaxation)
Thu July 26	B	Special Presentation by Tohoku and Kyoto Students on the situation following the 2011 Tsunami	Visits in Cambridge		D	
Fri July 27	B	Presentation Preparation	L	Team Presentations (13.15 <u>Kaetsu</u> Lecture Theatre)	Celebratory Workshop Dinner (19.00 Corpus Christi College)	
Sat July 28	B	Depart after breakfast				

4.2 Living and team-working together is fundamental to the challenge and excitement of the Workshop. Only a minority of the British students had studied Japanese, but invariably they were keen to learn something of the language and used it in their Team Presentations. Students commonly form lasting friendships and keep in touch with each other for many months subsequently electronically and not infrequently arrange to visit each other in subsequent year

4.3 For the Japanese students in particular, the challenge both of a new language and new culture can be daunting at first and for this reason the Trust recruits a team of volunteer **Facilitators**, native Japanese speakers living in Cambridge, most usually Japanese graduate students of the University, who offer to be with the various

science teams, helping the teams to gel, making sure the Japanese students fully understand what is happening and that they feel reassured and welcomed. The 2012 Team are listed in the projects in #6.2. Not listed there is Miss **Angela Steven**, a bilingual undergraduate from Homerton College also supported the programme with **Adam Roberts-Taira**.

4.4 Murray Edwards College and the Kaetsu Centre, which is on its campus, again provided an excellent base from which to operate. As a matter of policy, virtually all the students shared rooms, with one Japanese student sharing with one British student; teachers' rooms were distributed among them.

5 WELCOME AND ORIENTATION (Monday morning)

Following a brief introduction from Dr Eric Albone,

- **Professor Sir Tom Blundell FRS**, welcomed the Workshop on behalf of the University with a personal account of his own journey into science, stressing the importance of international collaboration in science which he has witnessed at first hand as former Sir William Dunn Professor of Biochemistry and Head of Department in the University and founding Chief Executive of Biotechnology and Biological Sciences Research Council. Sir Tom and his colleagues were also very kindly hosting a Workshop team in his laboratory (**#6.2.2**)



- **Mr Peter Roberts-Taira**, Director of the Kaetsu Centre welcomed the Workshop and also introduced his son, **Adam**, who is bilingual in Japanese and English and whose contribution to facilitating the Workshop programme was invaluable.



- **Teachers and Students** representing each of the three groups of schools attending the Workshop, from Kyoto, from Tohoku and from England, then expressed their feelings at the beginning of the Workshop and their appreciation in being able to participate, as follows

- **Ms Mihoko Fukutani** (1, below), Kyoto University of Education Senior High School
- **Mr Yasuhiro Takamura** (2), Shinchi Senior High School
- **Mr Nick Kirwan** (3 with Adam Roberts-Taira interpreting), Watford Grammar School for Girls
- **Tsuyoshi Yagi** (4), Kyoto Momoyama Senior High School
- **Takahiro Kageyama** (5), Fukushima Senior High School
- **Ben Schroeder** (6), Hinckley Wood School, Esher



- **Professor Shin-ichi Ohnuma**, Institute of Ophthalmology at University College London (**see #3.2**) and formerly Department of Oncology, University of gave his own Japanese perspective of the very special place Cambridge science occupies internationally and of the history of scientific interaction between Britain and Japan, ending with advice to the students to use the Workshop to think about their own future in science and in international society. Professor Ohnuma's first degree and doctorate was from Tohoku University and he has been especially helpful in building Workshop relationships with schools in that area of Japan.

- After refreshment an "Ice-Breaking" Session was led by **Mrs Mary-Grace Browning** (County Upper School, Bury St Edmunds), followed. After this the project teams met their lead scientists/ facilitators and following a buffet lunch went on to their various project venues.



6. SCIENTIFIC PROGRAMME

6.1 Ten Projects were undertaken over two and a half days in six University of Cambridge departments, in Plant Sciences, in Biochemistry, in the Cavendish Physics for Medicine Laboratory (3 projects), in Chemistry, in Engineering, and in Biological Anthropology with the Primate Immunogenetics and Molecular Ecology (PRIME) Group. There was also a project “Living with Nuclear Energy” hosted in the Education Department and a Science Communication project with the Naked Scientist Team in which the student team visited other Workshop projects, interviewed students and scientists and prepared a podcast of the Workshop. This is online at <http://www.thenakedscientists.com/HTML/podcasts/specials/show/20120730/>.



6.2 Project Teams UK Students were allocated to projects before the Workshop as far as possible on the basis of their preferences.. The Japanese students were allocated by their teachers based on their knowledge of the students. As in previous years information was sent to the students in advance of arrival giving further details of the Workshop as a whole and of their projects.

6.2.1 Meet the Algae

University of Cambridge, Dept of Plant Sciences

Andrea Vatavu Watford Girls' Grammar School
Aoi Mori Kyoto Univ of Education attached Senior High School
Karen Uno Kyoto Momoyama Senior High School
Nagisa Otake Fukushima Soma Senior High School
Rosie Waters County Upper School, Bury St Edmunds
Ko Yokouchi Miyagi Sendai Daini Senior High School

*Science Leaders: Dr Moritz Meyer, with Prof Howard Griffiths and Prof Alison Smith;
Facilitator: Keiko Morimoto*

6.2.2 Jewels in the Crown; DNA Repair Proteins

University of Cambridge, Dept of Biochemistry

Anna Ogaito Kyoto Rakuhoku Senior High School
Ben Schroeder Hinchley Wood School, Esher

Sophie Rhodes Heanor Gate Science College
Yukifumi Momono Miyagi Sendai Daini Senior High School
Science Leaders; Prof Sir Tom Blundell FRS, Dr Takashi Ochi, Dr Qian Wu; Facilitator: Dr Tomoaki Nakagawa

6.2.3 Cavendish Soft Physics Projects (3 projects)

University of Cambridge Cavendish Physics for Medicine Laboratory

i Rheology

Alejandro Legarda Wellington College
Yota Morimoto Kyoto Momoyama Senior High School
Yuya Shimizu Kyoto Rakuhoku Senior High School

ii DNA... as a Material?

Ayano Kitagishi Miyagi Furukawa Reimei
Ayari Handa Kyoto Univ of Education attached Senior High School
Jaya Tamber Heanor Gate Science College
Neal Dodge County Upper School, Bury St Edmunds

iii Biodegradable plastic from bacteria

Genki Niwa Kyoto Momoyama Senior High School
Natsumi Ishizu Rikkyo School in England
Varathagini Balakumar Watford Girls' Grammar School
Science Leaders: Taiki Yanagashima, Sarah Gallagher, Kazunori Ushimaru, Sumit Sangiambut, Nick Bell & Lorenzo di Michele in the laboratories of Dr Erika Eiser, Dr Ulrich Keyser, Dr Easan Sivaniah; Facilitators Dr Hirohide Takahashi & Kaoru Yamamoto

6.2.4 Synthesis, Characterisation & Behaviour of Metal Nanoparticles

University of Cambridge Chemistry Department, Melville Laboratory for Polymer Synthesis

Adam Pontin Hinchley Wood School, Esher
Ayana Isobe Kyoto Rakuhoku Senior High School
Jordan Charlesworth Heanor Gate Science College
Yun Asumi Miyagi Sendai Daini Senior High School
Science Leaders; Dr Oren Scherman, Sam Jones, Setu Kasera; Facilitator; Kei Yamamoto

6.2.5 Stirling Engine; Design, Construction, Performance

University of Cambridge Department of Engineering

Atsushi Kurotobi Rikkyo School in England
Harry Jones County Upper School, Bury St Edmunds
Mark Skelton Hinchley Wood School, Esher
Nairu Kimura Kyoto Univ of Education attached Senior High School
Takahiro Kageyama Fukushima Senior High School
Takaki Akiba Miyagi Furukawa Reimei Senior High School
Yuki Mimori Ritsumeikan Moriyama Senior High School

Science Leaders; Dr Hugh Hunt, Ross Henrywood, Maria Kettle and colleagues; Facilitator; Ray Shimura. We thank particularly the extensive support of the Engineering Department technical staff; also the generous collaboration of Prof Fumitaro Sekine, Kyoto University of Education, with information and designs from the Stirling Engine project from the 2009 Kyoto UK-Japan Young Scientist Workshop.

At the end of the Workshop, the students took back to their schools the Stirling Engines they had constructed.

6.2.6 Living with Nuclear Energy

Hosted at the Education Dept Laboratory, Homerton College

Billy Ford County Upper School, Bury St Edmunds
Thomas Robson Wellington College
Ryohei Yamanaka Ritsumeikan Moriyama Senior High School
Tsuyoshi Yagi Kyoto Momoyama Senior High School
Miyu Kanno Fukushima Senior High School
Koh Oikawa Fukushima Senior High School
Mizuki Yamada Rikkyo School in England

Science Leader; Prof Wade Allison, Emeritus Professor Physics, Oxford of University; Facilitator; Takaaki Kobayashi

6.2.7 Biodiversity & Conservation

PRIME Research Group, Dept of Biological Anthropology

Kiriko Hosokawa	Kyoto Rakuhoku Senior High School
Marina Sato	Fukushima Soma Senior High School
Saki Kanai	Fukushima Senior High School
Sakiho Tanaka	Ritsumeikan Moriyama Senior High School
Shiori Okamoto	Kyoto Univ of Education attached Senior High School
Sophie Chung	Watford Girls' Grammar School
Vishala Nirmalan	Watford Girls' Grammar School

Science Leaders; Dr Leslie Knapp, Rebecca Turton and Yun-Hua Lo; Facilitator; Nozomi Itani

6.2.8 Science Communication

The Naked Scientist Team <http://www.thenakedscientists.com/>

Lauren Page	Heanor Gate Science College
Loic Guegantou	Wellington College
Tomoki Abe	Miyagi Furukawa Reimei Senior High School
Tomoki Kuwahara	Ritsumeikan Moriyama Senior High School
Yu Ohmoto	Kyoto Univ of Education attached Senior High School

Science Leader, Ben Valsler; Facilitator; Dr Mihiro Sunose

7 STUDENT TEAM PRESENTATIONS

7.1 On the Friday afternoon, the students gave 17 minute team presentations of their achievements and answered questions in from of an audience which included invited guests. Commentaries were given by **Lord Rees of Ludlow FRS** (1), Astronomer Royal, and immediate Past President, The Royal Society, by **Mr Richard Thornley** (2), President, Rolls Royce Japan and by **Mr Kentaro Kiso** (2) Managing Director at Barclays Capital.



7.2 Closing Remarks were made following the Presentations on behalf of the students and the teachers from Kyoto, Tohoku and England by **Sakiho Tanaka** (1), Ritsumeikan Moriyama Senior High School, **Takaki Akiba** (3), Miyagi Furukawa Reimei Senior High School, **Rosie Waters** (2), County Upper School, Bury St Edmunds, **Dr Kiyonari Hashizume** (4), Fukushima Senior High school, **Mr Masahiro Kato** (5), Kyoto Momoyama Senior High School and **Ms Marta Friedmann** (6), Hinchley Wood School, Esher & by **Dr Eric Albone**, on behalf of Clifton Scientific Trust.



7.3 DVD Record. The Student Team Presentations, Commentaries and the Closing Remarks were filmed professionally and DVDs sent to all students and teachers who took part and to other interested parties. Copies are available while stocks last, and the entire film has been placed on YouTube in 4 sections (2012 UK-Japan Young Scientist Workshop). The film includes student teams' Powerpoint presentations, but excludes the discussions following the presentations.



8 **CELEBRATORY RECEPTION & DINNER AT CORPUS CHRISTI COLLEGE**

8.1 Following the Student Team Presentations, all participants and guests were invited to a Celebratory Reception and Dinner at Corpus Christi College, to which they were welcomed by **Mr Paul Warren**, Bursar, Corpus Christi College and short speeches were made by **Dr Eric Albone**, Clifton Scientific Trust and **Mr Eiji Watanabe**, Educational Attaché and First Secretary, Embassy of Japan.



1 Dr Hugh Hunt with the Engineering Team and Stirling Engines; 2 Ms Mihoko Fukutani; 3 (left to right) Richard & Chihiro Thornley, Michi & Paul Warren
4 Richard Thornley with Adam Pontin; 5 Nagisa Otake & Marina Sato with their Certificates; 6 Yu Ohmoto; 7 Ko Yokouchi; 8 Vishala Nirmalan;
9 Mrs Emma Tunstill and Mr Eiji Watanabe

8.2 The following teachers and students representing schools from Kyoto, Tohoku and the UK then spoke expressing their appreciation for the Workshop.

Yu Ohmoto	Kyoto University of Education attached Senior High School
Ko Yokouchi	Miyagi Sendai Daini Senior High School
Vishala Nirmalan	Watford Girls' Grammar School
Mrs Emma Tunstill	County Upper School, Bury St Edmunds
Mr Osamu Sugawara	Miyagi Furukawa Reimei Senior High School
Ms Mihoko Fukutani	Kyoto University of Education attached Senior High School

Finally **Mr Richard Thornley**, President, Rolls-Royce Japan, distributed Certificates to all the students.

9 TEACHERS' FORUM

9.1 Seven teachers from the British schools and ten from the Japanese schools took part in the Workshop supporting and taking responsibility for their students, and also taking back to their schools the experience of the Workshop. Students involved in a Workshop commonly give presentations to their whole schools on their return home. Teachers also provide a very valuable educational critique of the effectiveness of the Workshop. It is the aim of Clifton Scientific Trust to build up continuing links with the schools that take part.

9.2 **Teachers' Forum Objectives**

- to share grass roots experiences of teaching science in Britain and in Japan
 - to compare practical ways in which science can be made to live and become real for students in each country
 - to consider how future UK-Japan Young Scientist Workshops can make a greater contribution to this process
- In this it provided a formal opportunity to develop the sharing of classroom experience and good practice which takes place naturally within a Workshop.

9.3 **Teachers' Forum Presentations**

The Forum discussions commenced with two Japanese and two British teachers giving presentations of the opportunities and challenges in their own schools. Presentations were given by

- **Dr Kiyonari Hashizume**, Fukushima High School
- **Mr Masahiro Kato**, Kyoto Momoyama Senior High School
- **Ms Emma Beardmore**, Wellington College
- **Ms Sally Ann Fox**, Heanor Gate Science College, Derbyshire



Teachers' Forum; Mrs Mary-Grace Browning County Upper School, Bury St Edmunds in action, and Mr Masahiro Kato (left; also second from right in first photograph) with Mr Tatsuo Miyoshi, Ritsumeikan Moriyama SHS Dr Kiyonari Hashizume discussing the Super Science High School programme in Fukushima SHS

9.4 Also present was **Dr Manabu Sumida**, Elime University Science Education Department, who was spending six months' sabbatical with Dr Keith Taber at the Education Department, Cambridge University, and had asked to observe the Workshop. He spoke of his interest in curriculum development in Japan particularly with regard to gifted students. At the end of the Workshop, Dr Sumida said he had formed a very high impression of the educational value of the Workshop.

10 SPECIAL PRESENTATION BY TOHOKU AND KYOTO STUDENTS ON THE SITUATION FOLLOWING THE 2011 TSUNAMI



Furukawa Reimei SHS Team

Fukushima SHS Team

10.1 Students from each of the Tohoku schools gave Powerpoint presentations about their schools and about life following the 2011 Great East Japan Earthquake and Tsunami. This included two moving home-made films from the Soma students taken on the day of the tsunami. These presentations were followed by a presentation from the students from the Kyoto University of Education attached Senior High School describing way people in their area, far distant from the tsunami area perceived the situation. Presentations were given by

- Fukushima Senior High School; Takahiro Kageyama, Saki Kanai, Miyu Kanno and Koh Oikawa
- Furukawa Reimei Senior High School; Osamu Sugawara (teacher), Tomoki Abe, Ayano Kitagish, Takaki Akiba
- Sendai Daini Senior High School; Yun Asumi, Yukifumi Momono and Ko Yokouchi
- Soma Senior High School; Marina Sato and Nagisa Otake
- Kyoto University of Education Senior High School; Nairu Kimura, Aoi Mori, Ayari Handa, Yu Ohmoto and Shiori Okamoto

10.2 Concerns were widely expressed about “rumours” and general misinformation which led to some students talking about the “radiation discrimination” they felt their communities were experiencing across Japan and the need for the dissemination of scientifically valid information. The Kyoto University of Education attached Senior High School students’ presentation “A Report from Kyoto on Nuclear Issues” also covered the implications of 2011 for the prospects for nuclear power in Japan and included slides of opinion surveys they had conducted.

These issues were also considered in one of the Workshop Projects and reported in the final team presentations.



The present situation

- The disposal of the debris isn't getting along
- The radiation isn't decreasing
- We can't engage in agriculture (and fishery) because of the radiation, the disposal, and there are damages caused by rumors, too
- Many children evacuated from Fukushima

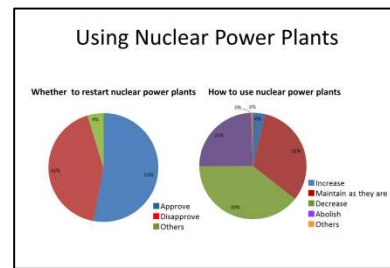
from Furukawa Reimei SHS Presentation



The Situation of Fukushima

- The dead 2269
- Disappearance 46
- House complete destruction 20183
- House partial destruction 60505

- The people of Fukushima prefecture endure discrimination about radiation from people in other prefectures.



11 CULTURAL EXCHANGE

11.1 Evening Events “Lets Communicate in Japanese” (Monday)

“Let’s communicate in Japanese” was devised and led by the Japanese students from Rikkyo and Kyoto Momoyama schools and introduced the British students to some interesting and amusing aspects of the Japanese language, including calligraphy. They found that some words in Japanese which sound almost identical and can have very different written forms (Kanji) and widely different meanings.



11.2 Evening Events; Gift Exchange & Cultural Evening (Tuesday)

The Gift Exchange and Cultural Evening provided an opportunity for each school group (excluding the two which had led Monday evening's activities) to put on a short piece of entertainment for the whole workshop. Greatly enjoyed as always.



11.3 Evening Events; Thursday evening was a welcome opportunity for everyone to get involved in some relaxed informal ball games on Parkers' Piece at the end of a very busy day.

11.4 Free Time in Cambridge (Thursday afternoon) Students and teachers greatly valued this all too short an opportunity to become tourists in Cambridge. The Workshop was extremely grateful to Dr Hugh Hunt, Fellow of Trinity and Leader of the Engineering Project who organised a punt party with Trinity Punts and provided tours of Trinity College, in addition to giving a fine demonstration of the aerodynamics of boomerangs on the college lawn.

12 OUTCOMES

12.1 The Student Team Presentations were filmed professionally and the resulting DVD was sent to all teachers and students who took part in the Workshop. Included are the Powerpoint Presentations produced by the student teams and Commentaries by Lord Rees (recently President of the Royal Society and Master of Trinity), Richard Thornley (Rolls-Royce Japan) and Kentaro Kiso (Barclays Capital). Further copies of the DVD are available on request while supplies last and the film has been placed on YouTube (#7.3)

12.2 The Tohoku Students and Teachers compiled a Report their own individual impressions of the 2012 Workshop on their return to Japan as a 61 page illustrated Report "2012 UK-Japan Young Scientist Workshop, Reports from the Tohoku Area, Japanese & English Version". (Appendix 1; on request)

12.3 Super Science High Schools from Kyoto have participated in the UK-Japan Young Scientist Workshop Programme since 2004. They have also organised with Clifton Scientific Trust similar Young Scientist Workshops in Kyoto based on the model developed by the Trust in England. On 2 Feb 2013, Kyoto University of Education convened their "Second Symposium of the Japan-UK Young Scientist Workshop" discussing the significance of the UK-Japan Young Scientist Workshop method, with input from Japanese students who took part in the 2012 and 2006 Workshops, the latter now at university in Japan. Dr Albone was invited to submit a video message outlining his vision for the Symposium. Clifton Scientific Trust has a full DVD record of the Symposium as well as copies of the presentations made. (Appendix 2 - The Symposium Programme, on request)

12.4 The podcast produced by the Science Communication team is online at <http://www.thenakedscientists.com/HTML/podcasts/specials/show/20120730/>. The students in the Engineering team each took back the Stirling Engines they had produced to their schools.

12.5 A film crew from NHK was in England for the Olympics and was with the Workshop for the whole of Monday. This resulted in a news item on Japanese TV shortly afterwards



12.6 All participants completed detailed feedback evaluation forms at the end of the Workshop.

12.7 Clifton Scientific Trust is aware from feedback from the teachers and also from students in both countries that the Workshop Experience can have profound lasting impact on the students who take part. Given resource this is a dimension which the Trust would wish to monitor systematically in the future. In this context Dr Albone and Dr Okano were invited to produce a short article on their perceptions of the impact of the Workshops on students in a publication sent to all their members of the Association for Science Education in November 2013. Copies Eric Albone and Toru Okano, "The UK-Japan Young Scientist Workshop Programme... Learning Lessons for Education?" Education in Science, November 2013 are available (Appendix 3 available on request)

12.8 Clifton Scientific Trust is now planning a UK-Japan Young Scientist Workshop in with the University of Cambridge in July 2013 to which Tohoku schools are invited, and in contributing to the Workshop being organised in Japan with Kyoto University and Kyoto University of Education in August 2013, both of which build on previous experience..