2008 UK-JAPAN YOUNG SCIENTIST WORKSHOP
3rd to 9th August 2008 hosted at the University of Surrey
Patron The Rt Hon the Lord Jenkin of Roding

A REPORT
Eric Albone, Clifton Scientific Trust

with students and teachers from
Camborne Science & Community College, Colchester County High School for Girls,
County Upper School Bury St Edmunds, Dartford Grammar School,
George Abbot School Guildford, Hinchley Wood School Esher,
St Benedict’s School Bury St Edmunds, the Rikkyo School in England
Ritsumeikan Moriyama High School Shiga, Kyoto Prefectural Rokuhoku High School,
Kyoto Municipal Horikawa High School, and
Kyoto University of Education attached Senior High School

The 2008 UK-Japan Young Scientist Workshop was devised and organized by Clifton Scientific Trust in informal partnership with the University of Surrey, and provided free of charge to all participants owing to the generosity of the Daiwa Anglo-Japanese Foundation, Mitsubishi Electric Europe, the Department of Children, Schools and Families through the Joint International Unit, the Japan Society, and the Japan Science and Technology Agency. We thank the staff of the University of Surrey and Mitsubishi Electric Europe who gave of their time and expertise free of charge, and acknowledge the support given by the Royal Botanic Gardens, Kew, the Royal Society of Chemistry and Japan Airlines. The Workshop was also endorsed by the Embassy of Japan as a Japan-UK 150 Festival event celebrating the 150th anniversary of diplomatic relations between Britain and Japan.

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Member of STEMNET; Member of the Parliamentary & Scientific Committee
We designed and made a robot in order to allow us to automate the chlorophyll-detection process.

... the Workshop is the greatest pleasure of my life... I felt myself developing naturally during the Workshop... this was the opportunity to think about many things in a global perspective. I think I have grown up as a different person in these ten days.

[The students] were creative in their approach... had relished the challenge and were ready for more... impressive how quickly the students adapted... a truly educational experience, something which is sadly all too rare in our assessment driven schools.

It was a real joy to see not only the excellent presentations of the workshop results, but particularly how well these young people managed to bridge all cultural and linguistic gaps. We are glad that we, Mitsubishi Electric, were part of this and could, especially through the excellent work of Dr Ping Wu, contribute to the success of the Workshop.

Hans-Jeorg Hinkel, Manager Strategic Planning, Mitsubishi Electric Europe
1. **Background** The 2008 UK-Japan Young Scientist Workshop hosted at the University of Surrey was the most recent of an evolving series of UK-Japan Workshops (the previous Workshop was in Kyoto) devised and organized by Clifton Scientific Trust in partnership with colleagues in Britain and Japan. The objective is to enable post-16 school students from our two nations to experience together science and its applications

- as a real life challenge where answers are not known, where classroom knowledge is put to use, where questioning is valued, where the students think for themselves, and where they work to the endpoint of team public presentations of their achievements
- as a cultural bridge where by working together students from both countries learn to value and understand each other and form lasting friendships
- as a science-based context for debate, discussion, questioning and collaboration where they enhance their interpersonal skills and grow in confidence and international awareness.

These UK-Japan Young Scientist Workshops address key issues facing science education in both countries, namely the urgent need to ensure much greater relevance in science education in schools and also to motivate more able young people and particularly young women to consider science as a career. The Workshops have proved to be extremely attractive to young women; of the 43 students taking part this 25 were female and 18 male. The significance of the pioneering work of Dr Albone opening up this new strand of UK-Japan partnership has now been recognised his being awarded of the Japan Society Award for 2007.

2. **Participants** The organising team for the 2008 UK-Japan Young Scientist Workshop consisted of Dr Eric Albone (Clifton Scientific Trust), Dr Toru Okano (The Rikkyo School in England) and Mr Tetsuo Takada (Kyoto University of Education attached Senior High School). Twenty-two students from 7 state schools in England lived together for a week at the University of Surrey with 21 students from 5 Japanese schools (4 Super Science High Schools in Japan and one Japanese school in England) and worked in small UK-Japanese teams in each of six cutting edge areas of scientific research and application, five in areas in which Surrey University has particular strength and one organised by Mitsubishi Electric Visual Information Laboratory which is at Surrey Science Park. At the end of the week each team gave a public presentation of its achievements. Places were offered free of charge to the students who were selected by their schools. The students were accompanied by teachers, one from each English school (9 attended because in the case of two schools, a single teacher was not able to stay the full week), and 7 teachers from the Japanese schools.

3. **Teachers** The role of the teachers was to act as observers and, in addition to providing pastoral support for the students, both to take back the workshop experience into their own schools with the aim of building continuing links between the schools (the students always very readily form personal international friendships which continue after the end of the Workshop), and at the Workshop to share their own experience of good practice. To this end, a half day Teachers’ Forum was organised as part of the programme.

4. **Student Project Teams** worked in the following areas

- Chemical and Microbial Fuel Cells, with Prof Bob Slade
- Circadian Rhythms, Sleep and Jet Lag, with Dr Simon Archer/ Dr Malcolm von Schantz
- Global Monitoring by Satellite, with Dr Craig Underwood/ Mr Tatsuo Shimizu
- Nanotechnology, with Professor Jeremy Allam/ Dr Simon Henley
- “Water for Life” (water resource in third world situations) with Ms Alex McKie
- Video Compression (Mitsubishi Electric Project) with Dr Ping Wu

Students were sent project briefs in advance of the Workshop and were allocated to teams on the basis of their stated preferences. Each science project had the services of a volunteer Japanese facilitator (ideally a Japanese graduate student at Surrey University) who had a
pivotal role in helping the teams to gel, and particularly in reassuring the Japanese students. A sensitivity to their own role as hosts provided an important learning experience for the British students.

5. Science as a cultural bridge The students achieved a great deal in a very short time. This is because the challenge and excitement of the science was heightened by being set within the wider challenge of working with young people from a very different cultural background. The students responded extremely positively to this and while the science was excellent, their lasting memory was of international friendship. The driver for the engagement with science was this human dimension and the fact that the students were given ownership of their own learning. This comes out in the evaluations all participants were required to complete at the end of the Workshop and also in the reflections the students and the teachers produced in their own words on returning home.

6. Events outside the Science Programme In addition to working together on their science projects to produce team presentations in which the British students even if they had not studied Japanese previously attempted to use some Japanese, the students learnt about each other by living closely together in student accommodation at the University. This process was greatly enhanced by a programme of evening events which apart from the Farewell Dinner were student led. These comprised:
- “Let’s communicate in Japanese” led by students from the Japanese schools
- “Gift Exchange and Cultural Evening” in which each school put on a 10 minute entertainment (serious/humorous/dance/drama/powerpoint/game) of their own devising
- “Informal outdoor games” on campus
- “Workshop Farewell Dinner” a formal occasion on the final evening following the Team Presentations at which certificates were awarded to all who had taken part, and thanks were expressed.

7. Royal Botanic Gardens, Kew Mid-week, a visit was organized to the Royal Botanic Gardens, Kew, courtesy Dr Monique Simmonds, Head of Biological Interactions at the Jodrell Laboratory, at which the teachers and students heard and discussed excellent presentations from a panel of younger scientists working at the Jodrell, outlining what they were doing in science research and particularly their personal motivations and how they came into science. This was specially arranged for the Workshop party and was followed by time to explore the gardens at leisure, all free of charge. The teachers present unanimously expressed the view that the presentations were absolutely on target and were only sorry they had not been recorded.

8. Pre-Workshop Programme in Cambridge. From previous experience in Japan in 2007, it was clear that it would be very valuable for the Japanese students to have a time before the Workshop began overcoming jet-lag and getting to know a little more about Britain, and also if possible to get to know some of the British students they would be working with. As a result, Clifton Scientific Trust organised a Pre-Workshop programme with colleagues at Robinson College, Cambridge for the Japanese party to stay at the College, arriving on Friday 1 August and departing for Surrey University on Sunday 3 August. In this period they learnt about the life of a Cambridge College as well as having the opportunity to be tourists in the town, and for example to enjoy some punting. Students and teachers from Colchester County High School for Girls and from the Rikkyo School in England volunteered to stay at the College with the Japanese team. Students from the County Upper School, Bury St Edmunds also visited on the Saturday. This proved to be an exceptionally valuable preparation for the Workshop. It also gave the opportunity to the English students to take the role of hosts to Japanese students most of whom had never been away from home before. Costs are not included in the Clifton Scientific Trust Workshop budget but were
met by the Japanese party out of their own funds and for the UK participants by the students and their schools.

Robinson College was extremely welcoming. Professor David Yates, Warden, welcomed the party and Lee Eccleston, Junior Fellow, Mathematician and Engineer, who organized the detailed programme with Dr Iona Martin from Colchester County High School for Girls, volunteered to be with the party throughout the stay acting as a tremendous ambassador both for Robinson and for Engineering. He himself is a Science and Engineering Ambassador.

9. Evaluation Evaluation was conducted both in requiring all participants (teachers and students) to complete detailed evaluation forms at the end of the Workshop and also in inviting students to send in their own reflections on the outcome of the Workshop on returning home. This was first trialed in the 2007 Kyoto Workshop and the collected reflections were published by the Japanese team (the Japanese contributions translated into English). This feedback clearly underlined the success of the Workshop in meeting its objectives. Examples of these reflections for the 2008 Workshop are available on request.

10. Related Outcomes The focus on Japan was initially suggested by Lord Jenkin of Roding, the Trust’s Patron, who saw the value of the work the Trust was undertaking building innovative science-school partnerships in Britain and felt that Japan, which shares many similar educational challenges, would benefit. It is clear that the approach, which sees science as a potent cultural bridge for young people through which both science education and education in global citizenship work together synergistically and effectively clearly is transferable.

In this context Dr Albone and Dr Okano were invited to present the Trust’s UK-Japan Young Scientist work at an EU “Form-It” Conference in Vienna in March 2008 as an outstanding example of best practice in international collaboration bridging the gap between professional science and science education. Proceedings of the conference are available at (http://www.form-it.eu/download.php; formit_conferenceproceedings_bridge_the_gap_080814.pdf) pp34 to 37).

Also, the Journalist Dorothy Lepkowska has interviewed students and teachers and is currently preparing an article for the Education Guardian which she indicates will be published in November highlighting the 2008 Workshop.

11. Reception at Burlington House The Trust thanks the Royal Society of Chemistry for hosting a Reception at their rooms in Burlington House on 3 July drawing attention to the Workshop which was addressed by Lord Jenkin, Minister Mami Mizutori from the Embassy of Japan, as well as a number of students who had taken part in 2007. The venue and staffing was provided free of charge by the Royal Society of Chemistry, which was represented by its Chief Executive, Dr Richard Pike, and Japan Airlines kindly funded refreshments.

12. A Financial Statement is appended to this Report

The Following are also available on request
1. Agenda and other items related to Teacher Forum
2. Evaluation and Reflections of Students and Teachers
3. Flyer for the RSC Japan Airlines Reception
4. Outline Programme Sheet for the Week
5. Powerpoint presentations produced by the Student Teams
6. Programme for the Student Team Presentations
7. Project Briefs sent to students ahead of Workshop