



IUPAC
ADVANCING WORLDWIDE CHEMISTRY

International Union of
Pure and Applied Chemistry



Young Ambassadors for Chemistry

Project 2003-055-1-050
2004-2007



Final report

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Young Ambassadors for Chemistry (YAC)

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Young Ambassadors for Chemistry



1. Project 2004-2007

The Young Ambassadors for Chemistry (YAC) project (www.iupac.org/projects/2003/2003-055-1-050.html) aimed to enhance Public Understanding of Chemistry through teacher and student school audiences in target transition regions.

The project was carried out in partnership with Science Across the World, a successful global science education programme, to train teachers and provide resources to develop the communication skills of young people and teach them to be Young Ambassadors for Chemistry (YACs).

The project was carried out in Taiwan, Russia, Argentina and South Africa. Korea joined the project, facilitated by the Korean Chemical Society, as part of the Year of Chemistry 2006 celebrations.

Travel and subsistence were met by IUPAC, costs for two trainers¹ by GlaxoSmithKline (Science Across the World) and local costs were covered by the local host institution and partners. This meant that many organisations helped with money, expertise and materials².

2. Poster competitions

The project built on the successful collaboration between IUPAC and Science Across the World in a global poster competition for children: 'It's a Chemical World', featured on the cover of the Nov/Dec 2003 issue of *Chemistry International*.

Apart from starting YAC, we organized a second competition in 2006: 'Chemistry for Humanity', facilitated by the Korean Chemical Society. The results were shown during ICCE 19 in Seoul (report in the Jan/Feb 2007 issue of *Chemistry International*).

¹ Dr Lida Schoen (Netherlands, chemistry) and Keith Kelly (UK, communication)

² See 'Acknowledgements' at the end of this report



Runner up Magy Ezzat receives her certificate from the principal of El Nasr Girls College in Alexandria (Egypt)



Prof Choon H. Do and Dr Lida Schoen in front of the winning posters 'Chemistry for Humanity' during ICCE 19 in Seoul, Korea (2006)



Runner up Annie Chen receives her certificate from Nobel Prize laureate Prof Yuan Lee (Taiwan)

3. Dates and locations

Country	Town	Dates
Taiwan	Taipei	2004, 22–26 November
Argentina	Buenos Aires	2005, 9-15 May
Russia	Krasnoyarsk	2005, 14-18 November
Korea ³	Gwangju	2006, 20-24 February
South Africa	Grahamstown	2007, 19-23 March

4. Venues and organizers

Country	Venue	Organizer	Affiliation	Local organizer
Taiwan	National Taiwan Normal University (NTNU), Graduate Institute of Science Education	Prof Mei-Hung Chiu (IUPAC)	National Taiwan Normal University (NTNU)	Prof Mei-Hung Chiu, Dr Shu-Nu Chang (IUPAC)

³ YAC Korea was not part of the IUPAC/Science Across the World project funding, but completely facilitated by the Korean Chemical Society.

Argentina	ESSARP (the English Speaking Scholastic Association of the River Plate)	Prof Norma Nudelman (IUPAC), Mónica Tosi (SAW)	Universidad de Buenos Aires, T.S. Eliot School	Prof Norma Nudelman Mónica Tosi
Russia	Pedagogical University of Krasnoyarsk	Natalia Gapanovitch), Prof Natalia P. Tarasova	D. Mendeleyev University of Chemical Technology of Russia, branch division in Krasnoyarsk and Municipal Educational Centre of additional education No 1', Krasnoyarsk, D. Mendeleyev University of Chemical Technology, Moscow	Natalia Gapanovitch, Prof Marina Lesovskaya (Pedagogical University of Krasnoyarsk)
Korea	Chonnam National University	Prof Choon H. Do (IUPAC)	Sunchon National University, Sunchon Chonnam	Prof Choon H. Do
South Africa	Rhodes University	Dr Erica Steenberg (IUPAC)	University of the Witwatersrand, Johannesburg	Dr Erica Steenberg, Ken Ngcoza (Rhodes University)

5. Participants

Country	Number of participants	Background	Contact hours course
Taiwan	25	Science and English (few) teachers, science museum staff (few)	32
Argentina	13	English and Science (few) teachers	10
Russia	43	Science and English teachers	32
Korea	25	Science and English (few) teachers	32
South Africa	24	Science and English teachers	20

6. Local support and visibility

Country	Official support	Visibility
Taiwan	yes	stands, announcements outside, posters, YAC bags, banners
Argentina	little	none
Russia	yes	little
Korea	yes	announcements outside, posters
South Africa	yes + SASOL Science Festival (Scifest)	announcements outside, posters

Nicolás Fossati from the T.S. Eliot School in Buenos Aires, Argentina, designed our YAC emblem. Nicolás did so while still at school, but has since gone on to study art at University in Buenos Aires. British Council Taiwan turned Nicolás' design into our wonderful coloured logo.



Visibility: participants in Taiwan (left) and all YACs in Korea (right)

7. Workshops

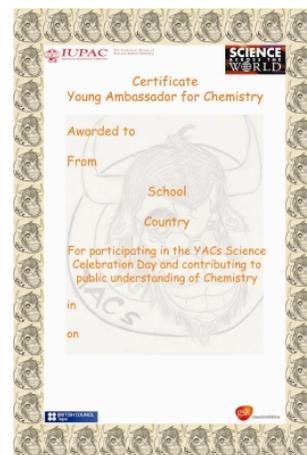
At the start of most courses we enjoyed very nice opening ceremonies with many high ranked officials and representatives from partner organizations and sponsors.

Using the *Train the Trainers* model we expected the participating teachers to be able to run a YAC event not only after the course, but also later in their own schools/regions.

The workshops concentrated on two existing Science Across the World topics: 'Talking about genetics' and 'Chemistry in our lives'. We discussed ins and outs of joining a global educational programme: e.g. time management and methodology. The participants practiced the experiments, for 'Talking about genetics' constructing a large DNA molecule from sweets, for 'Chemistry in our lives' developing a line of cosmetics for the YAC event.

After four days hard work all teachers received a beautiful YAC certificate of recognition.

In Taiwan Prof Choon H. Do (Korea) visited us during two days, to investigate how to organise YAC in Korea. During YAC Korea delegations from Japan and Taiwan were involved!



8. Language and translations



English and science teacher collaborating in Krasnoyarsk (Russia)

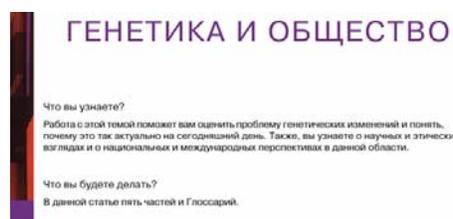


English teacher Mrs Ma in Gwangju (Korea) as interpreter

English was the language of instruction and communication in all courses. In Taiwan we managed with interpretation of the organizers, in Argentina many English teachers took part, in Russia we were provided with a full time interpreter, in Korea we met problems, so we often needed the help of a few participating English teachers and in South Africa we managed fine, due to teachers and students being bilingual (Xhosa and English).

For all events (except for South Africa)

the teaching materials and resources for the students have been translated in the local language: Chinese, Spanish, Russian and Korean. In Taiwan, Korea and South Africa we were provided with comprehensive books with all resources. All translated materials are downloadable from the Science Across the World site for all teachers (www.scienceacross.org).



Topic 'Talking about genetics' in Russian

9. YAC events

Country	YAC venue	Number of students involved	Estimated number of passers-by
Taiwan	In front of shopping centre in Taipei 101, the tallest building (508 m) in the world	72	not counted
Argentina	Japanese garden	30	50
Russia	Lecture hall in the Pedagogical University of Krasnoyarsk	108 children, teachers, parents, University students and colleagues from the Centre of additional education N ^o 1 and the Pedagogical University	
Korea	<i>in front of bus station</i>	60	3600
South Africa	square in front of the cathedral, right in the town centre	80	hundreds

We organized the YAC event four times outside and once inside (Krasnoyarsk, Russia). The temperature in November in Siberia didn't allow us to organise an outside event.



Argentinean students prepare their cosmetics



Russian students prepare their sweets DNA

The training enabled the participants to instruct the students for YAC day. This procedure worked very well, YAC events went smooth with trained teachers and clear instructions for the students. Enthusiastic students built their DNA and designed, produced and marketed their

cosmetic lines. We collected a variety of wonderful new brands!

Our juries had the hard job to choose the student groups with the best TV commercials. In Grahamstown, South Africa we watched 18 creative commercials! At the end of the day, the winning groups received their prizes and all students were offered a certificate of recognition and presents from the different participating sponsors.



Winning TV commercial in Gwangju, Korea



Science theatre in Krasnoyarsk, Russia



Prof Norma Nudelman and Mónica Tosi distributing the certificates in Buenos Aires, Argentina

A big surprise was the use of theatre and music. Complete new 'Chemistry' songs were composed and all scientific nonsense, sometimes used in real commercials, was gratefully used!

In Krasnoyarsk the event ended with Science Theatre by a group of primary students. The story, written by a young student, dealt with a witch that misused chemistry, but end good, all good! And the event really ended with song and dance with a large part of the audience.

10. Results from Roving Reporters

Apart from the students who worked on cosmetics and DNA, our roving reporters questioned the public about the event and their opinions about chemistry. During the first events they asked:

1. Do you know what is happening here?
Most people knew some information about the event.
2. Is it useful for pupils to study science?
All of them answered that it was useful.
3. Did your attitude to science change?
The majority of the visitors said that it changed.

Following are a few comments about the event and chemistry in general that the public made to these reporters: 'the event should also be organized in elementary schools and community centers', 'this display helps us understand life and the world', 'chemistry has a positive influence on our life and can improve our society', 'by applying chemistry to everyday life, it is easier to

learn', 'the first thing I think about when I hear 'chemistry' are explosions', 'my impression about chemistry comes from tests (exams)'.

Later we slightly changed the questions to:

1. Do you know what the students are doing?
2. Do you like what the students are doing?
3. What can you remember of your own chemistry lessons in school?

This last question showed a variety of answers from negative: 'chemicals are dangerous', theoretical: 'mercury is very heavy and sulphur is very yellow', 'I still remember the tests for the gases and most of the Periodic Table', practical: 'I know that chlorine kills harmful bacteria in water' to appreciative: 'we did not have these kinds of things in our generation, but we are glad for our children'.

Two experts (Prof Mei-Hung Chiu, Taiwan and Dr Erica Steenberg, South Africa) are analyzing the collected data in more detail.



Roving reporter questions the public in Grahamstown, South Africa

11. YAC events: visibility and media coverage

Country	YAC branding	Publicity
Taiwan	Banners YAC bags Materials book Posters Certificates YAC balloons Stickers	United Daily News, Taiwan's newspaper with the largest number of subscriptions
Argentina	Certificates	
Russia	Certificates Materials book YAC balloons (Taiwan) Stickers (Taiwan)	Krasnoyarsk News
Korea	<i>Banners</i> <i>Materials book (ISBN 89-5708-112-7)</i> <i>Certificates</i> <i>Stickers</i>	<i>Local television (www.ikbc.net)</i>
South Africa	Materials book Certificates Posters Stickers (Taiwan)	Press release SASOL Science Festival



The idea to promote chemistry by YACs was carried out in a variety of ways. During all events the participating students took up their tasks seriously and enthusiastically. They decorated venues with specially designed posters or with the winning posters of our poster competitions. At the end of many events we enjoyed yelling, singing and dancing. Representatives from the schools and many partner organizations attended the grand finales of our YAC happenings to add official flavour to the event.

We were thrilled to see newspaper articles, television reports and press releases sent out. Making the most of opportunities in the local and national media is an important part of raising awareness of Chemistry and Chemistry education.



Prof Wang Keun Lee talking to a reporter of local digital TV station ikbc.net (Gwangju, Korea)



Article about YAC in the United Daily News (Taipei, Taiwan)



Reporter of the Liberty Times interviewing three YACs (Yilan, Taiwan)



'Official' jury in Taipei, Taiwan: Gordon Slavin (British Council), Lida Schoen and Sarah Chang (GlaxoSmithKline Taiwan)



Principal and Science teacher of Ntsika High School with her students in Grahamstown, South Africa

12. Acknowledgements

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- British Council, Taipei, director Gordon Slaven, Richard Law, Hsin-Yuan Lai, Iris Hung;
- Chinese Chemical Society, located in Taipei, president Prof Kan-Nan Chen;
- GlaxoSmithKline Taiwan, Human Resource & Corporate Affairs Director Deborah Hsu, Rosa Chang;
- ESSARP, the English Speaking Scholastic Association of the River Plate, director Dr Cristina Banfi;
- Fundacion Espacios Verdes (Japanese Gardens), managing director Horacio Kagami;
- Municipal Educational 'Centre of additional education N° 1', Krasnoyarsk;
- Local Education Authority in Krasnoyarsk, Russia;
- British Council Moscow;
- Korean Chemical Society;

- National Chonnam Normal University in Gwangju, Korea, (Prof Wang Keun Lee);
- Jeollanamdo Office of Education, Gwangju, Korea
- British Council, Seoul, director Gavin Anderson;
- SASOL Science Festival (Scifest), director Brian Wilmot;
- South African Chemical Institute (Dr. Mike Booth);
- RADMASTE Centre (Prof. John Bradley);
- Rhodes University, Education Department, director Prof George Euvrard;
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- BioRad, Life Science Education, for donating five 'Genes in a bottle kit's;
- Central Laboratory of the Research Councils (UK);
- Roche Switzerland;
- University of Cambridge, International Examinations.



Winner of the BioRad prize in Grahamstown, South Africa

13. Spin off

During the project smaller YAC courses/events were organized in Bulgaria (Plovdiv, Sofia), Egypt (Alexandria), Jordan (Tafila), Korea (with Korean teachers during 19ICCE), Taiwan (Yilan) and Lithuania (Vilnius) with support of many different sponsors.

A special mention for Taiwan. In August 2006 the Ministry of Education (MOE) facilitated a new two day meeting in Yilan. 12 new teachers learned about YAC. The next day around 30 students with their teachers ran the event in front of the biggest Department Store in town. The enthusiastic students and teachers showed how wonderful chemistry can be. Our roving student reporters interviewed the public and they were interviewed by the press! The Yilan Liberty Times covered the event!

This was a real success, after parents who wanted the guarantee from the school that no explosions (the public image of chemistry!) would harm their children and the manager of the store that first refused to host the event. After a lot of discussions he agreed and even ended with the presentation of the prizes to the students. Well done Yilan students and teachers!



YACs in Yilan before the beautiful YAC banner

14. Conclusions

The YAC project has been a success. Thousands of students, teachers, parents and passing public (either invited or by chance) in many countries have been exposed to the 'good' side of chemistry, young students showing easy to produce instructive models and producing everyday-life products, that nearly everybody uses.

Local ownership proved to be essential for a successful course/event.

Our next job is to make YAC sustainable and self supporting in the visited and new countries. We collected many data that can help and we need to collect more.

The main thing now is to find new sponsors to carry on.

15. Future

For the next 6 months the YAC team got new invitations from Jordan, Qatar, Saudi Arabia, Yemen, Oman, Taiwan and Pakistan.

16a. Publications about YAC

1. Lida Schoen, Keith Kelly, Young Ambassadors for Chemistry in Taiwan, in *Chemistry International*, March/April 2005 (www.iupac.org/publications/ci/2005/2702/pp2_2003-055-1-050.html)
2. Lida Schoen, Keith Kelly, Young Ambassadors for Chemistry in Krasnoyarsk, in *Chemistry International*, March/April 2006 (www.iupac.org/publications/ci/2006/2802/pp2_2003-055-1-050.html)
3. Lida Schoen, Keith Kelly, Young Ambassadors for Chemistry in Korea, in *Chemistry International*, Sept/Oct 2006 (www.iupac.org/publications/ci/2006/2805/pp6_2003-055-1-050.html)
4. Lida Schoen, Science Across the World in the Yilan province in Taiwan, feature on the *Science Across the World website* April 2007 (www.scienceacross.org/index.cfm?fuseaction=content.showcontent&node=655)
5. Lida Schoen, Keith Kelly, Young Ambassadors for Chemistry in South Africa, in *Chemistry International*, July/Aug 2007 (in the press)



16b. Publications about the poster competitions

6. Lida Schoen, 'It's a Chemical World', The Overwhelming Success of A Poster Competition, in *Chemistry International*, Nov/Dec 2003 (www.iupac.org/publications/ci/2003/2506/1_schoen.html)
7. C.H. Do, in *ChemWorld*, Vol. 47, No. 1, pp 76-77 (2007) (in Korean)
8. C.H. Do, in *Chemical Education*, Vol. 34, No. 1, pp 6-9 (2007) (in Korean)
9. Lida Schoen, 'Chemistry According to Kids', in *Chemistry International*, Jan/Feb 2007 (www.iupac.org/publications/ci/2007/2901/1_schoen.html)