

SCIENCE EDUCATION CENTRE

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Innovative Projects for Science Learning In the International Year of Chemistry, 2011

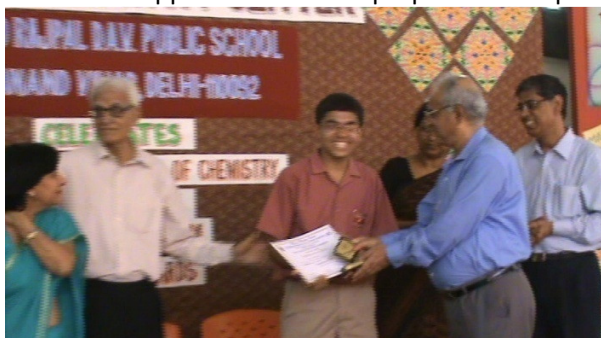
Declining interest in science education is a matter of universal concern despite the fact that pure sciences and pure mathematics are the backbone of technology, engineering and all 'applied' disciplines. A large number of students are opting out of the science stream at the Senior Secondary level in Indian Scenario also. Further, whatever enrolment we have in science, it is not being trained properly. One of the reasons for this is that there is lack of hands-on experience in the regular curriculum. Science without experiments is nothing but a history.

In December 2003 the Science Education Centre was launched at DAV Public School, Dayanand Vihar to popularize the study of science and mathematics using state-of-art technologies and promote enrollment. The primary objective of the centre is to offer competitive environment to students to exhibit their conceptual and problem solving skills. Another objective is to use the feedback of hands on to initiate the design and development of high-quality high tech resource package for improving the teaching/learning process in science and mathematics at all levels in cost-effective manner. Teachers' training is essential to meet these requirements. Therefore, teachers' training is also one of objectives of this centre. Teaching methodology obviously would be part of this exercise. Another matter of priority is to focus on strategies for bringing into educational mainstream such 'disadvantaged' schools who do not have the resources to expose their students/teachers to the 'joy of learning Science'.

The year 2011 was a special year because 100 years back well known scientist Madam Curie got Nobel Prize in Chemistry. The IUPAC and UNESCO have taken the initiative to celebrate the year as the year of Chemistry all over the world. In India IYC 2011 was celebrated in many ways. We had also made an effort to popularize science through Hands on activities particularly this year. A number of innovative projects were carried by the Science Education Centre (SEC) in collaboration with Hindu College (HC), Vigyan Vikas Kendra (VVK) and Indian Science Congress Association, Delhi Chapter (ISCA) during the International Year of Chemistry-2011. The projects in the form of Hands on activities, competitions and symposium/conference/colloquium/lecture cum demonstration are carried out at various institutions for different level of students, teachers and scientists. These activities are mentioned in the following paragraphs in chronological order.

May 2, 2011: Science Colloquium

- Lectures by Professor Monika Dutta, Delhi University on Chemistry of Gem Stones; by Dr Aruna Kaushik, DRDO on Radiochemistry and Nuclear Chemistry and by Dr CK Seth, Hindu College on SI Units and their uses. The Chief Guest for the occasion was Dr. Bibek Bandyopadhyay, Director Solar Energy Centre, Ministry of New and Renewable Sources of Energy (Government of India). Around 150 students from various classes and PGTs of Chemistry, Physics, Biology and Mathematics attended this programme. Certificates were distributed to the meritorious students for excellent performance during 2010 Vagiyanka- a Science quiz conducted by SEC in the International Year of Chemistry. The teachers were appreciated for the preparation of questions for the quiz.



Chief Guest awarding certificate



Resource Person delivering lecture

May 7, 2011: Brainstorming Session

- 34 PGTs of Chemistry, Physics and Biology from 14 schools attended and discussed about the laboratory syllabus. It was decided the SEC will design and develop some of such experiments and then train teachers to carryout these experiments with their students in their own laboratories.

May 16, 18 -19, 2011: June 28-July 2, 2011: July 16 - 20, 2011: September 1-3, 2011:

November 1- 3 2011: Workshop on Investigatory Science Projects

- **six workshops for students and teachers of different levels of school and college** fabricated electronic thermometer based on LM 35 D temperature transducer, Performed heat capacity and heat of neutralization experiment using this instrument and their own made calorimeter. They compared the results with the theoretical data. The students made pH metric titration curves for HCl – NaOH using QBASIC and C++ languages. They were thrilled to carry all the three activities because they have never seen electronic components, never used computer for the learning of languages for the plotting of graphs.



Students doing work

October 21, 2011:, November 19, 2011: Lecture cum demonstration for students/teachers

INSPIRE

The following experiments were carried out in front of around 200 students in the lecture cum demonstration held on October 21, 2011 at Amity University Lukhnow and November 19, 2011 at Amity, Jaipur.

- Egg in a bottle
- Non burning Towel
- KMnO_4 - Glycerin Reaction
- B Z Reaction
- Briggs Rauscher Reaction

October 29, 2011: Lecture cum demonstration for ISCA for the society

The following experiments to around 50 scientist/general persons in the lecture cum demonstration held on October 29, 2011 at India International Centre, Delhi:

- Egg in a bottle
- Non burning Towel
- KMnO_4 - Glycerin Reaction
- B Z Reaction
- Briggs Rauscher Reaction

November 8, 2011: Spectrum 2011- A Science Exhibition

A number of live projects were demonstrated by the students of various classes in this Spectrum science exhibition. It was held at DPS Indira Puram, Ghaziabad and the students were well appreciated with different awards and prizes.

November 18, 2011: Vaigyanika-2011

4508 students took part in this off line science quiz (Vaigyanika, Sanskrit word for science quiz) from 28 schools of 6 different states in India. The students from class VI to X were given with forty science questions, 10 each in physics, chemistry, mathematics and biology. The students of class XI and XII standard were given 40 questions each in all the four different discipline. The results of OMR sheet is in progress. The certificates will be given to them on January 16-17, 2012 during a national symposium cum science colloquium to be organized in association with ISCA.

The best tribute to Madam Curie will be to continue hands on activities for learning science at all the levels: primary, secondary and tertiary. The SEC, HC, VVK and ISCA are committed to this cause of learning science through hands on activities at least in India to begin with. In fact the mentioned institutions are planning to initiate a new activity- Hands on Competition during a valedictory function of IYC-2011 organised on **January 16-17, 2012**. In this we are exploring around 15 projects which the participants have to carry in 40 minutes duration and few good projects will be accordingly awarded. We are also distributing certificates duly signed by the chairman IUPAC-CCE to all those who participated in the workshops/competitions, etc .