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Dr. D.P. KHANDELWAL - Founder of IAPT
(1.10.1921 - 12.2.1996)

*Remembered by IAPT fraternity on the
22nd Anniversary of his journey to heavenly abode*

POLLEX-I "Hands on Experiments with Physics Olympiad Equipment" **A Report by Ravi S. Bhattacharjee, (Coordinator IAPT_APhO CELL)** **SGTB Khalsa College and Mr. U.Singh (Secretary, Gurugram Welfare Society)**

POLLEX-I – The First Physics **OL**ympiad **LE**vel **EX**periment or in other words a "Hands on Experiments with Olympiad Equipment", as a follow-up to our robust APhO program, was organised at SGTB Khalsa College, University of Delhi from 23rd Dec 2017 to 25th Dec. 2017. The workshop was organised by the joint efforts of the IAPT_ APhO Cell and Gurugram Welfare Society. Pollex stands for "thumb" and the thumb is key to the use of tools. Pollex is our effort to promote excellence in experimental work at the pre-college level leading to a Skilled India.

As reported in the EC, RC-1, RC-2 and RC-3 were contacted repeatedly but no school was suggested by them. As a result schools were invited by contacting them on the e-mail and finally the following 11 schools participated.

No.	School code	Name of School	Location	Name of Teacher	Name of Students
1	A	Bal Bharti Public School, Gangaram	Delhi	Mrs. Sonika Babbar	Vaidehi Chowdhry Shivani Pahadiya
2	B	BirlaVidya Niketan, Pushap vihar	Delhi	Mrs.Pratibha Balodhi	Gaurav Dawra Aastika Anand
3	C	Indraprastha Global School	Noida	Avdesh Kumar	Ishan raj Mishra Sahil Chautani
4	D	Kothari International School	Noida	Sandeep Shandilya	Johance Daniel Nikhil Rewar
5	E	Mata Gujri Public School, Greater Kailash	Delhi	Sabari Sarkar	Anmol Kaur Abhishek Tiwari
6	F	Millinneum School	Noida	Anju verma	Abhey Kalia Anusha Malik
7	G	Mount Carmel, Anand Niketan	Delhi	Dr. Rajeev Tyagi	K. Sowmya C Manali
8	H	Pathways World School, Aravali	Gurgaon	Mrs. Niharika sharma	Avikal Mann Satyam Pratap
9	I	Scottish High International School	Gurgaon	Neeraj Pant	Srijan Saxena Arnavi Rauthan
10	J	Indraprastha World School, Paschim vihar	Delhi	Dherraj Chandavani	Simran Arora Dhrish Sharma
11	K	Mount Carmel, Anand Niketan	Delhi	Ms. Seema Sharma	Sahil Sagar Swastika Ojha

The aim of the workshop was to provide an informal, non-competitive milieu to the participants so that there could be interaction amongst teachers and students of each school, across schools and with the resource team. The only rigidity was to complete the given task. Depending on the availability of equipment and other logistics the following Experiments were chosen.

Sl No	Experiment	Day 1	Day 2	Day 3
1	Speed of Ultrasonic waves in water (APhO2014 Singapore)	Gp.C	Gp K	Gp G
2	Friction (APhO2012 India)	E	B	C
3	Air Core transformers (APhO 2012 India)	F	C	A
4	Air Core transformers (APhO 2012 India)	G	D	B
5	Oscillation of water filled vessel (APhO2010 Thailand)	I	F	J
6	Earth's Horizontal Magnetic Field (APhO2010 Thailand)	H	E	K
7	Physics of windmill (APhO 2013, Indonesia)	D	A	H
8	Measurement of liquid conductivity (APhO2007 Shanghai)	J	H	I
9	PZT Piezoelectric Effect and Application (APhO 2015 Hangzhou)	K	G	F
10	Diffraction due to helical structure (IPhO2015 India)	A	I	D
11	Diffraction due to helical structure (IPhO2015 India)	B	J	E

The schools were divided into 11 Groups (Gp.A to Gp.K) and each allotted an experiment. Thus each school got to do three experiments. Each table housed an experimental setup and all necessary instructions as done at the Olympiads. The teams had to understand what was required for the experiment including the theory of the experiment from these instructions, The teams were free to interact and discuss so as to comprehend the experiment. They were also free to consult The Resource Team.

Resource Team: Prof. M.L.Ogalapurkar Expt. 1, Expt.8

Prof. J. Gadre Expt. 2, Expt. 3, Expt.4

Dr. Bhupati Chakraborty / Dr. Manish Kapoor Expt. 10 and Expt. 11

Dr. Deepak Chandra Expt.7

Mr. H.Pandey Expt.9

Mrs. Pragya Nopani Expt.5 and Expt 6

Overall Experts: Prof. Vijay Singh, Dr. Ravi S. Bhattacharjee, Dr.P.R.Singh

Observers: Dr. Suraj Prakash, Mr.U.P.Singh



Hence it was a pedagogy which attempted at learning from bottom to top. Teachers and students were exposed to and got acquainted with latest tools and experiments along with various techniques required for good experimentation such as procedural understanding, handling of complex equipment, data acquisition, reporting, analysis and error estimation. these higher order experiments At the end of the experiment the teachers were given model marking schemes (as in the Olympiads) to assess these multidimensional skills The purpose was self assessment and

learning to "doing" experiments rather than following instructions. It was an overall attempt to learn how to learn.

At the end of the workshop, feedback was obtained from all participants. There was unanimity that a non-competitive atmosphere enhanced both the will to learn, comprehension and cognition. Every participant wanted more of such experience.



Our endeavour is to create a resource team and spread this idea of an alternative pedagogy so that at a later date recommendations can be made to CBSE etc.