

International Exhibition  
“Experiencing Mathematics”  
Tour in India  
**December 2007 – March 2008**

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***Date: March 5 th, 2008***



## **I) Introduction**

“Experiencing Mathematics” is an international exhibition which was designed by Centre•Sciences, initiated and supported by UNESCO, especially for developing countries. This exhibition has been displayed in India, initiated by the science responsible of Unesco in South Asia, Dr Ahmed Fahmi, in the context of a circulation in 4 cities (New Delhi, Calcutta, Bangalore and Mumbai).

It was organized with the collaboration and financial support of:

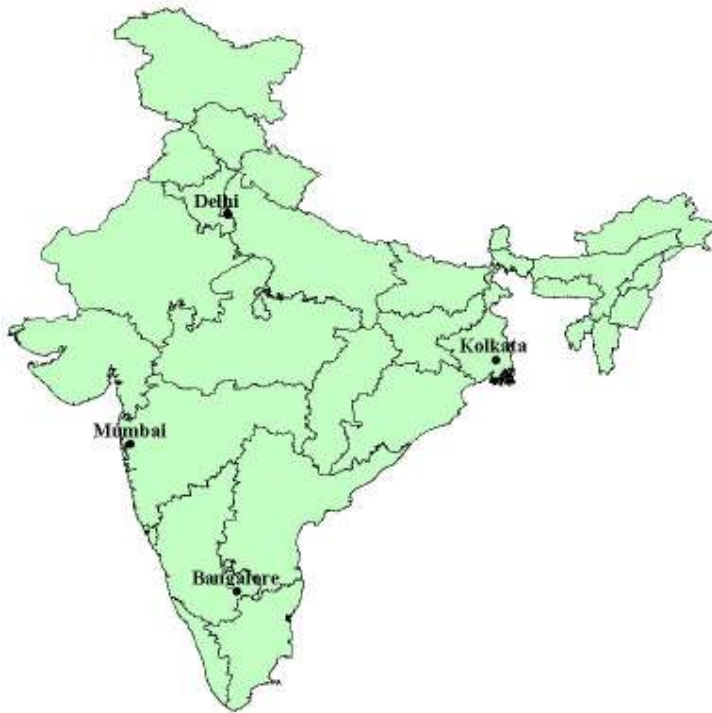
- NCERT, National Council of Educational Research and Training in India,
- MHRD, Ministry of Human Resources Development,
- NCSM, National Council of Science Museums (Government of India),
- French Ministry of Foreign Affairs (DGCID),
- French Embassy in Delhi,
- CIMPA, International Centre for Pure and Applied Mathematic.

This exhibition was intended to show to all visitors that mathematics can be astonishing, interesting and useful, accessible to everyone. They play a large part in daily life, are useful in many trades, and have an important role in our culture, development and progress. The exhibition was consisting of interactive exhibits on mathematics having much relevance to our daily life experience.

The government of India, through NCERT, is supporting a number of large initiatives to improve mathematics education in all their states and union territories, particularly as the achievement rates in Mathematics education, at both primary and secondary school levels, is quite low. In addition, drop out rates in Science and Mathematics is on the increase, associated with a decrease in teachers opting to train in these subjects. With this in mind, NCERT vision to enhance mathematics teaching in India folds well with the concept of the exhibition.

The NCERT has also expressed keen interest in training mathematics teachers of the upper primary/lower secondary levels (ages 10-12) in the use of mathematical models and devices, and introduce hands-on mathematics in the classrooms which can also be supported by ICMI (the International Commission for Mathematical Instruction) and IMU (the International Mathematical Union).

## II) Schedule of the tour in India



### **New Delhi**

Dec. 1st – Dec.16th, 2007

**National Science Centre**  
(NSCD)

### **Calcutta**

Dec.31st – Jan.14th, 2008

**Birla Industrial & Technological Museum**  
(BITM)

### **Bangalore**

Jan.23rd – Feb.11th

**Visvesvarya Industrial & Technological Museum**  
(VITM)

### **Mumbai**

Feb.23rd – March 9th

**Nehru Science Centre**  
(NSCM)

## III) Opening sessions

**In New Delhi**, Prof. Bernard Heulin, Counsellor for Science & Technology, French Embassy in India and Prof. B.R. Neupane, Regional Programme Specialist (Water Sciences), inaugurated the exhibition on December 3rd 2007.

Prof. R. B. Bapat, Head, Indian Statistical Institute, New Delhi, was invited as guest of honour on this occasion.



(B.R Neupane of UNESCO)

**In Calcutta**, the exhibition on "Experiencing Mathematics", was inaugurated by Prof. Bharati Banerjee, Head, Department of Mathematics, Sree Shikshayatan College, Kolkata.

**In Bangalore**, the exhibition started Jan.23rd, with the visit of Bruno Rouot, Attaché for Science and Technology (French Embassy).

**In Mumbai**, it was inaugurated at Nehru Science Centre, on February 23rd 2008 by Prof. M.S. Raghunathan, Padamshree and Homi Bhabha Chair, School of Mathematics, Tata Institute of Fundamental Research.

#### **IV) Setting up of the exhibition**

In the context of the circulation of the exhibition, Centre.Sciences has organized two settings up:

- the first one was made in the National Science Centre (NSCD) in New Delhi
- the second one in the Visvesvarya Industrial and Technological Museum (VITM) in Bangalore

Each time, we could work in very good conditions and efficiently to organize:

- **the setting up** with the Science Centre technical team,
- **the training session** on technical aspects (setting up, maintenance and dismantling),
- **the training session** for animators on the contents of each theme and how to manage classes in the exhibition,
- **the training session** for maths teachers (seeing after).

(the training session in New Delhi)



## V) Training sessions on hands-on mathematics in the classrooms

Before beginning the tour of this exhibition in India, we worked in narrow collaboration with local partners : UNESCO, NCERT and French Embassy. In agreement with the museums we had organized a training session for mathematics teachers of the upper primary/lower secondary levels (ages 10-12) in the use of mathematical models and devices, and introduce hands-on mathematics in the classrooms.

Two sessions of formation (New Delhi and Bangalore) for mathematics teachers were organized with a presentation of the web site of "virtual experiencing exhibition" initiated for that by UNESCO and conceived by Centre•Sciences:



[www.ExperiencingMaths.org](http://www.ExperiencingMaths.org).

During them, we saw how to use the web site with pupils.

At first, with the education team of each museum, we have encouraged the teachers to come back again to visit the exhibition with their pupils, and to see in the same time mathematics applications in the Science Centre.

In a second time, we studied how to use the virtual exhibition and develop pedagogical projects at school.

After this, teachers will have the possibility to work with the education team of the museum.



(training session for teachers :National Science Centre in New Delhi)



(training session for teachers : Visvesvarya Industrial & Technological Museum in Bangalore)

**In New Delhi**, a workshop on "Teaching Mathematics" for in-service teachers was organized in which we explained the innovative techniques and methodology for teaching mathematics at school level.

Up to Mr Anurag Kumar, Curator :

**"We emphasized that using teaching aid can definitely supplement class room teaching. The in-service teachers interacted with resource person and found the workshop very useful for explanation of various concepts from simple to complex."**

(about 30 teachers participated in the workshop)

This Science Centre has got wide publicity and received a large number of visitors during the period of the exhibition. The Centre is now planning to develop teaching module in the form of aid etc. to supplement class room teaching at various levels. In near future, they plan to hold workshops on 'Teaching Mathematics' for pre-service teachers.

**In Bangalore, a Fun with solids in Bangalore, an approach captivating :**

As a part of the exhibition, a series of **demonstration-cum-lectures** (6) on "**Fun with Solids**" developed at VITM, were conducted by Shri R Baradhan, for 440 students.

The museum organized this series after the participation of teachers to the workshop.

(about 27 teachers participated the training session for maths teachers)

(Shri R Baradhan, education officer)



## VI) Conclusion

	<b>Visitors</b>	<b>Schools</b>	<b>Days of presentation</b>	<b>Teachers</b>
<b>New Delhi</b>	21.575	225	16	242
<b>Calcutta</b>	9.145	19	15	32
<b>Bangalore</b>	41.045	255	20	272
<b>Mumbai</b>	25.502	420	16	470
<b>Total</b>	<b>97.267</b>	<b>734</b>	<b>67</b>	<b>1016</b>

The spread of the knowledge of mathematics is a very important activity for India today, because every subject starts from the knowledge of thinking and this is using the mathematics. All relevant institutions should work jointly to promote and ameliorate the teaching and learning of mathematics in order to develop the field of Science and Technology in India.

Therefore, the "Experiencing Mathematics" exhibition, under the support of NCERT, French Embassy and UNESCO in India, is a main activity of education to show the public that mathematics are very useful in both daily life and education. It also shows the usefulness of mathematics for the development of the society.

The exhibition was very successful in India with near than 100,000 visitors.

At last, the number of schools (734) which visited the exhibition with teachers is very encouraging.

Teachers (1016) of those schools are now ambassadors of a new way of teaching mathematics.

They are also initiators of scientific culture projects in mathematics at school.

At the end of this tour in Mumbai, the exhibition will continue up to March, 2008. The education team in the museum received a good response from all visitors particularly school and college students.

The tour in India will finish after closing of the exhibition on March 9th, 2008.

We hope to continue any kind of support to the activities of mathematics development in India.

(National Science Centre in New Delhi)



## **VII) Acknowledgements**

Our thanks go to the following who have contributed at the completion of this tour :

### **UNESCO**

B.R Neupane, Regional Programme Specialist  
Ahmed Fahmi, Programme Specialist in Science & Technology  
for Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka

### **National Council of Educational Research and Training (NCERT)**

Prof. Krishna Kumar, Director

### **National Council of Science Museums**

#### **National Science Centre**

SK.Emdadul Islam, Curator

### **French Ministry of Foreign Affairs**

Sylvie Ballet (DGCiD)

### **French Embassy in India :**

- in New Delhi

Bernard Heulin, Counsellor for Science & Technology,  
Vivek Dham, Coordinator Science and Technology Service,

- in Bangalore

Bruno Rouot, Attaché for Science and Technology  
Service for Science and Technology  
Nino Cicarrone, French Alliance Director

### **CIMPA**

Pr Michel Waldschmitt, Vice-President

## **Science Centres**

### **National Science Centre - New Delhi**

S. M. Khened, Director  
Anurag Kumar, Curator

### **Birla Industrial & Technological Museum (BITM) - Kolkata**

J. Sthanapati, Director

### **Visvesvarya Industrial & Technological Museum (VITM) - Bangalore**

K. Basudev Bhatta, Director  
Sunil Kumar, Curator

### **Nehru Science Centre - Mumbai**

A. S. Manekar, Director

