

## Princeton Class of 1978 Foundation Summer Service Award

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### Teaching Math and Science to Underprivileged Muslim Children – West Bengal, India, Summer 2009

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Princeton Class of 2012

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The project for which I sought and received generous financial assistance from the Princeton Class of 1978 Foundation was dedicated to developing teaching learning aids in math and science for underprivileged Muslim children in West Bengal, my home state in India. I worked in this project as an unpaid intern from June through August 2009, and this experience was one of the most deeply moving and humbling ones in my entire life.

West Bengal has approximately 20 million Muslims, or around 25 per cent of the state population. Madrasahs – traditional centers of Islamic religious learning – are an integral part of its education system. In the absence of a uniform civil code in India, the secular curricular content of most of these madrasahs is very limited, and this has often exacerbated poverty and unemployment among Muslims, by constraining their participation in public life everywhere, including West Bengal. The ruling government in West Bengal has been for quite some time taking an effort to upgrade several of these 506 madrasahs as “model madrasahs,” with a secular curriculum (plus the Arabic language). The last installment of this occurred in late 2008, when 10 more madrasahs were chosen for such upgradation.



Model madrasah in Malda, West Bengal, one of the eight I visited

Accordingly, the Government of West Bengal started collaborating with the one of India's leading NGOs offering educational services to marginal children, the Vikramshila Education Resource Society (VERS). VERS was given the task of developing effective teaching-learning aids geared towards the secular curriculum for these 10 madrasahs, with a particular emphasis on science education. It was in the context of this project that I was offered an

unpaid summer internship with VERS during June-August 2009, to work as a curriculum developer and designer of teaching learning aids and as occasional instructor in math and science for students of grades 6-10 in these 10 model madrasahs, as part of the West Bengal government's "Madrasah Quality Improvement Project."

For a few weeks before beginning this internship, I prepared for this task by researching the guidelines of the resource documents published by UNESCO for producing low-cost equipment for science and technology education for disadvantaged groups ([http://portal.unesco.org/education/en/ev.php-URL\\_ID=41658&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/education/en/ev.php-URL_ID=41658&URL_DO=DO_TOPIC&URL_SECTION=201.html)). I, however, remained sensitive to the need to adapt these guidelines to the specific learning challenges faced by poor and generally underprivileged Indian Muslim children.



A science class in the model madrasah at Budge Budge, West Bengal

My key responsibilities included: i) visiting these madrasahs regularly to understand the cultural context and academic achievement levels of children; ii) understanding and analyzing the math and science syllabi of students in grades 5-7; iii) developing teaching-learning resources and lesson plans, in collaboration with the Vikramshila team, based on an understanding of the syllabi; and iv) field testing materials/ experiments / plans, in collaboration with the Vikramshila team, to

ensure viability in the classroom situation.

I made twenty-four visits to eight madrasahs between June and August. These were scattered around different districts in West Bengal, including North and South 24 Parganas, Hooghly, Murshidabad, Maldah, and Dinajpur. I was unable to visit the All-Women's madrasah in Ekbalpore, Kolkata, because it is exclusively for girl students and I was not allowed access there. I was unable to visit the Arijullapur Madrasah in person, because of its proximity to villages troubled by frequent armed clashes between Maoist tribal insurgents and the police. The classes that I visited (grades 5-7) in each of these madrasahs had a size of 170-310, usually split into several sections of approximately 50 students each. The students came from varied social and economic background, with a large bulk – about two-thirds – being children of poor tenant cultivators and sharecroppers who have been persuaded by the lure of a regular midday meal to attend school. Some were children of textile weavers, leather artisans, carpenters and fruit and vegetable sellers. In larger towns, especially in the areas near Bardhaman and Kolkata itself, children from prosperous middle peasant families attended.



Posters as a teaching aid in a Grade 5 class in the madrasah at Budge Budge, West Bengal

The medium of instruction – and, thus, of all the teaching materials I prepared – was Bengali. This was not a problem for me, because it is my native language, and I enjoyed helping the children to visualize mathematics through Bengali numerals and letters. My most daunting problem lay

elsewhere. Since I was following the syllabus of the West Bengal Board of Madrasah Education, and since this organization had

scrapped the system of annual examination in Grades 1-4, I found that a large number of children in Grades 5-6 simply did not have a basic grounding in basic numeracy, let alone elementary arithmetic. This was the result of routinely promoting elementary school kids to the next higher grade without assessing their progress in basic numeric skills. In trying to introduce students of Grades 5-7 to concepts like long division and fraction, as well as to the basics of algebra and geometry (including the idea of a theorem), I had a hard time initially and had to fall back frequently on elementary-level arithmetic. Since I placed a great deal of emphasis on the visualization of mathematics – involving posters on poster paper, cardboard and PVC boards, geometry and shapes sets, color tiles, number boards, and flash cards – I was subsequently able to improve the students' level of understanding significantly at least in five of the eight madrasahs I visited. I concentrated on making math a fun experience for these kids by giving them puzzles to crack, and then using their responses to discuss concepts of arithmetic and geometry. I was happy to see that in spite of their general shyness, most of the kids came to like me a lot by the end of my internship. I am also happy to think that I was able to give most of these students a sense of the immense fun and joy of doing mathematics, although I am not sure how much this is going to help them in passing the annual examinations that they require to take at middle school.