

## **Quality Improvement in Mathematics teaching through Innovative means in Foundational Classes of 1 & 2**

In a NCERT survey on Maths, Meghalaya ranked a low 18<sup>th</sup> rank and a National Achievement Survey (NAS) revealed that children performed below national average on all arithmetical operations, except for data handling and applicative operations like calculation related to money transactions, which clearly indicates that the children can perform analytical and applicative aspects. By implications, the glaring gap in arithmetic can perhaps be attributed to teaching quality and teaching approach being deficient in mathematics.

In this context, the State Education Mission Authority of Meghalaya, SSA took urgent steps to forge a collaborative tie up with Jodo Gyan i.e. during 2013 period, the programme was initially implemented under CSR support on a pilot scale in 57 SSA schools, i.e. 29 schools in Ri-Bhoi District and 28 schools in West Khasi Hills District covering 57 teachers and 1353 children of Classes I & II. The outcome of this method was positive with students responding enthusiastically and showing visible signs of improvement in counting and writing numbers through introduction of hands-on activities and maths tool kits. The teachers also provided favourable feedback that these activities greatly enabled them to identify the difficulties faced by the children; besides emerging as an irreplaceable and useful teaching approach in helping the children improve their maths skills.

- This new innovative method of teaching through storytelling and play way method creatively using maths kits as tools for teaching is better, efficient and more effective than the traditional method of teaching, through abstraction and mechanical rules.
- Another noteworthy lesson is that, the degree of learning by the children has improved exponentially, as children are seen to be more comfortable and enthusiastic with play way method, games and activities compared to the usual lengthy explanation, which makes teacher's efforts futile. Also, the degree of learning by the students is greatly enhanced and classroom process is enriched considerably. This new approach takes away the in-born fear of mathematics from them and children are able to learn with more meaning and purpose. More interactions are also seen among the students and also learning becomes truly a 'joyful learning'.

JRM (Joint Review Mission), which consisted of Pedagogy Experts visited the State in 2014 and after having evaluated the approach, found that children responded to teachers with great enthusiasm in Maths. They also favourably noted that the materials and kits on maths concepts were very interesting and were stimulating learning and curiosity amongst children.

Smriti. Zubin Irani, then Union Minister for HRD, Govt. of India, in a letter addressed to Meghalaya Chief Minister, had applauded the innovative maths programme initiated by SSA-Meghalaya, and also stated that she would recommend this programme for replication to other States of the country.

Specially designed Maths Tool Kits have been utilized to support the communication between teachers and children about mathematics and to facilitate the involvement of the teachers and orienting them towards the pedagogical approaches.

### **Meghalaya Maths Project (July 2013 – March 2016)**

| <b>Time Line</b>      | <b>Project Overview</b>                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| July 2013             | Two days orientation workshop on quality improvement for BRPs and teachers                                                                                                                                                                                                                                                                                                                                                                                           |
| December 2013         | Pilot Maths Project for 57 Schools from Ri Bhoi and West Khasi Hills<br>One day orientation workshop for class 1 and 2 Maths teachers of the selected 57 schools                                                                                                                                                                                                                                                                                                     |
| March 2014            | <ul style="list-style-type: none"> <li>• One day workshops for class 1 and 2 Maths teachers to share the new Math pedagogical approach and practise.</li> <li>• Distribution of the Math Kits</li> </ul>                                                                                                                                                                                                                                                             |
| March – April 2014    | Jodo Gyan Team conducted regular school visits with the support of the CRPs to 35 Schools. During these visits Jodo Gyan Team conducted and demonstrated the new pedagogical practises for the teachers at the cluster level.                                                                                                                                                                                                                                        |
| July 2014             | <ul style="list-style-type: none"> <li>• Extension of the Maths Quality Improvement Project to 1000 Schools from West Khasi Hills, South West Khasi Hills, East Khasi Hills, Jaintia Hills and Ri Bhoi</li> <li>• A Presentation on the new pedagogical approach and practise on Maths education for the State Project Director, State Pedagogy Coordinator, District Mission Coordinators, District Pedagogy Coordinators and Block Mission Coordinators</li> </ul> |
| July – September 2014 | A district level orientation workshop on Maths Quality Improvement for 350 BRPs and CRPs from Garo Hills, West Khasi Hills, South West Khasi Hills, East Khasi Hills, Jaintia Hills and Ri Bhoi                                                                                                                                                                                                                                                                      |
| September 2014        | <ul style="list-style-type: none"> <li>• A Block Level orientation workshop on Primary School Mathematics for the class 1 and 2 Maths teachers of the selected 1000 schools</li> <li>• Distribution of the Maths Kits</li> </ul>                                                                                                                                                                                                                                     |
| October 2014          | Jodo Gyan team conducted school visits in order to conduct and demonstrate the new approaches to the teachers. This was done with the support of the CRPs at cluster level                                                                                                                                                                                                                                                                                           |
| November 2014         | A district level orientation workshop on Upper Primary Maths for 345 BRPs and CRPs from Garo Hills, West Khasi Hills, South West Khasi Hills, East Khasi Hills, Jaintia Hills and Ri Bhoi                                                                                                                                                                                                                                                                            |
| March – April 2015    | <ul style="list-style-type: none"> <li>• A second round of the Maths workshop for class 1 and 2 teachers (for 1000 existing schools), BRPs and CRPs were conducted at the block level. The workshop was focus on Maths classroom practises</li> <li>• Teacher Reference Manual (Khasi) was distributed to the teachers.</li> </ul>                                                                                                                                   |
| April – June 2015     | Jodo Gyan Team conducted school visits in order to conduct and demonstrate new approaches with the support of the CRPs                                                                                                                                                                                                                                                                                                                                               |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | at the cluster level.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| August 2015              | <ul style="list-style-type: none"> <li>• Intensive Intervention programme. This was conducted with 67 selected schools from Jaintia Hills and Ri Bhoi Districts which involved regular school visits, classroom observation and intervention, making and modifying monthly and weekly plans according to the level of the children</li> <li>• Block meeting with the 13 CRPs at Ri Bhoi and Jaintia Hills</li> </ul>                                                                                                                                                                                                                                                                                                 |
| August – September 2015  | Conducted Nodal schools visits and other school visits by Jodo Gyan team and meeting the CRPs for classroom observations, demonstrations, discussion and planning.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| September - October 2015 | Two day workshops for the Maths teachers of the selected 67 project schools from Ri Bhoi and Jaintia hills. The focus of the workshop was more on the concepts related with early mathematics and use of the Maths kits in the classroom.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| November – December 2015 | <ul style="list-style-type: none"> <li>• A special Intensive Programme was being implemented for 10 selected project schools</li> <li>• A meeting was conducted with the District Mission Coordinator, BRPs, CRPs, and Maths teachers of the 10 selected project schools in the presence of State Project Director and State Pedagogy Coordinator.</li> <li>• Special classes were conducted by the teachers for class 2 children every day from 16<sup>th</sup> Nov to 4<sup>th</sup> Dec 2015 for 2 hours per day</li> <li>• A baseline and end line assessment were conducted for the 10 selected project schools</li> <li>• Meeting with the identified CRPs one a week for reflections and planning.</li> </ul> |

| <b>Time Line</b>      | <b>Project Overview</b>                                                                                                                                                                                                                                                                          |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| October 2015          | An extension of the project to 3000 schools across all five districts of Garo Hills, East Khasi Hills, West Khasi Hills, Ri Bhoi, West Jaintia Hills.<br>A block level one day Maths orientation workshops for class 1 and 2 Maths teachers were conducted for East Khasi Hills                  |
| February 2016         | Three days Residential Workshops were conducted for 20 identified BRPs from Garo Hills. The focus of this workshop was more on maths pedagogy and curriculum planning                                                                                                                            |
| February – March 2016 | <ul style="list-style-type: none"> <li>• Block/ District level orientation workshops were conducted for 3000 class 1 and 2 Maths teachers with the support of the Identified 10 BRPs</li> <li>• Teacher Reference Manual (Garo) was distributed to the teachers.</li> </ul>                      |
| April 2016            | Upper Primary workshops were conducted for 110 selected project schools in Garo Hills and West Jaintia Hills                                                                                                                                                                                     |
| May 2016 onwards      | Intensive programme in 50 selected project schools.<br>6 BRPs, CRPs and URCs were actively involved regular school visits and planning<br>Baseline assessment were also conducted by these 6 RPs in these selected project schools<br>2 rounds of workshops were conducted for these 50 selected |

|                 |                                                                                                                                                                                                                   |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | project schools                                                                                                                                                                                                   |
| August 2016     | Two days Residential Workshops were conducted for 88 selected BRPs, CRPs and URCs from all the districts of Khasi hills and Jaintia Hills.<br>44 KRPs were identified during the workshop.                        |
| Sept - Oct 2016 | Maths projected was extended in 1000 project schools for classes 3, 4 & 5. Workshops were conducted at the block level for 1000 project schools.<br>44 KRPs also attended and supported at their allotted blocks. |
| Sept- Oct 2016  | Maths Teacher Workshops were also conducted for 2000 project schools for class 1 & 2<br>10 BRPs and CRPs were actively involved in conducting independent workshops                                               |

### **Glimpses from the classroom**



**Teacher training**



**Pynursla**



**An exploratory activity with shapes**



**Garo Hills- Decimal: Making decimal numbers activity**