Multi-grade Multilevel (MGML) Programme in Chhattisgarh : An Evaluation

Submitted to
The State Council for Education Research and Training
Chhattisgarh

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School of Education
Tata Institute of Social Sciences
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Contents

Frequently Used Abbreviations

BRC	Block Resource Centre
BRG	Block Resource Group
CAC	Cluster Academic Co-ordinator
CCE	Continuous Comprehensive Evaluation
CRC	Cluster Resource Centre
CRG	Cluster Resource Group
DEd.	Diploma in Education
DISE	District Information System for Education
DPEP	District Primary Education Programme
EGS	Education Guarantee Scheme
EU	European Union
EVS	Environmental Studies
GER	Gross Enrolment Ratio
MGML	Multi Grade Multi Level
NER	Net Enrolment Ratio
NCERT	National Council for Educational Research and Training
OBC	Other Backward Classes
RTE	Right to Education
SC	Scheduled Castes
SCERT	State Council for Educational Research and Teaching
SRG	State Resource Group
SSA	Sarva Shiksha Abhiyan
ST	Scheduled Tribes
TISS	Tata Institute of Social Sciences
UNICEF	United Nations Children's Fund

Executive Summary

The Multi Grade Multi Level (MGML) programme was started in Chhattisgarh in 2008 with a view to make primary schools more child friendly, and address the multigrade and multilevel classroom realities by allowing children to learn in more individualised and self paced ways. The method was adopted following a visit to the Rishi Valley RIVER programme and the materials were developed by the SCERT, Chhattisgarh with the involvement of teachers. Beginning with a pilot project in Durg district the programme was expanded over three phases to all 26,750 primary schools by 2012. Materials, including learning cards, learning ladders, group charts for wall display, and some materials such as abacus, were centrally printed/produced and supplied. Registers to be used to keep track of children's progress were printed and privately to be purchased by teachers from local vendors. Readers were prepared and supplied, although not to all schools, and workbooks were planned but eventually not produced. Teachers were trained for the method through block level trainings. Classroom walls were painted and roof decorated. Initially a State and Block Resource Group supported the implementation and expansion of the programme. After 2011, the Block and Cluster Resource Centres were expected to support teachers. The programme initially was implemented for grades 1 to 4. From the 2012 session, however, it was restricted to only grades 1 and 2. In the period up to about 2009, simultaneously a new State Curriculum Framework and new State textbooks for all grades were also prepared by the SCERT. The D.Ed. curriculum was also totally revised and new materials also prepared for the new DEd. This was undertaken by the SCERT with the involvement of resource institutions including Digantar, Vidya Bhavan, Eklavya and Azim Premji Foundation. Textbooks were provided to all children in primary schools. The SCERT also prepared guidelines and practices for the RTE mandated Continuous Comprehensive Evaluation, and from 2012 onwards, CCE was also implemented in all schools.

TISS was commissioned to undertake this study by the SCERT, Chhattisgarh to evaluate the MGML programme, its philosophy, design, content and implementation. The study was carried out between August 2012 and June 2013, covering a sample of 120 schools across 13 blocks in 9 districts. Twelve different tools to gather data from the schools, classrooms, teachers, resource persons and officials associated with the programme were used. 120 classrooms were observed and about 90 teachers were interviewed. Assessments of about 240 children from Grade 2 and 630 children from Grade 3 in language and mathematics were also carried out. Field work was carried out between October and December 2013, with some interruptions on account of the

one month long Shiksha Karmi strike. The MGML approach and materials (Mathematics, Hindi, EVS, but not English) were reviewed.

The material of the MGML were found to be better than most conventional textbooks in structure and catering to a variety of learning arrangements and opportunities. The new Chhattigarh textbooks are found to be of better quality. The quality of the MGML content on the whole was found to be mostly in need of improvement. It is largely based on pre-NCF 2005 approaches in language and mathematics. Algorithmic and repetition, information and recall are emphasised over problem solving and thinking. The texts used and exercises provided in language need improvement. In EVS, there is variety. However, the elaboration of each concept area into activities is found to be artificial. Hindi readers are found to be good. On the whole there is limited recognition of the multilingual context; while the materials are in standard Hindi, Chhattisgarhi is the lingua franca in addition to the tribal languages, but these are not reflected in the materials/ learning exercises. There are good activities requiring surveys and dramatisation. However, conceptualisation and integration of group work and whole class activities with the basic method which is individualised, self-paced learning, is found missing and is required. The method is akin to Bloom's mastery learning. Its suitability as the main, rather than complementary method, for early mathematics and language/literacy learning needs to be examined in more detail. The pedagogic role of the teacher is found to be under-conceptualised. The system of logos is also found to be unnecessarily complicated and in need of rethinking. Remediation as is currently addressed is also problematic. The record keeping is also found to be cumbersome. Disaggregating the learning into separate sequences and milestones, that are to be completed/achieved grade wise is also found to be against the conception of the method and bound to produce distortions in practice. So also, restricting it to only grades 1 and 2 are likely to pose problems to the workability of the method itself in its current form.

26% (ie. 31) schools were found to have sufficient essential materials for the practice of MGML, comprising cards, the group charts and ladders. In 21% classrooms, MGML was practiced with understanding, in 17% practiced mixed and adapted pedagogies were found, combining MGML and conventional textbook based methods. The textbook was not being followed as intended anywhere. Among the 48% schools where there was no practice of MGML, in 19% there was conventional pedagogy where the teacher was making an effort and an additional 10% where the teacher was only partially involved and making and effort. In 10% of classrooms teachers seemed to be very negligent.

57.5% of teachers interviewed were Shiksha Karmis, and 46% were appointed since 2006 onwards. 53% were undergoing or had obtained their professional training after joining service, and about 16% were still not trained. Almost all the teachers had received inservice training on the MGML for varying duration. A majority of them however found the training to be inadequate and of poor quality. Trainer quality was largely found to be inadequate as trainers had not themselves used the method and were therefore not convincing, and were only mechanically

relaying information; teachers were told to follow state orders. 22% of teachers seemed to have sound knowledge of the method. These teachers appreciated the freedom the method gave to children and the opportunities for interaction with each other and with the teacher. They also felt that individual cards for each learning unit enabled children to focus on the task on hand. 20% had average knowledge, and 38% poor, with various foundational misconceptions about how things were to be done, and why they were to be practiced. A common misconception was that groups are made according to learning levels of children and that the method is basically monitorial learning. Teachers were also of the view that the method cannot work well if children are irregular or if the class size is small. Teachers found the quality and extent of the resource support inadequate. They also did not receive clear instructions and explanations or guidelines about the MGML in relation to the textbooks and the CCE. Two thirds of teachers with poor understanding of MGML were also found not to be practicing the method. However, about half the teachers with good and average understanding were also not found to be practicing the method. The conventional method of teaching involved blackboard writing, repetition and copying. While the textbooks were being used, the learning exercises in them were not being followed as intended. In some MGML classes, children were found copying the contents of the cards. About 40% of teachers had negative views about children's educability, while about 13% had positive views. Of the 18 teachers with positive or neutral views on educability, 10 were practicing MGML with understanding and 4 were practicing conventional pedagogies with effort. Out of the 36 teachers who had good or average understanding of children's learning and who were reflective, 14 were practicing MGML with understanding and 11 were practicing conventional pedagogies an making and effort. Many teachers were of the view that the method was meant for rural children who could not cope with conventional teaching. In the classrooms where MGML was being practiced, the ambience was very positive and children were more free and actively engaged, as compared to the classrooms with conventional teaching. The method is designed to enable children to progress at their own pace. The teachers records however suggest that children of a given grade generally clustered around the same milestone, and there isn't much of a range.

In grade 2, about 2/3 children have knowledge of single-digit numbers and addition, and about 1/3 children have knowledge of double-digit numbers. Only about 1/3 children can manage single digit subtraction and about 1/5 children can manage double digit subtraction. Even at grade 3 level, only about 2/5 children have knowledge of the double digit sequence. About 2/5 are able to do double digit addition. Knowledge of subtraction computation without borrow is about 1/3 and with borrow is 14%. Of concern is also that a very large proportion of children in both grades did not attempt items at all. Proportionate to the size of the respective gender group, a larger proportion of boys than girls were able to answer correctly.

23% of Grade 2 children were reading fluently or at the word level of a text of Grade 1 difficulty. About 12-15% children were able to spell using *matras*, in both grades. About 15% children wrote full sentences—complex or simple. Other children who did answer wrote only phrases or words. 64% of children did not attempt to write at all. More boys than girls performed above the minimum acceptable score in Language in both grades.

In Grade 3, about 32% of the children had reasonably legible handwriting. 16% of the children had good spelling. About 10% wrote full sentences while another 17% wrote phrases or partial sentences. About 20% or of the children were able to answer comprehension questions that were text-based correctly. 10% or less children could answer comprehension questions that were not direct text-based and involved inference, or critical thinking or were open ended. The proportion of children who were able to do well in language was about 25%.

A large proportion of children (between 40 and 60%) in grades 2 or 3 scored a 'zero' indicating either that they did not attempt or could not get any item correct. In mathematics, the overall proportion of 'zeros' in the test was 10 to 20% of children. The proportion of children securing a score equal to or above the minimum acceptable score for grade 3 in language was about 20 to 30% and for mathematics was about 40%. About 20% of children in grade 2 and about 10% children in grade 3 secured above the 75% of the maximum score for that grade.

Comparing the performance of children in schools where MGML was being practiced with schools where conventional pedagogy was being followed, in grade 2, there seemed to be an MGML effect in the performance of children in mathematics and in language. In the case of language there was also an effect of modified and adapted MGML programme/pedagogies/ curriculum and the effect was significant at 1% and 5% levels. In mathematics, the difference was significant at the 5% and 10% levels. In the case of grade III, there was no difference in performance of children in the MGML, modified MGML and conventional pedagogy classes. In general, it should be noted that whether MGML or modified or conventional, performance of children on the whole was low.

The MGML is not recommended for Grades 1 and 2 alone and if it is to be continued, classes 3 and 4 must be included. However, the materials need to be reviewed, revised and improved. Approaches in Grade 1, for early literacy and numeracy need to be reviewed and reformulated. Workbooks also must be provided. Pedagogies for group and whole class work need to be conceptualised and integrated. The role of the teacher in children's learning needs to be conceptualised and supported. The alternative is the use of textbook materials which are found to be of good quality. For this extensive and intensive training in the use of the textbook as intended is essential. Additionally pedagogies for multigrade situations need to be conceptualised. A third alternative is to allow teachers to mix both resources and adopt suitable pedagogies. Pedagogies for inclusion of irregular children and children with special needs need to be conceptualised and evolved and teachers to be trained in them. Resource support structures need to be in place, and resource persons need capacity building to be able to work as field mentors.

Chapter 1

Locating MGML in the Educational Context of Chhattisgarh

Chapter 1: Locating MGML in the Educational Context of Chhattisgarh

The Multi-Grade and Multi-Level (MGML) programme was launched in Chhattisgarh in 2008 and was inspired by the Rishi Valley Institute for Educational Resources (RIVER) in Andhra Pradesh and the Activity Based Learning (ABL) Programme in Chennai. The MGML approach is seen as a strong policy option for quality improvement because it claims to simultaneously address the issue of multi-graded classrooms managed by few teachers as well as the need for child centered pedagogical approaches. Implemented in a phase wise manner from 2008 onwards by 2012 the programme covered all government run primary schools in the State. The programme development and implementation received support from the UNICEF and the European Union (EU).

1.1 The TISS Evaluation of MGML

TISS was commissioned to undertake an evaluation of the MGML programme by State Council for Education Research and Training (SCERT) in August 2012. As per the Terms of Reference (SCERT, 2012), the objectives of the study were as follows:

1. To review the core principles and assumptions of the MGML programme as reflected in the material developed for children as well as teachers,
2. To assess the implementation of the programme in terms of classroom processes and management, teacher training and resource support, material development and its use,
3. To assess the systemic issues within which the MGML is located and delivered, its linkages and influence with related programmes/departments/stakeholders,
4. To synthesize the key learnings and insights emerging from the programme.

The evaluation was conducted between August 2012 and June 2013.

1.2 Organisation of the Report

This report of the Evaluation is organized in the following manner. This Chapter provides an overview of the education context of Chhattisgarh State. It provides an overview of the MGML programme design. It also provides a history of the programme development and implementation upto August 2012, when this evaluation study was commissioned.

Chapter two explains the methodology followed by this study. Chapter three reviews the MGML materials in light of the programmes core principles and assumptions. Chapter four discusses the status of implementation of the programme in the field. Chapter five presents the status of children's learning. Chapter six specifically examines data to try to answer the question of whether there are 'effects' that can be related to and associated with the MGML programme intervention. The last chapter seven, summarises our conclusions and recommendations.

1.3 The Education Context of Chhattisgarh

The state of Chhattisgarh was carved out of Madhya Pradesh in 2000. According to Census of India (2001), the tribal population constitutes almost one-third of the total state population and includes 42 Scheduled Tribes (ST). Among these, Gonds constitute half of the ST population and the remaining tribes are the Kawar, Oraon, Halba, Bhattra. About 95 percent of the tribal population lives in rural areas, with highest concentration being in Bastar, Dantewada and Jashpur districts. It is a multilingual state. Although the official language is Hindi, Chhattisgarhi is widely spoken along with several tribal and regional dialects. In January 2012, 9 new districts were formed and taking the total number of districts from 18 to 27 in the state. The state has 146 Education Blocks and 2703 Clusters.

The state inherited, as a consequence of the Madhya Pradesh Education policy, an extensive system of Education Guarantee Schools and para teachers. Starting from 1997, no appointment of teachers was effected. However, employment of para teachers under panchayat continues to date. By definition, the minimum qualification of teachers was Grade 12 pass, and professional qualification was not required to become a primary school teacher.

1.3.1 Education Indicators in Chhattisgarh

Literacy rate: According to Census of India (2011), the average literacy in urban areas was 84.79% and that in rural areas was 66.76%. During 2001 and 2011, the overall literacy rate increased from 64.66% to 71.04%. As per Ministry of Human Resources Development (n.d.), out of the 146 Education Blocks in Chhattisgarh, 74 come under the category of Educationally Backward Blocks and 72 come under the category of non- Educationally Backward Blocks.
The Table 1.1 reflects a comparative year-wise data on other education indicators.

Table 1.1 Chhattisgarh Education 2006-2012

Indicators	Year		
	2006-07	2010-11	2011-12
Primary schools (Govt.+Aided)	32634	33145	33514
Upper Primary schools (Govt.+Aided)	13081	13690	13880
Total Primary Enrolment (In lakh)	31.97	31.79	31.22
Total Upper Primary Enrolment (In lakh)	12.96	14.96	16.22
Total Elementary Enrolment (In lakh)	44.94	46.75	47.45
GER Primary	104.74	102.52	107.83
NER Primary	97.78	99.60	94.68
GER Upper Primary	99.60	102.74	113.42
NER Upper Primary	92.45	99.57	84.26
Teachers in Govt. Schools	118926	156817	159786
Out of School Children	123632	178490	128185

Extracted from Sarva Shiksha Abhiyan (2012)

The data shows that the number of primary schools in Chhattisgarh has increased by 3% while that of Upper Primary Schools has increased by 6% between 2006-7 and 2011-12. However, according to Rajiv Gandhi Shiksha Mission (2013), the total number of schools in

2012-13 is 46951 which includes 33208 primary schools and 13743 upper primary schools which indicates a slight decrease at both levels. The total enrolment in primary schools has decreased while that in upper primary schools has increased. The Net Enrolment Ratios at both Primary and Upper Primary level have decreased. There has been a sizeable addition of teachers in the government schools between 2006-07 and 2011-12. There are still over a 1.28 million children out-of-school and although their number decreased between 2010-2011 and 2011-12, it has actually slightly increased since 2006-07.

1.3.2 Enrolment and Drop out

Table 1.2: Percentage enrolment and population by social category

Category	Population & Enrolment			
	% population share (Census 2001)	% enrolment share in 2009-10	% enrolment share in 2010-11	% enrolment share in 2011-12
SC	11.60	14.70	12.68	12.38
ST	31.80	32.18	33.52	33.75
Muslim	1.97	0.72	1.32	1.40

Extracted from Sarva Shiksha Abhiyan (2012)

It is seen that the enrolment of children from SC and ST communities is commensurate with their percentage of population share. However, the enrolment of children from Muslim communities is lower than their share in the population. However, the percentage share of children from SC communities has declined since 2009-10.

According to the data available from the Rajiv Gandhi Shiksha Mission (2013) based on DISE (2011-12), the status on some of the key education indicators in Chhattisgarh are as follows:

Table 1.3 Drop out rates

Level	Gender		
	Boys	Girls	Total
Primary Level	2.87	2.67	2.77
Upper Primary Level	2.64	2.49	2.57

Source: Rajiv Gandhi Shiksha Mission (2013)

The drop out rate at the primary level (2.77) is higher than that at the upper primary level (2.57). It is higher among the girls than the boys at both the levels.

Table 1.4 Annual Average Dropout Rate at Primary level in Chhattisgarh (2011-12)

Category	Gender		
	Boys	Girls	Total
All	3.81%	3.31%	3.56%
SC	5.71%	2.38%	4.08%
ST	17.55%	15.17%	16.40%

Extracted from Sarva Shiksha Abhiyan (2012)

The table above indicates that the drop out rate is highest among the children from ST communities and it is higher among boys than among the girls.

1.3.3 PTR

Table 1.5 Pupil Teacher Ratio (PTR)

School Level	2010-11	2011-12	National Average
Primary School	25	24	31
Upper Primary School	23	24	29

Source: Rajiv Gandhi Shiksha Mission (2013)

The Pupil-Teacher ratio in Chhattisgarh is better than the national average at both the levels and is currently 24 pupils per teacher at primary and upper primary level.

Table 1.6: Schools with Adverse Pupil Teacher Ratio (Government Schools)

Indicators	2010-11	2011-12	National Average (2011-12)
Percentage of School with PTR > 30 (Primary School)	34.04%	24.83%	40.98%
Percentage of School with PTR > 35 (Upper Primary School)	22.53%	19.63%	31.93%

Source: Rajiv Gandhi Shiksha Mission (2013)

About one-fourth of the primary schools and about one-fifth of upper primary schools have an adverse PTR which means that they have more pupils per every teacher than what is prescribed. However, these figures are better than the national average.

Table 1.7 Percentage of Single Teacher Schools

	2009-10	2010-11	2011-12	National Average
All Schools	11.03%	7.89%	6.17%	8.31%
Primary Schools	12.84%	9.20%	6.98%	10.97%

Source: Rajiv Gandhi Shiksha Mission (2013)

At present, the percentage of single teacher schools is 6.17% for both primary and upper primary schools and almost 7% for primary schools. This is lower than the national average and has been steadily declining over the years.

1.3.4 Management

The table show that 65% schools are run by Department of Education followed by 24% run by the Tribal/Social Welfare Department. About 10% are unaided private schools showing a small increase each year. Since 2007-08, the number of schools run by the tribal and social welfare department has halved. It decreased by about 7% between 2010 and 2011.

Table 1.8 Schools by Management

Year	Type					Total
	Dept. of Education	Tribal / Welfare Dept.	Local Body	Pvt. Aided	Pvt. Unaided	
2011-12	34104	12765	44	481	5074	52468
2010-11	32446	13776	73	477	4468	46792
2009-10	31464	14185	187	498	4144	50478
2008-09	31541	13884	174	412	3648	49659
2007-08	21773	23310	285	543	3411	49322

Extracted from Sarva Shiksha Abhiyan (2012)

1.4 Education Context at the Start of MGML in 2007-08

The MGML programme in Chhattisgarh needs to be located in the particularities of the period in education reform in Chhattisgarh state, and highlight the context wherein various initiatives to improve quality of education were being undertaken. The following is based on accounts of the reform context as understood via interviews, and the quality context based on DISE data for the period 2007-08, and other sources (as indicated for that period).

1.4.1 Schools and Infrastructure

Over 91% of schools in the state were run by Government including Departments of Education, Tribal/Social Welfare, local bodies and others. 70% of primary schools that were established in Chhattisgarh since 2002-03 had school buildings. The average number of classrooms for primary schools run by the Government was 2.6 in 2007-08 indicating prevalence of multigradedness. 6% of the schools functioned in a single classroom, 35% in 2 classrooms, 28% in 3 classrooms, and 18% in 4 – 6 classrooms. 45% of the primary schools had book-banks.

1.4.2 Enrolment and Attendance

A total of 107862 children with disabilities were enrolled in primary schools In 2006-07, the average attendance rate in primary schools was 67.7 for students and 75.7 for teachers (Ed. CIL, n.d.). The attendance rate for students improved as they advanced through the Grades with the rates being lowest at Grade 1.

1.4.3 Teachers and Teaching

18% of the primary schools were single teacher schools in 2007-08 indicating prevalence of multi-gradedness. On an average, there were 2.48 teachers appointed in government primary schools and 4.53 appointed in private schools. Pupil-Teacher Ratio in primary schools was 34:1. 47% of the teachers (excluding para-teachers) in primary schools had studied upto Higher Secondary level and 24% were graduates and 21% had post graduate education. 49% of all male teachers and 40% of all female teachers (including para-teachers) of primary schools had received in-service training in 2006-07. According to DISE (2007-08) 9.90 % of all the government primary school teachers were appointed as para-teachers. The academic qualifications of para-teachers were similar to that of regular teachers. A majority of the primary school teachers came from Other Backward Classes (OBC), Scheduled Tribes (STs) and

Scheduled Castes (SC) communities. During 2006-07, a total of 17 working days were spent as non-teaching assignments by the primary school teachers.

1.4.4 Learning Assessment

92% of the children in government schools had passed the Grade 5 exams with 43% securing 60% marks and above. There was no significant difference with regards to overall pass percentage when compared with results in private schools but there was a difference of about 25% points when compared to those securing 60% and above.

A Baseline Achievement Survey done by SCERT in 2007 (SCERT, n.d.) for primary level (Grades 3, 4, and 5) showed a mean achievement in Hindi was 71%, in English 65.9%, in Maths 67.9% and EVS was 70.7% (SCERT, n.d.).

1.4.5 Academic support

14% of schools were located less than one kilometer from the Cluster Academic Centre (CAC), 53% were located between 1-5 kms and 33% were located more than 5 kms from the CAC. Almost 90% of all primary schools were visited by CAC Co-ordinators in 2006-07 and almost 54% of all the primary schools were inspected in that year.

1.4.6 Quality Reforms and Interventions

After the formation of Chhattisgarh, the work on development of new textbooks was undertaken between 2003 and 2006. This was done by the Chhattisgarh State Council for Education Research and Training (SCERT) through tie-ups with ICICI and Azim Premji Foundation. Eklavya (Madhya Pradesh), Digantar (Rajasthan) and Vidya Bhavan Society (Rajasthan) were supported by the ICICI to undertake this exercise. Azim Premji Foundation started programmes that were based on Computer based classroom practices. During this period, a State Curriculum Framework was developed on the basis of the National Curriculum Framework, 2005. Examination reforms were also undertaken in 2007 (SCERT, n.d.). In addition to written examinations, oral examinations were also introduced and evaluation was made competency based from Grade 1-4. The revision of the Diploma in Education (teacher education programmes (D.Ed)) for elementary schools was undertaken during this period. During the year academic year 2011-12, SCERT began to conduct distance education programme for D.Ed to ensure the compliance with Right to Education regulations. New syllabus and study materials were developed by resource organizations for this purpose. The period was marked by a great deal of activity in quality reforms in elementary education on all fronts.

MGML was introduced at the time when the Chhattisgarh government was also investing in the exercise of textbook revisions as per the NCF curriculum and renewal of its teacher education programmes. Available literature on MGML method from across the world (Dhankar, 2004; Vincet and Ley, 1999; Birch and Lally, 1995; Little, 1995) shows various considerations that make MGML a pedagogical choice and discusses various systematic schemas on which MGML approaches are based. This includes many of the features of the Chhattisgarh education context: low qualified teachers, small schools with multigrade classrooms and overall lack of education quality.

1.5 The Chhattisgarh MGML Programme

"*Srujan*", the teachers' handbook on MGML, prepared by the SCERT, Chhattisgarh, describes the basis and rationale for this approach (SCERT, 2011). It is premised on the need to rectify the lacunae of the existing conventional teaching system. It is asserted that despite efforts taken on multiple fronts, such as teacher training, preparation of textbooks, distribution of teaching learning materials and experimenting with various programmes, the targets of enrolment, retention and quality of education remain unfulfilled. Thus, MGML has been seen as a solution to the problems prevalent in the education system and offers an approach which respects education happening at the child's pace, agency of the learner, centrality of material, teacher as a facilitator and enabler, role of peer learning and a flexible adherence to the curriculum. MGML approach is meant to ensure that irregular children are able to participate in the schooling process, that children with special needs find space and meaning in the education process, and that all children learn through activities and joyful methods. In contrast to the conventional system, the MGML claims to ensure better enrolment and retention (on account of increased interest from the students) as well as assured quality of learning.

The entire syllabus of Grades 1 to 4 in each subject—language (Hindi), mathematics, environment studies (EVS) and English—is divided into grade wise units of learning which are hierarchically organized into progressions/sequences milestone on the ' ladders'. (In the case of EVS this progressions are less hierarchical and are organized into a series of 'flowers'). Each milestone roughly covers a concept or a unit in a textbook. Within each milestone there may be 10 to 15 cards. The completion of a milestone is an indicator used to identify and track students' progress. Each unit of work is on a çard which is about A5 in size, both sides, and sets out work that children are supposed to do. This may be reading, writing, solving problems, doing an activity, playing a game, etc. Additionally there are materials provided which children may need to use, such as pebbles, abacus, etc. There are also a set of graded readers that are used in Hindi for Grade 1. The nature of the work is indicated by an icon called a 'logo' in the corner of the card. Each subject (Hindi, Math, EVS and English) has a different set of logos. For instance, Hindi cards have logos of animals, Math cards have logos of birds, EVS cards have logos of fruits and English cards have logos of household electrical appliances. This 'logo' decides which of the six groups children will go to and sit in. Each of the six groups consists of a set of logos. It also indicates to the child and teacher, the subject area and nature of the task itself. For example 'sheep' indicates that a game related to Hindi subject should be played inside the classroom, 'hen' indicates that this is a concept card from Math, etc. (see Annexure 1 for a detailed listing of logos and what they represent.)

Children sit in one of the six groups that are formed, based on the card they are handling and the logo indicated on the card which indicates the extent to which the activity requires teacher or peer support. These six groups consist of activities which are: fully teacher supported, partially teacher supported, peer supported, partially peer supported, independent learning group and evaluation. A brief description of the milestone and how groups are formed is as follows:

- Group 1: In the teacher supported group, children with activity cards that require concept formation or intervention of the teacher sit in. For example, when studying Hindi, children who are doing cards with milestone logos of cat or goat sit with the teacher. These children could be from Grades 1 to 4. Children from Grade 4, for example, could be reading a passage or poem while sitting in this group and the teacher could be required to provide explanation.
- Group 2: In a partially teacher supported group, for example, in maths, children with activity cards showing milestone logos of crow pigeon, weaver bird (*baya)* and kite (*cheel)* would sit in. These are concept cards related to division, numbers, subtraction and outdoor games. Here, the teacher is expected to help children wherever their presence is required. In maths after the teacher has explained the concept in Group 1, it is assumed that the children can do activities with partial teacher assistance.
- Group 3: Peer supported group cards in EVS have symbols of apple and guava. These are usually games that can be played inside or outside the classroom. It assumes that there are other children who are doing the similar cards at the same time and can play them together. For example in Grade 4, milestone 63 which is a peer supported group, children create a solar system by standing in circles doing rotation and revolution.
- Group 4: Partial peer supported activities are similar to Group 3 but wherein children can take the help of other children for doing the activities. In English, these cards are with symbols like mobile phone, fridge, and telephone and the activities include children doing acting, describing pictures, games, news, creating words with alphabets and so on.
- Group 5: In this group, children are expected to carry out self directed work. It includes reading books on their own, doing practice writing, creating scrap books, colouring or drawing pictures, counting, reciting tables, etc.
- Group 6: This group is for evaluation of the milestone achieved. Cards include questions that the children are expected to answer and is meant to reflect achievement of competency that is associated with the given milestone. These cards are arranged at the end of each milestone in all the four subjects.

The classroom space is designed and equipped in a specific manner. The walls are to be painted upto 3 feet in black and partitioned so that each child has a wall space for her or his own writing use. Above this is a yellow strip with Hindi alphabet written in the sequence that the MGML suggests it be taught *(la, ka, ra, ha, aa)*. The walls above this are to be painted with murals. The ladders, subject wise and grade wise, are provided in the form of large laminated charts and are to be hung where children can see them. Six large printed circles (called *Samuh thali*) with numbers 1 to 6 and relevant logos printed on them, subject wise, are also provided. These are to be displayed on the wall in six areas of the room where the children in the relevant groups can gather and sit together. Children are provided with individual floor mats. The handbook recommends that the teachers should sit on the floor with the children and not on the chair. Each classroom is supposed to have racks where the activity cards are sorted according to subject, level

and logos. These are arranged logo-wise in trays, with the logo displayed on the outside so that the children can easily identify and access the desired cards. The ceiling of the classroom has wires strung across where children's work and other educational material are displayed.

Children are expected to progress through cards monitoring their own progress from card to card following the sequence provided on the ladder. Each unit of learning is generally divided into seven to ten cards, ending with a 'milestone', which signifies the completion of a unit of learning. Each milestone ends with an evaluation card and in case children have not succeeded with the evaluation, they are expected to be provided with 'remediation'. Records of children's progress are maintained by the teachers in registers designed for this purpose (but sometimes purchased by teachers from the market), and the achievement of milestones is noted by teachers. Teachers are also expected to create a file called portfolio, which indicates the progress that every child has made. These are recorded to indicate if the milestone has been achieved on time and the progress made. There is also a daily diary where the teacher records which activities/cards were done by the child everyday. From the current year, teachers have started recording children's progress using Continuous Comprehensive Evaluation (CCE), which was largely designed as an approach within the context of textbooks, For Grades 1-2, there is a the CCE is to be done through MGML while for Grades 3-4, CCE is not linked to MGML but is based on the textbooks. The MGML materials in the form of 'kits' are centrally produced/ procured and provided to each school through the BRCs.

Training for teachers ranging from 2 to 5 days has been offered by the members of the State Resource Group and the Block Resource Groups set up in the first year of MGML project and later through the Block Resource Co-ordinators and Cluster Academic Co-ordinators. Depending on the length of the programme, the training introduced the teachers to the MGML approach, the background and concepts on which it is based, classroom management and their role. In addition, the teachers are supported through a teachers' manual (*Srujan*) referred to earlier. In the first year of the project, school based support and monitoring was done through State and Block Resource Group. The monitoring is now being done by the BRC and the CACs. This entire system of MGML is fairly akin to the Rishi Valley system, which has been adopted widely across the country. The materials were all designed in Chhattisgarh by a local team in the SCERT, chosen for this purpose. The key aspect in which the Chhattisgarh programme is 'different' is with regards the inclusion of EVS and English.

The MGML programme was implemented within this contextual background. It was implemented in a phase-wise manner in all government and government aided Hindi medium primary schools and now covers the entire state. A timeline of the key events and phases is given below. This is based on the timeline provided as part of the Terms of Reference (SCERT, 2012).

October 2007 *-- Six persons team (SCERT+SSA+UNICEF) from Chhattisgarh attended a national workshop on Activity Based Methodology organized by the MHRD in Chennai – this was their first exposure to the idea.*

Nov to Dec 2007 *– State decided to establish an 'MGML' program based on the lines of ABL. Based on exposure of a state team, material development for piloting in schools was undertaken.*

Early Jan 2008 *– the MGML intervention began in 21 schools in Durg district, not far away from Raipur.*

April 2008 *– Brief visit by Tamilnadu SSA team to see the implementation of the program. By and large positive feedback was provided to the state by this team. In a subsequent meeting at the state level, a decision was taken to expand the program to 8000 schools across the state. 40 blocks from 14 districts are identified and 8000 schools chosen. All the BRCs and BEOs were given a field exposure to Tamilnadu with UNICEF support; UNICEF also supported material development.*

August 2008 *– training of district and block resource groups.*

November 2008 *–Logistical issues – through materials reached most schools, many MGML trained teachers were transferred following their promotion to Middle Schools – this proved to be a big setback to the program.*

Nov 2008 to August 2009 *– Lull in the program – sporadic monitoring and follow up were key concerns. New batch of teachers trained in June-July 2009. Observations of MGML state resource group show that only 8%-10% teachers are applying the method.*

Sept to Oct 2009 *– realising that monitoring of the program was weak, MGML resource group undertook onsite support of schools/teachers, with UNICEF providing logistical support. This period of intensive support lead to improvement in 50% school.*

Oct to Nov 2009 *– Assessment of the program by team from Rishi Valley and ABL Tamilnadu – 5 days, 14 blocks, 76 schools. Assessment focused on MGML material, processes followed, training, implementation and overall quality (Rao,P. 2009). Also training of teachers from 4000 schools was being undertaken at that time.*

Feb/March 2010 *– Proposal was submitted to SSA to further expand the program across the state (27250 schools).*

May 2010 *– Proposal for expansion approved by SSA, but SSA budgets did not factor in teacher training. Also Education Secretary cum SCERT Director changed.*

June 2010 onwards *– A general lull set in – there was overall weak monitoring and lack of systematic plan for teacher preparation.*

August 2010 *– A new SCERT Director came on board.*

February 2011 *–From across the state, more than 2000 teachers come together to demand a revival of the program – this lead SCERT to conduct workshops where 100 persons from every district come to SCERT to share their views on MGML – 10 districts in all came to SCERT for this meeting (based on oral account).*

April to June 2011 *–The SCERT Director was changed, – 10 days training on MGML was included as part of teacher training; SSA approved expansion to additional 7000 schools; Discussions between UNICEF and SCERT to review the program in an attempt to strengthen it.*

A summary of the expansion of the programme is given below:

Pilot Phase- The piloting of MGML was done in Durg in 21 schools in Jan 2008.

First Phase- In April 2008, the decision to expand the programme to 8000 schools was taken. In August, training was started to prepare for the expansion and in November 2008 the programme was actually expanded to 8000 schools spread across 40 blocks in 14 districts as part of first phase.

Second Phase- The second phase (Jan 2009), of MGML saw it extended to additional 4000 schools (covering 2 additional districts, and 12-13 additional blocks).

Third Phase- In the third phase (Sept 2010) it was extended to an additional 14750 schools (covering all districts but leaving out a few urban blocks).

Final Phase- In the fourth and the final phase, an additional 7000 schools were covered in Sept 2012 taking the total to 26750 schools that are now covered as part of this programme.

The programme now restricted to Grade 1 and 2 only. In the 8000 schools that were a part of the first phase of the programme, the programme also included Grades 3 and 4. Throughout this period, all schools following MGML were also being given textbooks by the Government. In 2012, all schools were required to follow the CCE for Grades 3 and 4, and therefore shifted to using textbooks instead of MGML for Grades 3 and 4, so that effectively since academic year 2012-13, MGML is followed in Grades 1 and 2 only. From 2011-12 onwards, CCE protocols and practices have been designed by the SCERT and implemented in all schools, for all grades, including Grades 1 and 2. All teachers have been provided with training in CCE.

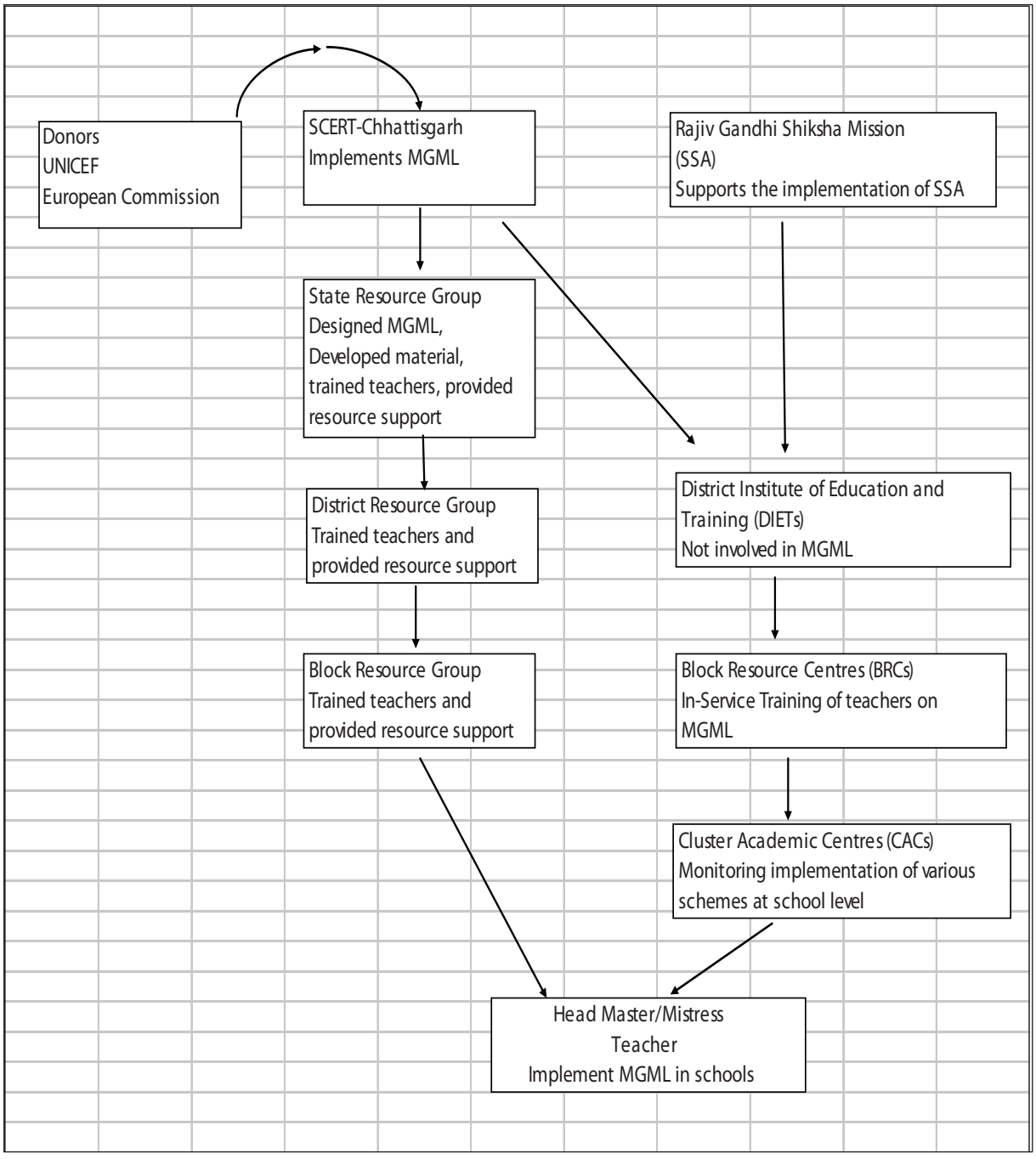
The key structures, institutions and actors of the system are summarised in Figure 1.

The programme has been implemented through the SCERT (MGML Cell) and Rajiv Gandhi Shiksha Mission (SSA) with support of UNICEF and European Commission. It has been operationalised on the ground through the missionary zeal of State Resource Group (consisting

of members from SCERT, teachers and Shiksha Karmis) with about 20-22 members, District Resource Group (146 teachers) and Block Resource Group (total of 584 teachers with 4 teachers in each one of the 146 blocks). The role of the Resource Group has been to develop material, train teachers and monitor the implementation of the programme by offering resource support to the teachers and schools. However, this Resource Group worked only during the initial phase of the programme and was later disbanded due to lack of financial and systemic support. Currently, the training and monitoring is the responsibility of BRCs and CACs.

During this period when the programme was operational, an evaluation study was conducted by RIVER in 2009 (RIVER, 2009). The study concluded that the programme had made good progress and most of the schools were implementing it as per the design, a positive, fear-free classroom ambience was established, academic levels were achieved as per the milestones, peer learning was happening and children were self-directed although 'stagnation' was found in teacher-supported group. It also noted that teachers were highly motivated despite more work that it entailed, proper training was being provided by committed and competent trainers, and the SCERT and UNICEF was supportive of the programme. It recommended the establishment of Demonstration schools, providing children with workbooks and training of BRCs and HMs. Our data shows that the findings and recommendations were reviewed but they were not systematically acted upon.

Figure 1: Structure and functionaries of MGML in Chhattishgarh



Chapter 2

Design of the Evaluation

Chapter 2: Design of the Evaluation

The study to evaluate the MGML programme was commissioned in August 2012. At the beginning of the study, a pilot visit was carried out which included a field visit to Dhamtari schools, meetings with officials from SSA, meetings with SCERT and UNICEF to gather background material about the programme and to understand the educational scenario in Chhattisgarh.

2.1 Key Questions and design response

Our methodology was developed based on our understanding of curricular and pedagogic reform in the Indian public education school system, the context of Chhattisgarh state, the design and structure of the MGML programme, and the events within which the programme unfolded, leading to the specific status of the programme in 2012.

1. The first key question to answer was the extent and nature of implementation of the programme in 2012-2013, the period of our study. Officially, the position was that MGML was being implemented in Grades 1 and 2. The official stance on the status of its implementation in Grades 3 and 4 was ambivalent because of adoption of CCE, which had required the schools to revert to use of textbooks. We wanted to examine and establish the extent and forms of the programme actually found in classrooms/ schools.

   This question needed to be answered through the field study and using multiple sources of information. The existence of the programme requires the receipt of materials in adequate quantity and condition and the establishment of the infrastructural requisites of the programme. Teachers may or may not in fact be practicing the progamme for a variety of reasons, including professional judgment regarding its pedagogical worth, extent of understanding of how it is to be conducted, problems arising out of adequacy of materials, inadequacy of teachers, and teachers perceptions of educability of children and consequently the extent of their effort. Further teachers may also be practicing variations of the programme—given both that the textbook was also available and that teachers had views on the efficacy of conventional methods. However, given that this was an evaluation study, field visits could lead to demonstrations of practice which may or may not represent the true situation on the ground. Hence it was necessary to use multiple sources of information to decipher what was the actual practice in the schools/classrooms. The field visits therefore included examination of the presence, existence, and condition of artifacts and infrastructure, and records/documents, classroom observations, verification with individual children if they were familiar with the method and their milestones, and interviews with teachers.

2. In order to form a view on the conceptual soundness and value of the materials, all the materials were reviewed by independent subject experts from the point of view of the National Curriculum Framework 2005. Additional key considerations included

(a) the fact that Chhattisgarh has a large tribal population and children's home language would be different from school language and additionally Chhattisgarhi is itself different from *khari boli* which would be reflected in the language of the textbooks (b) children in grades 1 would be beginning literacy (c) a large proportion of the children would be first generation school goers. Review of materials focused mainly on the materials for Grades 1 and 2 only. The overall methodology and design, including the philosophical and conceptual basis, were reviewed from curricular and pedagogic considerations and were based on interviews with teachers, observations of the classroom, interviews with various key resource persons involved in the design of the programme, and the materials and teachers handbook. The text book were also reviewed.

3. Quality of implementation: This question was important as the programme was rapidly expanded to the entire state and involved massive efforts of both material provisioning as well as organizing training and subsequent field support and monitoring. This was examined through observations of the space, of artifacts, records and documents in the schools, interviews with teachers and field functionaries and interviews with key persons involved with the programme. Teachers were interviewed to understand the extent, quality of training and field support provided, and their concerns with regards to programme implementation.

4. Pedagogy, Quality and Concerns of Teachers: Teachers were interviewed in some detail to understand their backgrounds, their own professional preparedness and their own understanding of the programme. This was regarded as important in our study as most teachers in the system are Shiksha Karmis. Their own occupational concerns also emerged in the course of the study. We interviewed them in order to understand their perceptions of educability of children. To what extent are the objectives of the programme achieved with regards to the inclusion and participation of children: the participation of all children who are irregular, children with special needs?

   In order to do this we observed the classroom in action and we also interviewed teachers. School records were used in order to check on and capture the range in the class to determine if the method was catering to a wide range of learning levels. We also identified, through interviews with the teacher the children who were considered 'irregular'/less regular or with special needs and observed the classroom and interacted with them to establish the nature and form of their inclusion. Classroom observations were conducted in grades 1 and 2 and children's familiarity with the milestones achieved was verified through checking with children themselves.

   Detailed classroom observations and descriptions were made on matters such as the teacher pupil relationship and interactions, peer interactions, and what was going on in each group (where they were groups). The language used by the teacher and their 'warmth' and involvement with children was also noted.

5. What is the learning that has accrued to children? This question was studied using achievement tests for Mathematics and Hindi. A test was designed for Grade 2 and

Grade 3 children. This decision drew its justification from the fact that Grade 2 children would have had one year of the MGML programme learning in the previous year and would still be experiencing the MGML classroom. The test was an assessment of learning of Grade 1. In the case of Grade 3 children, even though the official position was that Grade 3 does not follow MGML, still, these children would have had two years MGML programme learning in grades 1 and 2, hence we could attribute their learning to MGML effects. The test for Grade 2 was therefore designed keeping in mind the syllabus of Grade 1 in Mathematics and in Language and test for Grade 3 was designed keeping in mind the syllabus of Grade 2.

The Grade 2 children were tested through paper-pencil test for Mathematics and Hindi and for reading. The tests were administered one on one, keeping in mind the age of the children and needed explanation and some support. The paper-pencil test items required them to write. Additionally there was a test of reading. Only 4 children per school in Grade 2 were tested on account of the time consuming nature of the test. Children were selected through a stratified random sample so that boys, girls and general and SC/ST children, regular and irregular children were represented. Children's verbal responses, especially when they said they did not know versus silence, were also recorded. Other aspects of children's work which was observed were also noted and recorded, including their writing and computation techniques.

The Grade 3 was only paper-pencil test and it was administered to the whole class. Only basic arithmetic and comprehension were tested. In addition, children's handwriting was also noted.

The test items drew in the content of the MGML programme cards and their level was also decided in relation to the difficulty level of contents of the MGML cards.

6. To what extent can the learning of children be attributed to the programme? In order to analyse and interpret children's learning, additional information about the children and the community was gathered, including gender, social category. Literacy level of the community was determined by asking teachers regarding this—we were not able to obtain recent census data on this. Other attributes of the community and the school were also noted, including the size of the school, the type of community (in terms of multi-caste versus single caste, occupations, remoteness of the village, size of the school and extent of regularity of children.

   Attributing 'effects' to the MGML programme was not possible to determine through the design of the study. There was no possibility of experimental or quasi-experimental design or ex-post factor designs as there were no 'non programme schools'; at least not officially. Also it could not be said that a school not found to be following the MGML was therefore to be considered as following 'textbook' or conventional teaching' in any strict sense. The absence of MGML could not be construed as presence of a textbook method. Post field work, on analysis, it was found that there were schools and classes which were either following MGML or conventional teaching. Comparisons were made between these.

7. Questions we could not answer because of the lack of any previous documentation.
    a) Although the MGML is supposed to raise retention, this could not be investigated as there was no comparable data.
    b) Although MGML is supposed to cater to children who are 'irregular', this could also not be examined in any rigorous manner empirically.
    c) The quality of resource support provided to the teachers and monitoring of the programme by the State Resource Group and Block Resource Group could not be examined in the current context because the structures had ceased to be functional. However an understanding of how these structures functioned in the earlier phases of the programme were examined through interviews with erstwhile group members and teachers on the field.

2.2 Data Sources and Tools

For the study, both primary and secondary data was collected. Secondary data included earlier reports related to the MGML programme, educational statistics and policy, reports on the coverage of the programme.

MGML material such as *Srujan* (Teachers' Handbook), Activity Cards, Readers, Monitoring and reporting formats and textbooks for Grade 1-4 were analysed.

Primary data constituted the bulk of the data which was gathered for every school that was sampled. The tools for primary data collection were first pilot tested in schools of Kanker. Based on this experience, the tools were revised. A few changes were also made in the tools after the data collection in one block was completed. These were however minor and were those pertaining to the manner of recording the test results and sample size for the assessment tools.

Primary data were collected with the help of the following 12 tools (see Annexure 2):

As explained above, Tools, 6, 7, 8 were assessments for Math and Language for Grade 2 and Tools 9 and 10 were assessments for Math and Language for Grade 3. These were administered alternately i.e. if Grade 2 assessment was done in one school, Grade 3 assessment was done in the next school. The thumb-rule that was followed was that wherever the Tool 4 was done with Grade 1, assessment tests were done for Grade 3 and wherever Tool 4 was done with Grade 2, assessment tests were done for Grade 2 only. This was purely for organizational ease and management, as the tests were time consuming and it would not have been possible to carry out both assessments in a given school by a single researcher in one day. Thus, we have almost half the schools where we have administered assessment tests for Grade 2 and other half Grade 3 assessments. The purpose of Grade 2 assessments was to understand the current competencies on Math and Language. The tests were prepared with reference to the MGML cards that children are expected to complete by end of Grade 1. The purpose of Grade 3 assessments was to understand the current competencies in Math and Language. The tests were prepared with

reference to the MGML cards that children are expected to complete by end of Grade 2. It must be noted that this data was collected after the completion of the first semester.

Table 2.1

Tool No	Tool Name	Tool Description	Annexure details
Tool 1	Covering Sheet	Basic facts about the school and record of data collected. Maintained for every school	Annexure 2a
Tool 2	School and Classroom Description	Description of school and the MGML classroom, presence of artifacts, records. Maintained for every school	Annexure 2b
Tool 3	Classroom observation record	Guide for observing the classroom transactions throughout the day. Alternately recorded for Grades 1 or 2 and sometimes for both Grades 1 and 2. Also recorded in some schools for Grades 3, 4 and 5.	Annexure 2c
Tool 4	Milestone Range	Recorded the range of all children in the Grade on milestones for all subjects and also their basic profile. This was recorded for all the children alternately between Grade 1 and Grade 2. Thus, about half of the schools have this data for Grade 1 and remaining for Grade 2.	Annexure 2d
Tool 5:	Milestone Check	Recorded familiarity of children to the 'process' of MGML by asking them to carry out activities that were completed on earlier milestones on the ladder. This was recorded for all subjects with 2 children randomly selected out of the children who were listed in Tool 4 Milestone Range. This was alternately administered with Grade 1 and Grade 2 children. Tool 5 was not administered in schools where there was no MGML in practice.	Annexure 2e
Tool 6	Grade 2 Math	Math assessment tool testing children on arithmetical operations and designed for Grade 1 level. It was administered to 4 students of Grade 2 in half of the total schools sampled.	Annexure 2f
Tool 7	Grade 2 Hindi Language Reading	Language assessment tool which required the child to read a Hindi text which was carried by the researcher and shown to the child. The text was Hindi Reader (No.38) used as part of the milestone completed in Grade 1. A Running Record of the child's reading was maintained. At the end of the reading, the student was given a test in oral comprehension based on the text that was read out. This tool was administered to 4 students from Grade 2 in half of the total schools sampled.	Annexure 2g i. Tool and ii. text
Tool 8	Grade 2 Hindi Language Writing	Language assessment tool which required children to see an unfamiliar picture and write what they saw. Children were first allowed to orally say what they saw in the picture before writing. This tool was administered to 4 students from Grade 2 in half of the total schools sampled.	Annexure 2h (i.Tool and ii. Picture)
Tool 9	Grade 3 Math	Math assessment tool which tested children on arithmetical operations at Grade 2 level. It was administered to all the students of Grade 3 in half of the total schools sampled	Annexure 2i
Tool 10:	Grade 3 Language	Language assessment tool which involved children reading an unfamiliar text and writing answers to the questions that were asked at the end. It was administered to all the students of Grade 3 in half of the total schools sampled.	Annexure 2j i. Tool and ii. Text
Tool 11:	Teacher Interview Guide	Semi-structured tool which was used to interview MGML teachers teaching Grade 1 and/or 2 and also Grade 3. In addition, other teachers who had prior experience with MGML, including the Head Master, were also interviewed using the same tool.	Annexure 2k
Tool 12	Focus Group Discussion Guide	A Guide consisting of questions related to the history, administration and experiences of MGML programme which was used in Focus Group Discussions held with State Resource Group and District Resource Group Members	Annexure 2l

Tools 6, 7, 8 were administered one-on-one with children separately, generally in the corner of a classroom. The researchers were asked to first put the child at ease before starting the tests. Tools 9 and 10 were administered like a test to the entire class, one test following the other test. The class teachers were sometimes present in the room to supervise the children along with the researcher.

One member from the research team spent an entire day at every sampled school. During the Shiksha Karmi strike, the team members visited the schools as planned and also met teachers outside the school to collect their interviews. In every school, we used a set of 11 tools for collecting data which is elaborated upon in the next section.

2.3 Sampling

The sampling was planned in order to enable us to comment on the programme as a whole, make generalizations and to investigate and note important variations. The selection was done in consultation with the SCERT and UNICEF, both of the Districts and specific Blocks. Key features that guided the selection of this sample were:

1. Geographic coverage of districts across the three regions/zones of the state. Zone A covered southern tribal belt consisting of Kanker, Bastar and Gariyaband; Zone B covered central belt consisting of Bilaspur, Mungeli, Bemetara, Durg, Rajnandgaon, Dhamtari, Mahasamund, and Balodabazar; Zone C covered northern belt consisting of Ambikapur-Sarguja and Jashpur.
2. Distribution of blocks within a district as per the (a) location (rural and peri-urban), (b) reputation of well functioning MGML programme and (c) when was the MGML started in the block.

The sample selection is described in detail below.

2.3.1 District, Block and School Selection

1. At the first stage, a sample of 13 districts was identified from a total of 27 districts in Chhattisgarh. These districts were spread across the three zones- southern, central and northern region of the state and included tribal, rural and peri-urban areas. This was done in consultation with the SCERT and UNICEF.
2. At the second stage, one or two blocks were identified from every chosen district. This was again done in consultation with SCERT and UNICEF keeping in mind the location of the block, reputation of status of implementation and the year when MGML was started in the particular block as mentioned above. This was important because the year in which the programme was rolled out in a particular block would have implications on the nature of its implementation and it was also important to examine schools where the programme was known to have run well. A total of 20 blocks were sampled in this manner which included 8 Educationally Backward Blocks

(EBBs) namely; Ambikapur, Bataoli, Kansabel, Bilha, Masturi, Lormi, Pathariya, and Jagdalpur. The EBBs are classified by the Sarva Shiksha Abhiyan on the basis of female literacy levels being below the national average and gender gap in literacy being above the national average.

3. Within each block, a list of clusters was obtained. From this list, 2 clusters were chosen through a stratified random sampling; one cluster was randomly selected from the nearby clusters and the second cluster was randomly selected from the faraway clusters. During the period of our field research, the Shiksha Karmis went on strike. This affected the field study on the whole (discussed later). With regards sampling, after the strike, the sampling of the clusters was also determined on the basis of the clusters that were unaffected/less affected by the strike.

4. Within the selected 2 clusters, a list of all schools was collected from the local Block Resource Centre or the Cluster Academic Co-ordinator or member from the erstwhile District Resource Group or Block Resource Group. For every such list made available for the cluster, 5 schools were sampled on the basis of the following criteria – 1 school which was recommended by the local resource person, 1 school which had special features such as Ashram shala or a girls' school, or had linguistic diversity or any feature as highlighted by the resource person, 1 school which was close by or large, 1 school which was faraway or small and 1 school which was randomly selected. The names of the sampled schools were known to the researchers only the day before or the morning of the day of school visit. The resource group members and school teachers helped in reaching the schools. In one small cluster, we were able to study all the schools of that cluster.

Thus, we were able to study on an average five schools per cluster and ten schools per block. And a total of 200 schools over 20 blocks in 13 Districts was the plan.

2.3.2 Selection of Grade, Teacher and Children

1. In alternate schools, observations were conducted in Grade 1 and Grade 2 classrooms and teachers of these respective groups were interviewed (in case there was more than one group).

2. In alternate schools Grade 2 or Grade 3 children were tested. Sampling was used for the selection of children to be tested in Grade 2. The full list of all names of children and details of their gender and caste was obtained from the teacher's register and also marked in Tool 4. Sampling was undertaken to ensure that from the children that were present on that day and who could be tested, there was equal representation of girls and boys and children from all caste groups. All children in Grade 3 were tested.

The full details of the sampled districts, blocks and clusters are provided in Annexure 3

2.4 Field work

Data gathering in schools began on November 19, 2012 and continued until December 20, 2012. Two research teams of 5 members each worked simultaneously in different parts of the state- one in the north and one moving towards southern parts of Chhattisgarh. A total of 200 schools were planned for. During the period of our research, a State wide strike by Shiksha Karmi was called, which lasted from 3 December 2012 to 12 January 2013. During this period schools were virtually closed and no teaching took place as most teachers in primary schools are Shiksha Karmis and the Strike was effectively state wide. On account of the strike, we had to change the route plan for the teams and they visited blocks that were less impacted. We were also not able to continue with the field work as planned, and decided to stop after we had completed a total of 120 schools in 13 blocks, whereas the original target was 200 schools in 20 blocks. Preliminary analysis of the 120 schools was carried out and an interim report presented to the SCERT and SSA.

During the field work, the research teams stayed at facilities and using arrangements made by the local BRC and CACs in schools and in the BRC offices. Travel was by hired and public transport. The data collection allowed for gathering of both qualitative and quantitative data. The set of tools collected from every school was checked at the end of the day. Gaps in recording data, if any, were noted and addressed with the help of notes maintained by the researcher. Qualitative data was recorded in a narrative format by the research team.

2.5 Additional interviews and interactions

In addition to the above mentioned school level data which was obtained using the set of 11 tools described above, primary data through interviews and focus group discussions were also collected from the following:

1. Two Focus Group Discussions were conducted with the members of the State Resource Group, District Resource Group and Block Resource Group at SCERT, Raipur.
2. Interviews with the BRC/CACs were taken, wherever possible during the field work.
3. Key informant interviews (with those involved in the MGML programme) were done during the initial phase of data collection.

Details of those interviewed can be found in Annexure 4

In the second phase of field work, additional key informant interviews were conducted in Raipur. In addition, in-depth classroom and school observations were done in Bilaspur in one school. The interim draft report was submitted to the SCERT on 18 February 2013 and was presented at a seminar at SCERT on 25 February 2013. This was done on the basis of first phase of field work and presented select findings. Following the discussions at the seminar, it was decided to focus on further analysis of the data already collected and substantiate with few

additional key informant interviews rather than covering additional 80 schools. This decision was taken in consultation with the SCERT as the data saturation point seemed to hare been reached.

2.6 Analysis

The data collected using the 12 tools was rich and allowed for triangulation as well as cross-variate analysis. Data were all digitized into either narrative descriptions or entered into spreadsheets as per the code given to every data item. Data gathered through Tool 1 on School Profile was mainly used to locate the school on the sample and tag it for data management. Data on School and Classroom Description (Tool 2) helped in collating the independent variables such as when was MGML started, remoteness of school, literacy levels of community in which the school is located, school size, PTR and so on. In addition data emerging from this tool was analysed to identify the presence of MGML programme in the school through artifactual evidence such as racks, cards, ladders, group charts, readers, etc. This was triangulated with the qualitative data gathered through classroom observations (Tool 3) and teacher interviews (Tool 11) to analyse the presence of MGML in the schools. The qualitative data from these tools was also coded to establish (a) was MGML being practiced and if so in what manner, (b) quality of teachers' understanding of MGML, (c) teachers' reflections on learning and their professional understanding, (d) teachers' perceptions of educability of children and parental backgrounds. In order to ensure inter-coder reliability, the codes assigned to these four questions was independently recorded and verified by two researchers at different points of time.

Qualitative data from teacher interviews as well as Focus Group Discussions and key informant interviews was also collated around emerging themes related to usefulness of MGML approach to specific groups, engagement of teachers and children in class activities, perceptions and experiences about "is the department interested in MGML?", quality of training on MGML, quality of teacher professional training and question of professional identity, quality of academic resource support and so on.

Data collected from children was primarily related to gauging their familiarity with the method and assessment tests. The former was tabulated through pre-coded responses to generate descriptive tables. The data on assessment tests had to be treated with greater rigour. Children's answers on Math for Grade 2 and 3 was (Tool 6 and 9 respectively) were checked and scores given to correct responses. In addition, codes were generated to also capture numeral formation, computation strategy, types of errors made by children and these were assigned to every child at an overall level. Children's answers on Language writing for Grade 3 (Tool 10) was also checked and scores given to correct responses. Codes were generated for letter formation, spellings, quality of answers written and so on. These were assigned to every child at an overall level in addition to computing question-wise performance of children. Language writing for Grade 2 (Tool 8) showed very little data on the actual questions asked and therefore our coding considered any responses provided by the children for letter formation, spelling, and word formation. Running records from Grade 2 Language reading and comprehension (Tool 7)

was coded and analysed to establish the quality of reading in terms of fluency and error rates. Comprehension test data for Grade 2 was also analysed using pre-coded categories. Children's performance and school level performance was then used to run the t-test to test hypotheses related to the question: "are there MGML effects?"

Chapter 3

Review of MGML Materials

Chapter 3 Review of MGML Materials

Materials are given a very important place in the MGML approach. The materials being used in the MGML Chhattisgarh were developed at the SCERT by a team of teachers who were selected for this purpose. During 2007-08, this team carried out extensive research on the design and experience of similar programmes in other places such as Tamil Nadu's Activity Based Learning, Karnataka's Nali Kali, RIVER project and others. The visits made to some of these sites by a few members enabled the team to get first-hand understanding of how the programme works. They also reviewed the material used in other places, compared it with the textbooks used in Chhattisgarh and other material developed earlier in the state, like under the Janashala programme. This was later brainstormed through a series of workshops among the teachers, who later got constituted as State Resource Group (SRG). This lead to the preparation of MGML material, primarily by the SRG, under the leadership of MGML Cell of SCERT. This material was tested in classrooms by the teachers, including the SRG members, to see how it worked and subsequently revisions were also made to the material. SCERT also invited feedback from teachers on the materials used during the first phase, and based on this, some of the content was revised.

This chapter begins with an introduction to how materials are to be used in the MGML method. This is followed by a detailed examination of the materials for language (Hindi), mathematics and EVS.

3.1 Features of the MGML Materials and the classroom

The learning material in the programme is designed with specific intention of addressing multi level learning of children. The initial pages of the Srujan (SERT, 2011) manual identified the textbook centeredness of the conventional education system as being the key reason for both challenges faced by it and its failure. According to Srujan, children in a given class exhibit diversity and differ from each other with respect to mental, social, economic, interest (*ruchi*) and other forms of differences; and these differences are largely neglected by textbooks and conventional pedagogy. Srujan takes the view that while each child has immense potential and creativity these are left unutilised and unexplored in conventional pedagogy, where a single teacher leads an entire classroom from one chapter to another. According to Srujan, the textbook centred classroom assumes that each child is able to complete all concepts within prescribed timeframe, and visualizes a mono-grade scenario.

The following considerations were central in the design of MGML. "Reflecting the diversity of children; relation with social world; in accordance with children learning interest and methods; enabling children's activities; expanding resources of children's learning; encouraging learning that is self directed as well as peer to peer; methods that are dependent on the child's level and progress (*gati aur sthar*) ....." (Excerpt translated from Srujan Manual, SCERT (2011), p1). The emphasis on catering to the levels and pace /speed or progress of the child may be noted.

3.1.1 Cards:

The content of the syllabus from grades I to IV has been taken subject wise and chunked into units of learning which are organized into 2 sides of a paper card between A4 and A5 size. Thus, the çards are the central material of the programme. Logos or small symbols on the right hand upper corner of the card indicate various types of information. Each subject is represented by a type of symbol / logo series: animals for Hindi, birds for Mathematics, fruits for EVS and electronic gadgets for English. There are a range of each of symbol types which are used to indicate the type of activity.

There are 19 types of animals in Hindi, 21 types of birds in mathematics, 17 types of fruits in EVS and 12 types of electronic gadgets in English which are used. These indicate the type of activity involved: if it is an indoor or outdoor activity, if it is a writing assignment or involves drawing, etc. In other words this indicates the range of activity types in each subject area. activities in side classroom or writing assignment or multiplication and so on.

Table 3.1 Logo examples

Subjects	Logo Details		
	Logo type	No of specific symbols	Examples
Hindi	Animals	19	Monkey: action / imitation Lion: instruction / order / respect
Mathematics	Birds	21	Crow: Games outside classroom Kingfisher: counting, recitation, tables
EVS	Fruits	17	Guava: Games outside classroom Gooseberry: 3 monthly 6 monthly and end term
English	Electronic Gadgets	12	Television: Word picture and dialogue Tube light: colouring, joining dots

These images are segregated according to the nature into six groups interaction (discussed in the next section). Large circular cards/Charts with large circles printed on them, with the group number and replicas of the logos are provided to be displayed in different parts of the classroom. The cards are also sequenced in a progression each under a 'milestone'. Each milestone is roughly equivalent to a chapter / concept in a textbook. The cards are given numbers in sequence. Thus each card has a number and logo in the right hand upper corner. The room is also provided with "ladders" for each subject which indicates the sequence of cards, milestone-wise. This is somewhat akin to the content page of the book, 'with the serial page numbers, without the subject headings.

Srujan argues logos are useful/necessary (*avashyakata*) for 5 different reasons (op cit, p 7): (a) provides information on the activity (b) enables maintaining MGML material in order (c) becomes easy to arrange the activities on ladder sequentially (d) easier for getting children in groups (e) to make the material interesting and attractive (*aakarshak evam ruchikar*).

The total number of cards each subject varies. On each of these cards, there are often instructions to the children or teachers; different literary genres of language material to read (prose, drama, poetry, etc) ; images to discuss; space to draw or write; etc. Complete material

is also further coded with the colours to indicate which grade each card may belong to. The quality of paper used for printing indicates that they can be used at least for 2-3 years, even with small children, however it may be necessary to replace them from time to time.

Table 3.2 Milestone Range subject wise and grade wise

Class	Subjects			
	Hindi	Mathematics	EVS	English
Grade1	0-10	0-14	1-28	0-13
Grade2	11-20	15-27	1-28 (same cards for oral and written work)	14-25
Grade3	21-39	28-45	29-45	Not available
Grade4	40-57	46--64	46-64	Not available

The Cards with their logos and numbers, and the ladders enable children to identify what they are to do, and what they will do next, after they have completed the card on which they are, and how they will progress 'through the ladder'. With the help of the ladder which charts the progression, children follow and move from card to card. The group charts tell children where they are to sit, once they have picked their card. On a particular day, 4 different children from class 1 to 4 may all be working on a card with a symbol of '*parrot*', and they would all be sitting together in the group no 3 which is a peer to peer activity. More details on how the groups are formed is described below.

3.1.2 Classroom organization

In a functioning MGML classroom one expects to see cards organized according to subject and segregated logowise. Ladders would be displayed on the wall and also the six group charts in different parts of the room. Children would be working in 6 groups. This is regardless of their grades, and could include all children from class 1 to 4 (depending on the PTR ratio—we were however not able to observe Grades 1 to 4 based MGML as the programme had already been restricted to only Grades 1&2). There would be a single teacher sitting among the children (not at table and chair) as the activities in classroom are in progress.

The concept of group is understood as follows: "groups are formed taking into considerations different sources of learning. For example in the first group children learn from the teacher in the third from the peer and fifth from the society and later by oneself." (opcit, p26) The groups are formed in order to make sitting arrangement in classroom under 6 categories : *(1)* teacher led *shikshit samarthit* (2) partially teacher led *aanshik shikshak samarthit* (3) peer to peer *sahapadhi samarthit* (4) partially peer led *aanshik sahapadhi samarthit* (5) self directed by the child *swaadhigam* (6) evaluation or testing *moolyankan* . As can be seen the basis of the formation of the group is the extent of involvement of the teacher and interaction and support of peers. The method does not require the teacher to attend to the entire class. The teacher's close interaction is expected for group (1) and her partial interaction for group (2). In Group (6) she oversees evaluation (opcit, p26).

The 4 ladder charts are displayed in classroom wall. It allows the teacher and children to track their progress. Children can move from one card to another without necessarily waiting for the teacher's instruction. In the beginning of a period teacher shows child where to start from or what to continue. From the children's point of view, the nature of teacher vs peer interaction is not the obvious basis for the grouping. Rather they join groups according to the logo on the card. Srujan describes the guiding principles on which the ladders have been made in the following manner:

" i) to provide an order / sequence in the activities that enable children to learn ii) to arrange children in groups iii) enable spiral learning iv) help children to regulate their own speed for learning v) to ensure that children confidence as they move ahead in the ladder; vi) to enable material for learning is organised and well maintained (*vyavasthit evam prabandhit*) etc." (based on Srujan, opcit, p12).

An additional aspect that is implied especially in the principle of pacing (ie helping children regulate their own speed of learning) is that even if a child has been absent it does not matter as she can start where she stopped. It thus addresses one of the issues that textbook based classroom cannot address, which is that the whole class progresses together from one concept or chapter to the next, directed by the teacher. A textbook based system would not directly address children who are absent and would expect them to make up and join the class.

Within the framework MGML material design of having cards/groups/ logos/ milestone etc. there are certain learning assumptions:

a) From the perspective of ordering the classroom – like keeping the children and material in certain sequenced and systematic manner. Group card helps children to identify the order and place in classroom, while the ladder indicates the hierarchy to which the child has moved.

b) Ways of learning: logos indicate that there are certain activities through which every concept may be transacted. There is a certain emphasis in repeating certain concepts multiple times under different forms of interaction either between children and teacher or peer to peer or children and society.

In what follows, the cards and content of three of the subject areas: Hindi, Mathematics and EVS have been reviewed. English has not been reviewed. Pedagogical considerations derived from the NCF 2005 and for the concerned subject have guided the review.

3.2 HINDI

Largely, Indian classrooms function with a few teaching-learning resources, the textbook being the primary one. The rest comprise of charts, posters and other such display material which make their way to the classroom through schemes or campaign waves. Any effort to

supplement the acutely limited supply of resources for teaching and learning is welcome. However, selection of material requires careful consideration. Very often, a particular method or a package of material is presented as if it were a solution to the challenges posed by the classroom context. This method-material centric view, unwittingly, disregards the context, the needs of the learner and the teacher's perception of the situation. Inevitably, the method or material aimed at influencing the teaching learning process carries a set of assumptions about the learner, the teacher, the concept or school subject it addresses.

Such an understanding about the Indian classrooms and the contemporary theoretical understanding about reading and writing guides the review of the MGML material in Hindi. Firstly, the obvious ways in which the material positively influences learning and facilitates teaching will be discussed. After this, the assumptions inherent in the material about teaching and learning of language are examined.

3.2.1 The possibilities

Hope for change: Arrival of new material in resource-starved classrooms is a source of excitement for both learners and teachers. It brings hope for breaking out of the mundane routine of teaching and learning set around a single book-the textbook. It brings possibilities of shaking, otherwise motivated, teachers out of a state of inertia and boredom. The learners look forward to more vibrant engagements with learning. On the whole, new material brings the promise of change for the better.

Literature as resource: The MGML material in Hindi has a variety of cards addressing a range of language learning needs. Stories, poems, expository texts, suggestions for exercises and activities, word cards, *wakya patti* and other such cards comprise the sets across grades. The set presents a collection of poems and stories, which is not ordinarily available in classrooms. The teachers can use the material for reading aloud or use it as reference material for telling stories. If the teachers use the material solely for the purpose of telling stories, it will enliven the classroom. Most teacher training programmes neither equip the teachers to recognize literature as a significant resource nor help them identify the sources from where it can be accessed. However, the quality of literature / text and the ways in which its use has been suggested in the material needs to be examined critically. It has been discussed in a later section.

Trigger for ideas: The given activities present a pool of ideas and the various suggestions for activities hold the possibility of deepening the engagement with a language concept. Again, this is subject to the teacher's willingness to try out new ideas in class and her sensitivity to the needs of her group of children. However, the frequency of such ideas is few and far between in the material. The analysis of the nature of exercises which has been addressed elaborately in another section, indicates that the material abounds with questions which invite and encourage memorization of factual aspects of the text and leave little room for children's imagination and expression. The suggested ideas may also prove to be generative in the sense that few teachers might be able to further adapt or change a given activity to devise new ways of engagement. For instance, *Billas-khel* is a game of hopscotch suggested on card 1-1. The objective of the game

seems to be to practice letter recognition and learning the blend of few letters of the Hindi alphabet with the vowel /a/. An interesting variant of the game could be to have the names of the children playing the game written on the floor or the names of the places they live in. This would certainly involve some 'real' and meaningful reading. But, such activities seem to be beyond the scope of the material because it aligns with the bottom-up conceptualization of reading. The progression of the material is from the presumably smallest unit, letter onwards. *Billas-khel* forms a part of a unit which starts with a rather uninteresting poem, card 1. The words, *rath, hul, cup, ladka-ladki and aam* have been identified. A story, *Mehanti Kala*, card 1, has been created, quite forcefully, around these words. The story and poem give an impression of a literature-driven and whole language programme. But, the following exercises reveal the real objectives of learning and the fact that the literature was simply a means towards an end. Cards 1-1 comprise of the chosen words with illustrations on one side and the word with its constituent letters on the other side.

Sensitivity to the local language: The language in the material has been sensitive to the broader social-cultural context of the state of Chhattisgarh. Birds, fruits and other objects have been labeled in the local language. For instance, scrap book cards label several animals and vegetables in one or in a few cases more than one local language- *patal/bangala(tamatar)* card 10*, handi/gagri/handiya(matka)* card 7*, musuva(chooha)* card 4*, chirayi(chidiya)* card 8. This may be seen as an attempt to legitimize the use of home language of children in school and as a step in bridging the gap between the school and home language. However, the reliance on the child's language, especially in the first year is not complete. There is a simultaneous labeling in Hindi. The teacher is also instructed to write Hindi name in parenthesis when children create their scrap book. In addition to this item 9 on the mid-term evaluation, card 1, instructs the teacher to elicit short sentences in *manak bhasha* (standard language, in this case, Hindi) from the child during her/his assessment. This indicates that labeling of objects in local language was a token exercise. The question that remains is that does this acknowledge the multiplicity of language contexts in Chhattisgarh. Also, is it only limited to the labeling of objects or does it also accept the language in its wholeness in the classroom.

The preceding section briefly discussed the possibilities the material offers of changing the classroom context for better. The following section examines the assumptions inherent in the material about language learning and reading and writing in particular.

3.2.2 The assumptions

A brief note on the material is warranted before the assumptions are discussed. The material has been designed in the form of cards, perhaps to make it handy for the teachers and students. The purpose and level of the card can be ascertained by the logo and sequence number on each card. In addition, few cards also have titles like scrap book. The coding of the cards and the various purposes allocated to them are representative of the fragmented nature of reading and writing activities in the cards. It is quite an unwieldy package which creates hierarchies not inherent in language. *Shabd patti and wakya patti* are prime examples of this.

The child will have to spend a fair amount of time in engaging with various permutations and combinations of *wakya pattis*, (cards with logo of a dog) before any real reading takes place. A lot of material is for practicing of skills like auditory discrimination, visual discrimination and blending of letters. The *upcharatmak shikshan* cards, especially focus on such skills. Card 7, logo bear, item 1 says to make a distinction between the shapes of /dh/ and /gh/, an example of visual discrimination. Card 5, makes a presumption about letters which can pose difficulty for students and say in items 1 and 2 that /chh/ as in *Chhattisgarh* and /ou/ as in soup are *kathin varn* and should be practiced in writing, reading and identification. The nature of such exercises and instructions reveal the assumptions guiding the creation of the material.

The MGML cards have been pitched at various levels. The categorization of cards into *shabd patti, wakya patti* are indicative of a certain perception about reading, the bottom-up approach to reading, especially in the early years. The structure of the material/cards conceptualizes reading as a linear process, where the smaller units are added together to arrive at the bigger whole. The *akshara* forms the smallest unit and blending the *aksharas* together one reaches the *shabd* and finally stringing together of words results in *wakyas*. The *shabd pattis* give practice in adding one letter to another letter mentioned in the card. This results in a group of rhyming words. For example, practicing on *shabd patti* 3 results in 'jail' and 'sale' which rhyme with the given word 'rail'. Similarly, the *wakya pattis* can be cut up into isolated words which can be combined with other words in various permutations and combinations and result in many sentences. Such exercises are not meaning driven but focus on the structural aspect of language. Visibly, the focus is on using the material for preparing and practicing for reading instead of reading. The process has been deconstructed into isolated skills of letter recognition and sound recognition, blending letters, joining words to make learning of reading simpler. Reading is actually the orchestration of all these simultaneously and attention to isolated skills does not result in reading. The material offers very few opportunities for writing. In the early years such exercises can mislead children into believing that reading is about adding and juggling various units like letters and words. The cards that place certain letters in the context of a whole text do not convey much to children in terms of meaning because the focus of the text is the letter. For instance, the card for milestone 4 has an assortment of words in focus (the highlighted words in the text). The words are *bus, anar, khargosh, charkha* and other words. The text in which they figure is an attempt at rhyming and lacks thematic unity.

The understanding and approach behind the readers is same as mentioned above. It seem to be constructed as next level to the grade I cards where children move from 'shabda' and 'vakya patti' to small texts reflecting the fragmented and linear view of reading. The whole idea is to get children to practice reading smaller text after moving through 'shabda' and 'vakya'. Therefore, texts are seem to be organized around few words and letters which are highlighted on the cover conveying that reading is about decoding and drill. For example, the reader 'Rishi' (Reader 47) highlights the letters, 'ri', 'shra', 'sha'; letters which are found in the word 'rishi'. In the rest of the text in this reader, deliberate attempt is to use words with these highlighted letters. Like, '*aashram*

mein rishi rehte the'. The fragmented and the linear approach to language have made the content very restricted and, the writing of the text is highly artificial. In an attempt to keep sentences short and avoid connectives it has failed to highlight relationship between the sentences, making the process of reading more difficult. At many places it is not even a narrative or has a story structure which would help children make meaningful association and predict the event and sentences, also it mostly ends abruptly; for example, the reader titled *'Sabha'* , 'rishi' *, 'diwali'*. On the back of the cover similar sounding words like *'baal, gaal, maal, chaal'* are given which are not associated in meaningful manner and are given with the purpose of drilling or practicing sounding out.

An intensively structured material of this kind does not place a lot of trust in teachers' abilities. It is not the kind of material which will empower teachers. On the contrary, it takes away the decision-making power from teachers because it has charted out the path for teachers. The material does not offer any novel ideas for execution or new ways of conceptualization of reading and writing. It does not empower them with knowledge to change their teaching. The material can be looked at as a tool to 'manage' several grades at the same time and not necessarily 'teach' more than one grade at a time.

Similarly, the structure of the material leaves no room for children's lives and experiences to be represented in the cards or to be shared during the activities. Scrap book and *abhinay karo* cards give some space for dialogue. But, this too is clichéd, as often indicated in textbooks, and does not go beyond describing objects or pictures. Children will do the exercises they had been doing earlier with their textbooks and now they will have a mind-boggling range of cards.

The broad assumptions guiding the focus and creation of the material conceptualize reading as a linear and additive process. This view of reading has been contested and shifts the focus from the wholeness and meaningfulness of language. Emphasis has been laid on the structural aspects. Practice of various structural aspects makes a significant part of the material. The National Curriculum Framework, 2005 identifies "meaning making" (p.15) as one of the most important aspects of learning. It also reminds how language teaching is associated with the "*correctness* rather than with the expressive and participatory functions of language" (p. 40). Lack of focus on meaning and attention to accurate pronunciation of *varns* or use of standard language is a characteristic of the material. The material does not consider enriching the physical space of the class with children's writings or other print material brought by them. The next section reviews other aspects of the material like the text, exercises and questions.

3.2.3 Text

The organisation of the texts into milestones is driven by the concern for forms. The primary objective of the cards seem to be teaching children about various forms and its features and, therefore, texts are organized around a particular form like, paragraph writing, letter, essay or information text and not around literature. Whereas, the use of literature in the language classroom is considered to be essential to improve the quality of children's reading and writing. Because, by exposing children to rich literature, reading, and discussion around the text, we make them gain interest in reading- writing, and develop their ability to use various literacy

devices. Therefore being surrounded by good quality literature not only adds to the child's knowledge but also scaffolds children and acts as a model.

Authentic Texts: Exposing children to authentic literature is significant because it makes them realize what makes a good text. Literature is like an umbrella which holds thematically, stylistically variety of texts under it which is shown to influence structure, syntax, organization, vocabulary and author's craft. But unfortunately in Indian classrooms children do not get the opportunity to engage with a range of authentic literature as we are unable to appreciate the role literature plays in child's development, in addition we are also plagued by lack of books for children; textbook being the only book available to them. Precisely for this reason it becomes very crucial to have a textbook which at least tries to incorporate authentic literature to give opportunity to children to engage with it. The national curriculum framework has also reiterated the significance of using literature in our language classrooms]

In contrast, the selection of texts in MGML material seems to lack the element of authentic literature. Stories and poems included are neither exciting, nor close to children's interest. Few traditional popular stories which have been included, like *Bandar baant, Haathi aur cheenti, Daani ped* and *bansuriwala* have been rewritten especially to suit the specifications of the MGML material; resulting in very flat narration. Take for example Baansuriwala in grade 2 cards, though it is a very popular children's story but it has been retold in a very insipid manner and, is devoid of literary features. At places due to the short choppy sentences, it reads like string of sentences; "*gvala naaraz ho kar chala gaya. Usne raja ko sabak sikhana chaha. Gwala ne phir baansuri bajan shuru kiya*." The informational texts too (*Kabaddi, Jaadugar, Indradhanush*, *vartalaap)*, sound artificial and contrived and, lack variety in presentation; that is it has been written in a very flat and straight forward way. It has been observed that texts written in artificially created contexts rob reader of its pleasure and, as a consequence are high on morals (*Sahsi Rupa*, *Imaandaar Seth*, *Mera ek Sawal, Shreshtha Vidyarthi)* making it very didactic.

Selection of poems is equally didactic and, narrow in their themes with 'nature' as the overriding theme; exception like *'Mausi'* and *'Papa'* and *''Udanchoo* are rare. Not only is the content, even the choice of metaphor and imagination is too staid and constricted. The primary objective of including poems like *'vinay', 'Subah', 'Nanhe-nanhe bade bade'*, *icchha* is to give children lesson in moral and not to give them opportunity to enjoy and develop a sense of rhyme and rhythm and free their imagination from any kind of restrictions.

At the level of content and style most of the texts included are found lacking. Absence of voice in texts makes it dead wood and therefore, difficult for reader to connect. For instance, 'Eid' in grade 3, is a clichéd representation of the festival which lacks details and, is not vivid and thick in description. The lifeless description does not evoke any feeling and, therefore the text is unable to engage the reader (milestone, 29). 'Patra' in grade 3 is another such example. Instead of giving an authentic or a more convincing letter to read it offers a very contrived letter that shows a child writing to her friend about MGML cards and milestone being done in the class. It seems really unlikely that a child would care to write a letter to her friend about the milestone

she is doing unless, it is unusually exciting (milestone, 34; card 31). Another example of artificial and unconvincing writing is *'Sahasi Vallabh'*. Believing that breaking the whole into smaller units makes reading simple, the text is broken into small sentences and avoids connectives making the text artificial and difficult to hold. In addition to that, the text seems to have been written with the whole purpose of teaching the value of perseverance and social responsibility hence the weak content. At places it has also used words like *'rakta'* which does not seem to gel with the rest of the style of the text and seem to have been used to introduce children to a new word *(chot lagne se pair se rakta behne laga)(milestone 31; card 33)*. Such texts are not helpful in making reading and writing exciting and attractive for children and encourage them to develop it into life long process.

Genre: It is believed that exposure to a variety of text will give children opportunity to develop the skill necessary to comprehend it. In MGML material it seems that thought has been given to expose children to variety of genres like travelogue, poems, stories, play, riddles, letter and autobiography. But the selection of texts does not excite the readers enough to raise their interest in that particular genre. In addition to these texts, children are also taught about the features of these genres under the '*Upcharatmak*' cards. What purpose does it fulfils? Are children not able to enjoy the text without knowing the features of these genres?

To be able to develop the ability to craft text and write in different genre, what is required is not memorizing the knowledge of the form but to be able to connect and engage with variety of texts. Familiarity (as a reader) with a range of texts gives children the confidence to try out different genre and, choose the appropriate genre to convey effectively what one wants to convey. In MGML material care has not been taken to make the selection of the text more meaningful for the children. For example, letter given in the milestone 34 of grade 3 is extremely unexciting. It is unlikely that a grade 3 child will write to his/her friend discussing the method of teaching in the classroom. It makes for a very boring reading instead; there are many authentic letters available which could have been included. What needs to be understood is that the reason or the purpose of using certain genre is associated with its need. Knowing the format of the letter is not enough; what is more important is to let children understand the purpose and the ways of writing letter by giving them opportunity to engage, discuss and write authentic letters.

3.2.4 Exercises

Simply having a text is not important. How we use this text is very important and the questions we engage with in the class gives us an opportunity to delve deeper into the content, understand writer's choices and decisions and also helps us develop author's craft.

Questions: It is also important to give space to children to have their own opinion but the abundance of information and recall based question in MGML materials do not allow them to do so. For children to be able to enjoy literature for what it is and, to have the freedom to interpret it in their own way, they must be able to question and define the purpose of the text. Recall based questions like,

Kaun- kaun se rang ki billiyaa thi?(Grade 3;milestone, 23; card,22)
Kabaddi ke khel mein mara kab maana jaata hai? (Grade 4; milestone, 42; card 36)
Surjeet kis team ka kaptan tha?(Grade, 4; milestone, 42; card 43)

do not allow children to form their own perspective and argue logically. Sadly such questions are in abundance in MGML material. Open ended question like, 'what would have happened if monkey had not come?' are very few but are needed more.

Poems usually deal with feelings and emotions but the exercises given completely ignore this aspect of the poem and, instead have asked traditional recall and fact based questions like, what do flowers teach us? What does the earth teach us (Grade 4, card 24)

Koel kaisi aawaz karti hai? (milestone, 27; card, 28) *Titali phulon se kya kehati hai? (milestone, 27; card, 25)*

Phoolon se hame kya seekh milti hai? (milestone, 23; card 22)
Kaun koodne laga? (milestone, 23; card, 24)

Rather, it could have given children opportunity to explore their own feelings, experiences, explore new metaphors, and create their own poems using mentor poems. But what we have instead is asking them to write the *'bhav'* (Grade 3, card 24,22;) of the poems in their own words. Wherever opportunity is given to create their own poem, the process has been made very formulaic and boring in an attempt to make it easier for children.

It has been observed that children have a natural sense of rhyme and are found to be playing with language outside classroom, but this aspect of children's language has not been taken into account. At some of the places it does ask teacher to draw children's attention to the rhyming words in the poem but it needs to be supported with more such example to help children to expand their repertoire. To be able to help children do so they need to be exposed to many such poems and on which they can lean and borrow from to construct their own poems. It helps not only in term of developing a sense of rhyme but also builds up thematic repertoire.

3.2.5 Grammar

The concepts of grammar included in the card are very exhaustive; it ranges from prepositions, types of sentences to adjectives and its various types and also includes various genres like story, letter, travelogue and many more. At one level grade 3 children are asked to fill in the blanks with '*ne*' in simple sentences like '*Geeta …… gana gaya'* which seems to be way below their age and at another level grade 5 children are asked to identify adjective from given choices which also includes different types of adjectives like 'qualitative and quantitative' without explaining about it.

The presentations of grammar concepts are also quite problematic. Instead of making children understand its usage it focuses on identifying its features. For example many modules have '*Samanarthi shabda'* which children are supposed to learn but nowhere in the entire exercise

children are given opportunity to do personal writing where they can develop the skill of making decision regarding choosing the most appropriate word in particular context. Similarly word meanings are given under *'shabdakosh'* but it ignores the most valuable aspect of the reading process; the ability to guess the meaning of the word from the context. Though 'Srujan' talks of active participation of learners, the exercises lack imagination and, most importantly lack understanding of how children learn. Like mentioned above, comprehension is about using meta-cognitive strategies and, to expect active participation of learners one needs to provide them with the opportunity to develop comprehension strategies like the ability to guess from the context. By providing meaning under *'kathin shabda' and* not encouraging them to predict on the basis of context is not enabling them to build such strategies. Giving *'shabakosh'* is important but what we need to understand that it is not the most effective strategy to know the meaning.

3.3.6 Writing:

The aim of the exercises is to see that children move beyond copying and are able to think for themselves and make choices related to topic, form and style. Unfortunately, the recall based questions encourage copying; children are aware that answers are there in the books to be copied. Most of the writing assignments given in these exercises are fact producing exercises with few exceptions here and there like, describing 'how to ride bicycle'. It may not give children the freedom to choose their topic but at least it gives them an opportunity to relate their writing with their personal experience and hence, write with voice.

Personal writing helps children gain control of their writing and, among other things give them opportunities to write for a wider audience rather than writing for the restricted audience-the teacher. Though the classroom interaction has been divided into six groups, the writing tasks are such that it is mostly done for the teacher. At places there is an attempt to give space to children's community and their worlds outside school but even these turn out to be more of information and recall based rather than experience. For example in a milestone related to 'sports', it asks children to name the games which they see in their village; an information based question rather than experience.

3.2.7 Conclusion

The MGML material was meant to break away from the limitations of the textbooks, but with regard to the quality of texts and the exercises, it fails to do so. The understanding behind the selection of text in textbooks and the MGML material, the exercises and, also the texts included seems to be very much similar but most importantly it does not seem to differ in their understanding of the language pedagogy.

Illustrations in the MGML material are neither attractive, nor do they take the text ahead. It seems that illustrations have been looked at as fillers, rather than adding quality and meaning to the text. On the other hand, the illustrations in the reader are attractive and gel with the text. Unfortunately, there are proof errors also. Grade 2 cards have many misspelt words in milestone 12, 18, 21.

The areas in which the material is wanting far outweighs the possibilities it offers. The material does not make a break from the commonly produced material created in several programmes. In fact, the NCERT textbooks created after the deliberations on the National Curriculum Framework, 2005 have influenced the prevalent perceptions about reading and writing and language learning in general. This material takes no cognizance of that exercise.

3.3 Mathematics

The NCF 2005 is used as a framework to analyse the Mathematics curriculum in MGML. In addition the approach adopted by the Chhattisgarh state textbooks is also examined and commented upon where relevant.

MGML Maths cards were designed to be used in a multigrade classroom, more specifically to meet the needs of a multigrade classroom and more positively to tailor the curriculum to the pace of each learner. As such there are certain presumptions in the design of the card.

1. Maths can be broken down into sizable bits.
2. When a level of competency is achieved the child can move forward or stay where he is. Thus putting the child presumably in the driver's seat and making it a child led curriculum.
3. The teacher cannot be omnipresent in a multigrade classroom, and the cards distribute the children in different groups depending upon the concept tackled within the cards. The groups are divided into teacher led groups, teacher assisted, peer assisted and independent groups, thus presumably freeing up the teacher to work with the students requiring her help and giving the child a sense of independence and ownership.

   The NCF 2005 and the NCERT position paper on Mathematics 2006 offer broad guidelines as to what a mathematics curriculum ought to look like. Some of the salient features which a math curriculum ought to present are: visualisation and representation, making connections, abstractions, quantification, analogy, case analysis, reduction to simpler situations, formal problem solving, guessing and verification, estimation of quantities and approximating solutions, systematic reasoning, mathematical communication. In other words, setting up an equation must get as much credit as solving the equation, a teacher needs to shift her focus from specific content to be acquired to creating a learning environment. The curriculum too needs to have a broad base and introduce children to a range of mathematics, moving beyond the focus on algorithmic approach and computation to include, geometric reasoning and visualization, patterns and shapes, etc.

The MGML Mathematics cards for Grade 1 to 4 were analysed drawing on the perspective for mathematics curriculum as articulated in the NCF 2005. We studied the cards in order to understand:

A. Organisation of content including pacing, sequencing and spiraling

B. Movement of the curriculum from concrete to abstract

C. Areas/ Concepts covered.

D. Treatment of concept and procedures

E. Amount of practice and variation

We compared the treatment in the cards with the relevant textbooks of the State.

3.3.1 A summary of the contents of the cards:

The Mathematics cards feature 21 logos which indicate either the concept being taught, or a kind of activity and in other cases the logos signal whether the card requires writing or oral work. The Main concepts taught at Grade 1-4 level are the Four Operations, Counting, Sequencing numbers, Place Value, Fractions, Measurement, Weights and Measures, and Estimation. A summary of the Milestones concepts covered at each grade level are:

Numbers 1-100; Addition and Addition with carry over; Subtraction; Addition and Subtraction of Two Digit Numbers; Measurement: Estimation and measurement of length; Weights using weight counters, Prime numbers; Place value to the 1000's, Geometry - Straight lines and the drawing of them to given measurements, Drawing a circle using a compass, Circumference and Radius, Area and Perimeter of a square and rectangle; Rays and angles; Right angle, acute and obtuse angles, Use of a protractor, introduction of multiples (*gunaj/ apvartya*); cost price, selling price, profit and loss; reading a distance map and converting m into km. Fractions- improper and mixed, multiplying fractions, addition and subtraction of fractions when they have the same denominator, Symmetry.

3.3.2 Overall approach

The MGML cards set out to innovate and build a 'way of doing Math' in an innovative and investigative manner. Certainly the design of the cards with its numerous logos, manipulative suggestions give an impression of an investigative and understanding based approach to Mathematics. However in the daily transaction of the cards, this investigative and understanding design gets lost in translation. The majority of the cards emphasise the four operations and computation. The direct focus on computation is obvious in Grade 4 level cards where along with the word problem, even the mathematical operation to be used in solving the word problems is indicated, by showing not just the operation symbol but also setting up the numbers. This reductionist method devalues the primary intention in redoing the curriculum and reduces what could be a rich curriculum to computation.

Such an approach devalues problem solving and mathematical communication. Hence the learner is no longer challenged to understand and express a problem in abstraction. Instead the lower order skill of adding, subtracting, dividing and multiplying are reemphasized while the higher order skills get no coverage in the curriculum.

Perhaps this is the most serious challenge faced in the entire Math curriculum is the importance given to lower order skills. While knowledge of the mathematical computations are vital, the movement of any good curriculum must lead towards higher order skills of analysis, problem solving and even creating. There are very few instances where such experiences are provided to children. There is hardly an occasion where children may come up with problems of their own or even set up a equation.

3.3.3 PACING

The Mathematics curriculum is not evenly paced. A study of the cards suggests that the curriculum aims more for a spread rather than depth of concepts. The curriculum content is not loaded evenly across the cards and milestones: while some of the milestones are concept heavy and burdened, other milestones are more relaxed. Some Milestones seem to carry the burden of at least half the curriculum—e.g. Milestones 11 and 29, while others act only as review. This undermines the designers own stated interest in reinforcement as this uneven pacing does not support systematic reinforcement. This gives suggests that there has been inadequate attention paid to pacing.

The curriculum demands more of a Grade 1 learner than a Grade 2 learner. The Milestones covered in Grade 1 begin with a paced approach when suddenly they race through new concepts without adequate time, all in a hurry to introduce the learner to new concepts, while those in Grade 2 are more of the reinforcement variety. Although there is attention to the need for learning mathematics using manipulands, however, the curriculum does not adequately attend to this. Concepts such as Place Value suffer from a serious lack of pedagogic attention.

3.3.4 SEQUENCING

A well-paced Math curriculum not only takes into account the concepts to be taught but is also mindful of the 'developmental' stage of the learner, building within the system adequate room to revisit the concept in the year and build upon the same concept. There is no consistent effort in the cards to take into account the developmental needs of the child, who may not understand the concept the first time but after 3 months might be in the developmental stage to understand the same concept better and build on it. This revisiting and the building up of the concepts is not clear except when moving up in Grade levels. There is no established pattern followed in the cards for this.

The sequencing of content is important in Mathematics where concepts build on one another. In the MGML materials there are several instances where the sequencing of concepts is not adequately attended to. For instance, in the case of Mathematical patterns, the first introduction to patterns is early. However the return to patterns takes place only in Milestone 10, almost half a year later, (i.e. with counting in 2s and 3s and 5s). Again in milestone 9 children are tested for 33+12, however the following card makes the claim that children are still understanding 30 +3 makes 33. This when placed in juxtaposition with Milestone 7 where the children are already handling operations with two digit numbers, complex operations of

subtraction 29-19 renders the cards which come later and are simpler than the ones the children performs later in the year rather confusing.

Frequently, when concepts are taught before the students are ready for it developmentally, then there is a tendency to algorithmise. It is thus likely that children will study Arithmetic only procedurally and algorithmically and not with comprehension. The instance of the introduction of multiplication in Grade 1 (milestone 11) and division on milestone 23 are instances of such early algorithmised treatment of concepts, prior to relevant conceptual treatment/relevant concepts which take place at a later stage. In this case, Grade 2 milestone 20 for multiplication and milestone 29 while introduces repeated subtraction—both taking place at a later stage. Some other instances of such inappropriate sequencing with algorithmisation taking place on an earlier milestone and conceptual treatment at a later milestone, if at all.

Milestone 52 Card 2: instead of getting the learner to apply this simple concept of multiples, colour codes the multiples and the learner has to now copy it.

Milestone 50: One of the questions asks the learner: Dinu's house is 2000 cm away from school? So how many metres far is it? The problem is worked out using long division, 100 divides 2000, 20 times. But the student has not yet worked with a divisor which is a double digit divisor.

Milestone 52 Card 10: The divisor is a four digit number, but children have not yet learnt this. However, the objective is to convert 7000ml into litres.

Milestone 38.12: tries to draw connections as in that the learner has to measure a thing like a book and express it in metres, centimetres, feet, inches. Although this might be hard as converting it between different units requires knowledge of decimals which they have not yet learnt.

3.3.5 Spiraling

The opportunity to go back within a curriculum takes on special meaning for the children in primary years. A sound curriculum must take into account the fact that a child will access the curriculum differently at different points in the year and so must provide enough opportunities to re-visit the concepts albeit at different levels. That is to say the curriculum must build upon the same concept within the year at different points of time to account for the developmental stages of the child. Thus a concept may not be taught at one-go and instead will have ample opportunities through the year to lay a building block as the year progresses. Some curricula are even designed to re-visit the same topic as many as three times in a year. This takes into account the developmental stage of the child, so while she/he may not be ready for a topic at 8. 2 years, she/he might be ready for it 8.8 years. Each time they go back they lay another layer at the foundation.

In the MGML system, topics are touched upon several times. However, the treatment of the topic without depth and the confused sequencing does not allow this to amount to systematic spiraling. The set of cards relevant to a concept examined together give the impression of being piecemeal.

In Milestone 37, *Maapan- dharita/* Measurement is in the form of practice in addition. There is no real measurement being taught here. At Milestone 41.11, measurement is introduced again, including the measure millimeters, but there is inadequate attention paid to the units, almost as if the learning would automatically follow from exposure. These are concepts that need to shown, discovered and brought to the notice of the learner, but as the card doesn't make any extraordinary demands of the learner.

Milestone 29: Time with hour, minute and second hand. The conceptual depth of the card is too dense for children who can read only the hour, based on the previous year's content. The differences mentioned are between the hands is the fat hand, medium sized hand and the thin hand (visually) and the not the big hand and small hand (29.17). In the next card time is represented in h:m:s (4h: 40m: 45s).

3.3.6 Abstraction

One of the major problems with the Mathematics curriculum is the movement to abstraction much too soon. While the designers are aware and cognizant of the fact that one cannot teach Math in abstraction in the primary classes, the design of the cards is such that without "specified/ dedicated" manipulands made available with the kit, math may be reduced to symbol work to be done in notebooks (MGML parallel chalk and board didactics.)

As early as Milestone 6 the student is expected to add numbers which cross ten, without sufficient practice or the support of visuals, or indication of the manipulands to be used e.g. 7+4=? . This is likely to lead to drawing lines in the notebooks, or adapting to use fingers (MS: 6.7). We may bear in mind that till now children have been working with numbers only till 9 so far. Later, in Milestone 8, addition of two digit numbers, there is no more visual representation, just an expectation that the child will know 15+ 12. One would expect that addition of two digit numbers or the subtraction of two digit numbers would be the *avadharana/* concept/ *murga* card, this is not so. Instead the *avadharana* card seeks to explain numbers 21-30. The textbook, in contrast, still has a lot of visuals. There is a lot more emphasis on seeing and understanding.

There are cards which try to explain and elaborate mathematical concepts with the help of activities. There are logo cards which expect/ demand that the card be accompanied with a game or an activity, however, many times these seem artificially created activities rather than the concept lending itself towards such an activity.

For instance in Milestone 5, 'Measure and Place Value' are introduced with illustrations. In Milestone 6, place value is again only touched upon. Children are expected to play a game where they make bundles of ten using matchsticks and count what's left over. In measurement,

the cards instructs the child to go around and measure the things around it using his hand, a pace etc. This learning is not contextualized or explained. It's just an "activity". This piecemeal approach breaking up a concept into bits without delving deeper can lead to routinised work.

3.3.7 Problem solving and errors as learning:

Mathematics as a domain gives importance to accuracy, but it is also interested in process of thought through which the solution is arrived at, leaving open the possibility of making errors while trying to solve or think things through. The MGML cards seem to indicate that errors are not an option while solving problems. There is little room created in the learning units to encourage students to grapple with and figure things out. Rather they prematurely inform the learner on how to get the answer, using an algorithmic approach. The cards are mechanical in what they expect from the student, sometimes even to the extent of spelling the answers out. The cards do not generate the attitude of problem solving or allow for the child to wrestle with the question and find things on their own. Rather, everything is spelt out for the child

The cards leave no room for error, in that, they not only do set the problem up, but also tell the learner what operation to use and how to work the problem out: it is almost as if errors are seen as undesirable and if so Math becomes merely a game of accuracy and computation rather than a discipline of strategies or mathematical thinking or perspective.

For instance at Milestone 32, while practicing division, the card asks the learner to solve 56/ 6. This is simple computation as it were, but even here the cards continue onto tell the learner that this means that it is 56 divided by 6 -Taking away the ability to problem solve and placing emphasis on mechanical resolutions.

In the 'Word Problems' at Milestone 32 the cards show the "way" of solving the problem with not only numbers organized in place but also the operation in place. Thus the card would go on to read after the word problem the following as well

56
- 5

_____
_____

Thus, even a word problem is reduced to simple and mechanical computation.

Except in evaluation *moolyankan* and in very few other instances, by and large, the cards indicate what operation is involved. For the most part, one example is provided and this is followed by a set of problems, making it very obvious to the learner that the method in the example is to be used to solve the other problems. Even as late as Milestone 51 which is Grade 4 the cards tell the learner which operation is to be used and how the numbers must be organized in order to compute.

This tendency to reduce and limit mathematics learning to computation is made more

dominant as there is a de-emphasis on concepts such as Measurement, Money, Weights. These concepts are taught as mere 'application' of algorithms for addition, subtraction rather than as independent concepts themselves. While it may be argued that Estimation is given its due within the curriculum space, these other concepts are perceived more as terms to enhance computational ability where they are added as tags to the existing numbers such as Rs. 29 – Rs. 18 = ? rather than as concepts which are worthy of engagement in a systematic and meaningful manner.

Milestone 40: Introducing Weights and the Conversion of 1000gms = 1 kg and 500 grams = ½ kg, 250 grams= ¼ kg. This is taught in the strictest sense, the topic is not explored, questions which challenge the learner are not asked, its back to practicing addition with this concept instead other operations like subtraction with borrowing is reinforced through weights and measures. In Milestone 39 and elsewhere there is the use of outdated coins like 20p and 1p

Milestone 32 where the student is Skipping in 3's, 4's and 5's. The student is told that they are skipping in this pattern and the child then has to mechanically follow the said pattern. In certain cases like at Milestone 32 Card 6 the cards have even colour coded the pattern so that the child has to just find the next number on the right colour and write the number rather than counting in 2's, 3's, 6's etc.

Another area where mechanical perspective over understanding is evidenced is at Milestone 3 which introduces the "+" symbol. The equations are already solved. The student just has to add the "+" symbol. It takes away from the idea of addition as a plus something. The learner is asked to mechanically draw the sign all through, and if copied into the notebook, the child cannot differentiate between drawing the object and drawing the symbol. It's more a "formulaic representation' with mysterious meanings which the child is not encouraged to decipher.

At milestone 3 card 16, the learner is taught addition in a non-intuitive manner for example: 1+2 = 3 , 2+2 = 4, 1+1 = 2, 1+3 = 4. There is a lack of patterns, intuitive understandings. It is more confusing as the child is being introduced to the addition for the first time. In contrast the textbook asks the child to count all the objects given, add one and write the answer. Thus, learning the vocabulary of adding one before learning the symbol of adding one. It builds on the intuitiveness of number- the most basic of which being: 'Numbers are either one up or one down' as the first pattern.

In many places, addition and subtraction are non-creative. They are empty of any real everyday significance, in the sense that they do not make connections with the child's everyday world. When we were there on the field the teachers had made a mantra of it. "*Do dahai, ek ikaii*"…."*dahai ke ghar jayenge, ek bundle layenge*"….this lyric is what the children had to remember to do when borrowing. It placed emphasis on whether the learner remembered the formula of doing it, rather than the why of doing it.

Some exceptions:

However, the MGML cards do have examples where Mathematics involves problem-solving demanding a thinking of/ about numbers rather than a doing of it. For instance, in Milestone 30 Card 15 question 5 : the framing of the question (which hasn't been introduced before and comes in the *Moolyankan*) demands such a problem solving attitude as the question can be answered by either counting up, or subtracting as it's a "how many more" question. It's loose in framing and keeps it elastic.

As a refreshing change in Milestone 35 they have explored interesting questions of patterns. In 35.5 the cards ask the learner to use digits 1, 2 and 3 to make as many numbers possible. Perhaps this could have been extended to add another dimension such as use these numbers to make the largest number possible, smallest number possible etc. In MS 35.13, they ask a brilliant problem-solving question rather than just the repetitive addition where one of the three addends and the sum is given and the learner has to find the missing addend whose one digit is given and while the second addend is a zero. This requires active Math investigation, knowledge of strategies and challenges the learner to think beyond the "given" framework.

Unfortunately, these sorts of questions are not adequately explored and used within the MGML Maths curriculum. These sorts of questions find very little space in the cards, instead what is available is the tight and exact framing of questions where you know you are adding in a given way or subtracting in a given way. The following evaluates the curriculum on the treatment given to the concept and procedures.

3.3.8 Mathematical Communication and Use of Language:

Mathematics is not just about computation and accuracy but is also the ability to communicate. There are certain broad skills required to do Math everyday which include analysing, comparing, ordering and telling or making connections and explaining the reasons for the possible answers by the use of language whether mathematical or others. For instance; the textbook provides for problem solving and requires children to verbalise while they problem solve. For example: there is a picture story, about a girl who is trying to rescue her kite and has to make a choice of a ladder. She uses the shorter one and then uses the longer one realizing that the bigger one is the right one. Although the problem is solved the student has to verbalize this problem and talk through the choices made by the girl. The picture stories in the textbook used in problem solving involve the use of verbal language in making sense of mathematical ideas. This rightly places the use of language as a tool in problem solving Mathematical situations. The stories are real, varied and are grounded.

In contrast the MGML milestones introduce the vocabulary but do not extend or deepen its use. The treatment is more repetitive and artificial. For example, in Milestone 4, the card introduces the symbol of subtraction and provides solved problems. There is no demand on the child to conceptualise 'taking away' or verbalise the idea.

The language in the cards is also sometimes difficult to comprehend. *Avadharana* card in Milestone 18 (subtraction) for example is word heavy, and the language is not accessible to children.

3.3.9 Remediation (upacharatmak shiksha)

The idea of remedial instruction is to provide an opportunity to the student to revisit the basics, identify where the misconception has occurred, correct it and move on. The idea of remediation being incorporated into a system is sound. However, the designation of specific cards for the purpose is problematic. The assumption that the "system" knows exactly what the learner has stumbled at, accords too much possibility to the card, for this sort of understanding can only arise from the teacher who investigated to check where the remediation is required or where the gap has occurred and intervenes to set it right.

Notwithstanding this conceptual problem in the approach to remediation, the remedial instruction in many cases is not pitched at the level the child may have erred in that particular milestone. For instance, in Milestone 8 which deals with subtraction with double digit numbers, such as 22-11, the remediation accorded here is a card which explains subtraction for numbers as small as 3-2. The question here to be answered is: Does the remediation remediate for the gap the student is at, or is it remediating that which she/he already knows. If the gap has occurred at a two digit numbers, the remediation must also be pitched at the two digit numbers. Going back to one-digits and mastering that would not be sufficient to make the transition. The approach in the cards does not handle this developmentally. In this instance, the *Upacharatmak shiksha* is pitched at a level where subtraction is first introduced at Milestone 4 almost 40 cards behind.

This tension can also be seen again in Milestone 29. This milestone is dense with novelty and new concepts are all loaded into this. To have a remediation at the end of this milestone after all the concepts have been taught is to wait too long. Remediation should ideally occur at the end of the 'particular' concept, so the learner doesn't feel like a failure. This remediation at Milestone 29 is like a catch all remediation which is impractical.

Sometimes the remediation is not really targeting the problems which might arise in this milestone and so loses its value. For example, in Milestone 17 the *Upacharatmak* card has word problems but these have to do only with single digit numbers while those in the cards have to do with double digit numbers. In other places, the remediation is mechanical for instance in Milestone 21 the *Upcharatmak* card at 21.13 teaches the child 6 times table and it does this by writing out the answers of the 6 times table and asks the child to copy it out in the given blank spaces, similarly with the days of the week. This erratic approach takes away from the idea of remediation.

3.3.10 Treatment of a few concepts

To examine the treatment of concepts, Number concepts and subtraction were chosen.

As per the NCF, initiating a learner into Number Concepts during the early years should

focus on introductory activities such as Classifying, Categorizing, Number Conservation, Sequencing, Patterns etc.

The cards seem impatient to move the learner along, also the emphasis and focus is placed more on number identification and recall. This impatience can be detected all through the cards. Curricular space for patterns, categories and classifying is limited and the shift to symbols and the abstract is hurried and quick. It is now established that moving a child to memorise and write the sequence of numbers from 1 to 100 and 1000 and 10,000 before they are ready for it takes away from building the maps and categories and synapses in the child's brain in the way the learner begins to think about Maths. The pressure on the teachers to ensure that a first/ second grader can add or subtract and think about place value is immense as can be seen from the pacing of the card. If curricular space accorded to concepts is taken as a measure of importance than understanding of a concept gains the least space; Reinforcements on the other hand take up a large part of the Maths curriculum. This race for coverage is evident throughout the milestones.

By the middle of the year, the students are asked to say the numbers. What this usually translates to in a classroom setting is a classroom chant of the numbers 1-100. The cards are an attempt to challenge the teacher to approach Mathematics in new and innovative ways but without directions and without dedicated manipulands, the cards fall back to reinforcing number recall. In some instances there is an artificial stretching of the Milestone with students memorizing poems more in the in the "One, Two, Buckle My Shoe" variety, without any real mathematical ideas involved.

In another instance while there is an attempt to develop motor skills by introducing 'tracing'. However, the tracing is undertaken in an abstract sense using the index finger. For tracing to have the desired effect of developing motor skills it must involve control of a pencil/ chalk, the pressure on the object– the actual drawing of a concrete-visible line but here the tracing of the card with no directional arrows makes it a mechanical activity. In a classroom setting both the student and the teacher are apt to dismiss the activity as a filler.

A contrasting treatment of the same content is available in the textbook -- the child is asked to fill the picture using pebbles, draw simple shapes, match similar pictures, shapes and patterns, continue a sequence of patterns, exercises in number conservation and classifying or categorizing.

In MGML subtraction is introduced as something out of the realm of experience rendering it non-intuitive and hard to access. The sum three minus two is given to the child with the expectation that the learner comes to the conclusion of one. In the textbook, the child is introduced to taking away one from the given numbers, and then consolidates it by asking them to add one to the number or take away one from the number. In another exercise the child is asked to pose the equation to the pictures given. Again, developing the use of concise language to express a mathematical problem.

Another interesting way the textbook poses the question is by asking, 'How many more?' – How many more are required to make 9 – thus introducing counting up as a strategy for

subtraction. It's almost as if in the textbook, Maths is a language of its own as simple and decipherable as the child's first language while the cards on the other hand despite trying to be grounded and more relevant to the child's experience are harder to grasp and explain. The cards really are "materials" which have to be "taught" deliberately in a Maths class.

3.3.11 Errors of copy and proofing

- Milestone 8: At this Milestone, is the half year test where the children are tested for addition with carry over when this has not been practiced at all so far (8.16).
- In certain places (Milestone 29.13), the hundreds place value is denoted by a (hundreds bundle) which so far didn't exist, it usually was denoted by a (tens bundle, of ten). Moving symbols like this can be quite confusing especially for the average learner.
- Milestone 43: Explanation of second, minute and hour hand again, but the cards seems convoluted. It's not smooth and easy, moreover right after, there is a question like "*May 2009 me kaun sa din hai*?" – The student may be unaware as to how to interpret that question.
- Milestone 46: Numbers to 10,000. While the calendar for 2009 is given to ask questions. One of the questions is: What day is Feb 15, 2005? Another one asks the learner to make the calendar pertaining to Jan 2010.
- The spatial- geometry curriculum seems to be severely limited. Even in the fourth year of the curriculum the subject is treated the same way, there is no variation in the kind of questions being asked from Grade 1, until area and perimeter are asked later in the year
- In Milestone 49 there is an error on card 2 (49.2), question 11, 6th sum. Also in Card no. 5, second level, third sum is wrong. Card 6 Question 1 is phrased wrongly.

3.3.12 Conclusion

Without doubt MGML Mathematics Cards challenge the teacher to approach the teaching of Mathematics in new and innovative ways. It does in almost all instances demonstrate the teaching of Mathematics in mediums apart from the use of the blackboard and chalk or book. And in this very significant aspect the MGML cards open a door into looking at the teaching of Mathematics differently, pitching it at understanding because of doing and experiencing rather than listening and copying from the board. However, given the treatment evident, there is a strong possibility that the cards become the new, substitute blackboards.

The Mathematics cards need to be reviewed from the point of view of the depth and treatment of concepts, mathematical communication, problem positing by the learner, problem solving, comprehension and use of dedicated materials/ manipulatives encouraged and stipulated within the classrooms. Further the routination and algorithmisation which is widely seen in the cards need to be reviewed as they undermine the possibility of concept formation. Remediation needs to be revisited conceptually in the entire system.

3.4 Environmental Studies

This section reviews the Environmental Studies (EVS) cards made for MGML programme. We begin with brief summary and review of the policy documents and the perspective that is used in EVS cards. That is followed by the method used in doing this review of the EVS cards. Finally, a review is presented under two categories viz. one, on the methods adopted and second, on selected two topics. The section then concludes with broad observations.

3.4.1 Frameworks and Background

It is a challenge to evaluate content material merely by depending on the text given in the framework documents. MGML has *Srujan* document which stands as its basic document. The cards for EVS with fruit symbols and red band provides the basic text which has been translated as the content from base document. To understand *Srujan* documents perspective, it is necessary to recognise the history of the subject of EVS. EVS as a subject has been evolving and understanding about what needs to be taught at primary school has been rather vague. It is often identified as a mixture of basic social sciences and sciences. However, these assumptions about what forms as basic or what depth needs to be achieved in primary school etc has been debatable. It is possible to notice the changes about the understanding of subject in the syllabus document of NCF 2005, which is narrated in the paragraph below. It is important to locate this history of EVS as a discipline and its evolution because that will provide a better understanding in evaluating MGML material.

There has been certain continuity in the way EVS was understood from 1975 as proposed by National Curriculum Committee in 1975 policy document on "The Curriculum for the Ten-year School: A Framework" to National Policy of Education 1986 and National Curriculum Framework (NCF) 1988 etc. They continued a framework of treating Science and Social Sciences as distinct for primary school children. The proposal for integration of sciences and social sciences emerged more clearly in NCF 2000. However, the boundaries of Sciences and Social Sciences were not completely merged even within NCF 2000 and it is this perspective with which the SCERT's MGML cards seem to be aligned they evidence such a 'thin integration'. In 2007, the State developed the State Curriculum Framework (Chhattisgarh, SCERT, 2007) which is more akin to the NCF 2005 framework.

A comparative look at the content in EVS in textbook of the state and post 2005 NCERT books can provide certain idea as how there has been integration or interdisciplinary approaches being practiced in EVS. Does MGML material seem to recognise these shifts can be an important question. While trying to evaluate the content in the textbooks of the state with the list of topics it appears in the textbook of NCERT it does not necessarily align with that of NCF 2005. In comparison, the textbooks in the state have made an effort to cut across disciplines and integrate various ompetences that are expected of EVS framework in textbook. In contrast to this, the alignment of topics identified in MGML cards seem to be more aligned with NCF 2000, or even the version of textbooks that emerged earlier than that. Further even though there is an official document revising the curriculum framework in 2007 with the new SCF, along the lines of 2005

NCF, the syllabus or textbooks have not been revised accordingly. Hence, it remains inconclusive if this is an exception to MGML material alone. It continue to pose the question if there should be such alignments made as valid and relevant for children across different parts of the country.

Neither the NCF 2005 nor the SCF 2007 propose a subject called EVS for grades 1 and 2—infact the only subjects at these grades are Language and Mathematics and EVS is supposed to be integrated into these two subjects. However, the MGML differs from the NCF and SCF in that it has EVS cards from grade 1 onwards. The syllabus of the MGML cards seems to draw from the times when EVS was understood as a list of concepts that are considered 'basics' of science and social studies. This is a tradition that originated in the 1970s.

3.4.2 Approach of this review

There are two ways in which the concepts and their arrangements have been evaluated. One, by picking up samples of the different 'methods'/skills expected and as presented in individual cards, and second, by looking at how specific concepts are developed across cards and grades. The cards for that were selected for examination and comment on the 'methods' were randomly picked up from classes 3 and 4 or those which came across as strikingly problematic which were identified while going through all the cards. The cards for the evaluation of specific entire concepts were chosen from different disciplinary areas within EVS. The selection also matched the concepts which were identified from textbooks. We have not been able to evaluate the cards that were in the 'additional cards'. Most schools have not designed or implemented the cards of this nature.

3.4.3 Overview of EVS in MGML cards

Across the four years, EVS syllabus is divided into 63 milestones. Milestones 0 to 28 are for the Grade 1 and 2. And Grade 3 and 4 milestones being from 29 to 63. The arrangements of the concepts across the classes are based on a sense of hierarchy. Unlike the language or maths cards, MGML does not arrange the EVS cards in a linear pattern but in clusters. The learning of each concept has been designed by repeating it/revisiting it using different methods which are described later. For Grades 3 and 4, there are 10 clusters of concepts that consist of 5 or 6 different types of activities to be done in groups. For comparative purposes, we looked the way similar content is treated in class 1 and 2 textbooks. Since there are separate textbooks in EVS which discusses the concepts in MGML cards they were compared.

There may be different ways in understanding what constitutes the subject of EVS. It could be seen as an early stage concept development or introducing and making children familiar with the vocabulary. It is assumed these will become useful for children as they begin to learn the subjects of Science or Social Studies later. In an older tradition of textbooks, in EVS, the entire breadth of sciences and social science were introduced in primary school. Thus, for example, in history children were taken for a quick round of ancient history to freedom struggle or in civics from village panchayat to United Nations were covered between Grade 3 to 5 or basic aspects of matter in science. Most often, learning was supposed to lead to recall information and not being able to acquire methods of the discipline or engage with the concepts. There are traces of this approach in the cards.

However, we do notice an emphasis on the methods of EVS which appears to be taking MGML on a newer path than mere recall based learning. In introducing each (most) concepts, different methods are adopted. These methods are identified under different symbols as follows:

Making groups – within MGML, children sit in groups and cards that form different groups are 1) coconut and banana 2) mangoes and pomegranate 3) apple and guava 4) papaya and custard apple 5) grapes and pineapple 6) tamarind and gooseberry.

Table 3.1 Logos in EVS

Mangoes – survey	Guava – games outside classroom	Teacher written story
Pomegranate – collection and classification	Pineapple – making pictures or colouring them	Child written story
Coconut – poem and story (other text narratives)	Papaya – activity / experiments	*Suniyoujit yojana*
Bananas – conducting discussion	Tamarind – evaluation	*Akasmik yojana*
Custardapple – drama	Gooseberry – 3 / 6 / yearly exam cards	*Baal pustakalay*
Grapes – exercise (*abhyas*)	Additional cards	Ladder familiarisation
Apple – games within classroom	Mother's story	

The aim of EVS in MGML is to expand the horizon of children's thinking (*paryavaran vishay ka ladder bacchon ki vyapak soch ki skshamata badhata hain (p12)* and on another two occasion MGML claims that its objectives are as follows: (a) EVS is understood as subject (*Vishay)* that can enable children to conduct analysis, sorting and classification which will lead children to better ecological perspective (*mgml shikshan pranali me paryavaran ke adhyana me pratyaksh avalokan, sankalan, vargikaran ka karya karta hain jisse inme prayvaran ke prati sanvedan sheelata ka bhaav aata hain) (p57)* (b) In this method there are six groups and that each group has children of class 1 to 4. Thus, there are different age group children working together. Thus, in EVS activities are done with the help of children (*is pranali mein cheh samooh nirdharit kiye gaye hain. pratyek samooh me kaksh pahali se 4thi tak vibhinna aayu ke bache ek saath gatividhi karte hain. Paryavaran adhyana main prayojana karys baccho se karaya jaata hain) (ibid)*

3.4.4 Some overall observations on perspectives:

NCF and textbooks based on SCF seem to suggest that it needs to be done at Grades 3 and 4. However MGML seem to prescribe that it is better that it is segregated out in Grades 1 and 2. The rationale for this separation may be worth rethinking or explained better.

It may not be necessary that every concept covered and the mode of instruction that is suggested within the NCF or MGML need to be synchronised. In fact, within NCF 2005 there are provisions to practice different types of leaning material in classrooms, and hence it is important that diversity within the state run programmes provide such multiple opportunities for teacher to choose from. Yet, overall there could be someway in which concepts selected within MGML need to be aligned along a single framework that the SCF may create in future, or are based on better pedagogical explanation.

Creating groups, spelling out the diverse abilities expected through the pedagogic practices under various logos (Srujan pp 90-92) etc. are indeed very positive moves within MGML. It has

always been a challenge even under textbooks to see how groups get formed and learning is directed through sustained group activities in classroom. A similar challenge may exist even for MGML, even more importantly learning happening across peer, and not as individual sitting in groups and learning from their individual cards.

3.4.5 EVALUATING THE METHODS

Narrative/Poem/Story/Drama (Coconut cards) The unit (MS 36) is about farming and activities related to it. The card has 10 conversations and a picture of a radio. This card is representative of the overall approach that is evident of creating an artificial story scenario as a context. In this card, the story is situated in a fictitious classroom. The students of this fictitious class begin asking questions after listening to the radio, which their *guruji* answers. Questions asked by children are artificial. The Teacher is presented as a "know all" who responds to each of the questions with some relevant information. There is no story line, plot or 'happening' in this narrative. And this sort of an approach is repeated in many cards including the very next one on climate! Ironically, while there is an effort to provide gender equality in representation of children, the teacher is always portrayed as a male, and addressed as *guruji* and never *behenji*. It appears that stories and poems for EVS context are slightly better in textbooks than the cards.

Selection of poems in Grades 1 and 2 are often without enough rhyming quality because often the selected for the purpose of covering lists of animals, or fruits, or festivals and so on. Per se these may emerge from the fact that these listings of animals etc. could be on account of the MGML itself which has several logos which have to be remembered—identified and named by children. It could also be a 'language' learning expectation to enable children to name and write the names of fruits, animals and birds. However such a 'listing' approach of things to be known and learnt seems to mark the EVS curriculum from the early grades. Another example is the narrative in MS 12 where trees and plants are introduced. Some poems like one on MS 9 '*gaay hamari maata hei*' have probably been included with different reasons and convey ideas that are more problematic.

Classification (Guava and Pomegranate). Both 'guava' and 'pomegranate' cards involve classification, in social sciences vs natural sciences respectively. A subject distinction which is being made though the cognitive activity is the same. Such classification tasks are absent from the grades 1 and 2.

In the same set of cards [MS *36 Guava*], activity outside the classroom is classifying types of crops into kharif and rabi. It is very unclear why this classification for class 3/4 children would be useful. Probably the only purpose it serves is knowing the words, kharif and rabi. There is a similar exercise of classifying for card 43, where objects are classified into metal or wood. However it is hard to define - does this become a game at all, whether these are played inside or outside classroom. These type of games are largely absent in grades 1 and 2 cards. Probably these were considered suitable for the grades 3 and 4, which is reasonable..

In milestone 40 the unit is about Matter. It introduces students to idea that all matter takes space and has certain types of qualities. In the particular card, children are to put together a set of words into three categories: Liquid, Gas, and Solid. The words are – iron, curd, silver, oxygen, limca, wood, sand, air, rasna, steam, sweat, black smoke, pebbles, tears, cloud. The inclusion of words like 'oxygen' in this list for grade 3 children is surprising. The activity itself is a repetition of an earlier card.

Survey/Data gathering (Mangoes) This method expects children to the gather information from their surroundings. In MS 62, children are supposed to collect information from 10 farmers. The Survey activity provides a set of questions - when was the seeding and harvesting happening, what is the use of crop. It instructs children to visit the farmer and collect the information. By reading the card it is not clear how the data is used and what activity could be done around it. The survey activity per se seems to fit into the context of the topic and other cards, where children are exposed to different aspects of farming more as an economic activity. Introducing survey as a method is laudable, as it enables to bring the knowledge from outside the classroom, of farmers, tribals labourers and crafts people which are often beyond textbook, cards or teachers, into the classroom learning space. Surveys are an essential aspect of EVS and its inclusion is to be appreciated. However, every concept that is to be learnt may not be amenable to a survey. MS 37 in Grade 3 expects children to keep track of information across many seasons. Such an activity is quite un-doable and would likely not be carried out at all.

Most concepts in Grades 1 and 2 seem to begin with this type of cards involving activities where information is to be gathered. In MS 16 children are asked identify modes of transport, MS 18 about insects, MS 19 our sources of livelihoods etc. These are pitched at the level for class 2 children.

Drawing and Colouring (Pineapple) It is indeed a very positive move from the curriculum designers to include colouring and drawing as important modes of learning. It appears that these opportunities are more often provided within the card system than the textbooks. It is definitely worth appreciating them. However, for this to be practical, children would require individual worksheets which they can colour. A single card in the entire set cannot be used by multiple children within or across years. It is a separate matter that although such worksheets are not provided, still we did not find in any school that these cards had been coloured or painted. Does it mean that children then did not have any opportunity to do these activities or that they were not provided with colours?

Sometimes the images are not appropriate or have not been carefully selected. (eg an Italian coffee maker in Pineapple 57, or MS 1 pineapple card has the images of two children. It may not be worth providing such detailed figures for children who are just learning to hold their pencils. Moreover, many of the images/outlines are in a standard style with no diversity across the grades. One could consider including children's own drawings in the cards. 'Perfect' images or photographs may not be the only way for illustrations. Overall, cards also need to be revised

to include different styles of illustrations. In this context, the 'Reader cards' present a model of a range of image and illustration styles that could be used in general for all cards.

Drama (Custard apple) MS 49 card has four pictures – mosquito, fly, rat and cesspool and child collecting water from or playing around it. Previous cards in the series deal with the diseases caused by these creatures**.** The instruction on the card expects children to role play (fly, haja, malaria, fly, AIDS, plague, contagious diseases, hospital, dirt, cleanliness are marked into small slips and wear the labels. Children are either expected to describe them or act like them. Drama cards appear more often in grades 1 and 2 as compared with grades 3 and 4. What is unclear is with regards how such activities actually take place in the classroom. A drama requires a group of children and an audience. In the case of grades 1 and 2 children, they may also require a teacher's assistance or guidance. How are these supposed to then take place within a system that is governed by ladders followed by individual children and groups in which children may be gathered but would be on different cards?

Experiments (Papaya) creating experiments can be carried out by young children is not an easy task. Further simply doing an experiment is not enough—it needs to be translated into learning from experiment --doing an activity per se may not automatically explain to the child what is to be learnt or enable the child to recognise what is being learnt in the process. Sometimes like in the following example [MS 55] it is not clear if what is required is to be called an experiment or a survey. In this card, students are expected to observe at various forms accidents children may have had and note them in a register. This includes, cut, burn or boils or other. It is not clear what exactly will be observed and learnt from this. In fact, the survey also expects the children to visit the families where accidents like the above have occurred and ask questions regarding the accident This includes asking if there has been *durghatna* its reasons, if it was possible to avoid them, etc. In MS 56, children are required to make models of traffic signals. It is not clear what it is of value that is being learnt here. In fact none of the activities that have been included in the 'papaya logo cards' can be called an 'experiment'. In MS 20, children are taught about the school. Under the papaya logo children are asked to create a list of things available in the school and for each item listed, they get a point. In fact this is more of a survey than an experiment. In the context of the particular milestone, this is a repetition of what they have done in mango logo, where picture matches with things available in school.

There is sometimes a sense of repeating the same idea in different ways, which per se does not make sense.

Discussion (Banana) The discussion activity in MS 37 requires children to see the picture on the card and talk about it in the MS 25 the same topic is discussed with leading questions. And in this sense, the concept is spiralled.

Practice/Exercise and Evaluation (Grapes and tamarind): These cards are about ways of reinforcing the concepts given in the MS. As mentioned, while analysing the logo cards different concepts are reinforced with the help of different methods. Under grapes and

tamarind cards, concepts of that milestone are evaluated. In Grades 1 and 2, questions are posed with images and not sentence based questions [eg MS 13 grape, MS 8 grape]. There are many questions that are bringing out newer aspect of learning into the concept that is under discussion or making inter disciplinary linkages. Questions do adopt a variety of strategies. In later MS class 3 and many cards in class 4 seem to be more often towards enabling recall and reinforcements [eg MS 42]. Only on few occasions in these sets do we find open ended scenarios. The diversity of methods that are elsewhere used is nearly absent in these set of cards. Learning in some ways gets articulated as information recall. At the same time it is probably also a challenge as to how evaluations could be made interesting for smaller children.

Teacher made cards: According to Srujan document, gooseberry cards are to be made by the teachers themselves. These are also expected to be oral examination cards. These are the 3 monthly and 6 monthly cards which need to be done. In this review, it has not been possible to analyse the cards that were made by the teacher's themselves or those made by the children. These seem to be poorly maintained in schools or almost non-existent.

With regards the use of these varied methods, it is commendable that many methods have been systematically developed for use in EVS. However there is also a mechanical manner in which for each milestone and concept, all the methods are employed. This leads to repetitive and prolonging of learning in some cases. Also, not all the units/concepts lend themselves to all the ideas, and this also leads to some artificial and mechanical prolonging. Several of the methods would benefit not only from being conducted in small groups, but also at the whole class level where everyone participates, various ideas are contributed and the learning is synthesised. However such possibilities are precluded by the overall approach. With regards the small group activity also there is a design problem as it is not clear how the a group of children all doing the same activity card would actually come together and undertake the said activity.

3.4.6 The treatment of concepts

In this section the treatment of concepts is discussed and compared with the treatment in the textbook. As mentioned earlier the same concept is done through different methods in the MGML programme and the textbook. One concept was taken from 'science': 'parts of the body', and another from social science early humans'.

(a) Parts of the body

Both the textbook for the class 3 and the MGML milestone 29 (first milestone for class 3 according the *Srujan*) have the same poem '*meri gudia*' (my doll).

The treatment in the textbook is as follows (Pages 150 to 152 *Samekikrit Patyapustak Ganit Evam Paryavaran Adhyan* 2010 -11): The doll described seems to be 'fair doll' (*bhuri* eyes / red cheeks / red lips) the picture is an "Indian" girl. The exercise that follows the completely takes out the poetic elements or rhyming etc. Not a single minute is wasted in enjoying the poem or asking children about their own dolls.. The poem *is treated as a tool* to get into a discussion on the concept of parts of the body. (For the time being, ignore the fact that children in tribal

areas of Chhattisgarh may not be familiar with dolls!) The lesson begins by asking children to list the parts of body described in the poem. They are then asked to identify parts of their own body , but these are not mentioned in poem. Next children are asked to write all things they did from morning till evening and identify the body part they used to do it. This is followed by a game where children are asked to experience/imagine doing certain activities without a fully functioning hand. The chapter ends with a question where children are asked to do things which require both their hands and both their legs. The exercises that follow are divided into those that require oral responses and those that require written responses.

Chapter 2 in textbook *Alag Alag Par Hum Sab ek Jaise; (*Pages 153 to 156 ibid) develops the same concept. The focus here is on the differences between people. The activity requires children to make the outline of their hand and to make comparisons: big, small, long lines etc. This continues with with other parts of the body like legs, face etc. (the text is silent regarding physically challenged children in classroom). Thus, overall in the textbooks there are 5/6 types of activities to discuss the topic.

In the MGML curriculum, the concept is dealt with in cards with all the logos: coconut / papaya / banana / grape / apple / mango / custard-apple / pineapple/ tamarind and guava, i.e. (poem story / activity and experiments / discussion / exercises / games in classroom / survey / drama / colouring / evaluation and outside activity. Thus, there are about 9 different activities suggested. These different activities provide a variety of different ways of engaging with the same concept.

First card in the set is that of coconut, with two sides, both narrative text as well as rhymes. It begins with a description of visit the city – where child sees game of cricket, eats different food etc. with his father. One poem is *meri gudia* as in textbooks and a second poem about the animals using different body parts. There seem to be a slight over doing of repeating the same concept here. Banana cards too have 2 sides where children discuss the parts of body, one where there are a lots of images different activities followed by older style of a picture with whole body with circled parts of body. This is followed by grape card of exercise where children are asked to write the parts of body. Next is the inside game card of apple – *'pasa game'* is the most common of the games designed in the MGML cards. Here, children are expected to write the use of parts of body again. This is followed by a survey where how adults do different activities and which part of the body is used to do it. Children are then asked to act out the different parts of the body. Followed by pineapple card where children are to colour two images (image is expected to be traced by children - clearly even this cannot be done repeatedly as there may be only one card for the entire school). Then, in the next card, children are evaluated by writing down the names of parts of body of two children. And lastly in the guava card children expected to play games. Most activities are indeed doable by students, however, there is a certain element of repetition.

Overall in a comparative framework – there are elements in textbook and cards that are similar. Both negate the elements of poetics even while teaching poem, within an EVS context.

The textbook acknowledges the physical differences, in colour size shape etc. per se does not make us too very different. Cards seem to do certain aspects of similarities and differences however the activities in it are more repetitive. It is unclear why a concept like parts of body needs to be repeated so many times, for a 8 year old (Grade 3 child).

(b) Concept Early Humans (aadi manav – hamare poorvaj)

In the MGML, this is the subject of Milestone 54. *The coconut card*, using a narrative approach, begins by identifying humans as unique because they had knowledge. And because they had knowledge, humans got independence and creativity. And this differentiates the humans from animals. Such statements are commonsensical, and would hardly be of any use to a class 4 child. Children are not initiated to any sense of time or what is being talked about. By the second sentence of the text, biases and prejudices begin to emerge with statements like – *sarvapratham manushyon ka jeevan pashuon ke saman tha*" (early human lives were like that of animals). Such an understanding of primitive humans is rejected in history, yet it appears in the MGML text. With such sweeping statements MGML provides no context to the lives of people who may continue to live in forest. There is no mention as how similar or different were "earlier people" from those living in the forest. Their dependence on nature and forest are not contextualised.

The text uses about 20 sentences, to complete a description of everything from stone tools, fire, wheels, beginning of farming and animal husbandry, all of which in fact took several centuries to evolve. The text ends with a statement that this is how modern humans emerged. There is no sense of time evoked through this description and the narrative style implies that these are all established facts!

The next card with banana logo is for discussion and has a set of pictures of hunting, rafting, making fire, rowing in a river, pulling wheel cart and cooking in fire. It may not be possible to conduct a discussion unless the previous card has been read. In the coconut card there is a sense of linear changes (which per se may be contested) but in this card it appears that everything has been simultaneously. Suppose a child does not read the card and has done only banana cards, he or she is likely to get misguided. Further, the comparison questions between how the "modern people" and "early people" are more biased. This is more of a problem in the State of Chhattisgarh where careful delineation and separation of naïve and simplistic comparison with forest people needs to be avoided. The comparisons between 'primitive' and 'modern' needs more careful treatment even at this early stage given that upto recent time and even currently practices such as hunting for food, wearing grass raincoats and practices relating to travel would compare well with what the text describes as 'primitive' of 'early humans'.

The mango card (survey) which follows presents a relevant survey to be conducted by children. It requires children to ask their parent and neighbours "*kya aap aadi maanav ke bare mae jante he*?" Do you know about early people? Or "*hamare poorvaj aur aaj ke maanavyug me kya fark he*?" (What are the similarities between our ancestors and people in contemporary

times?). It is indeed a relevant survey – however it is unclear how tribal are to be approached on this issue and whether tribal people themselves may want to be identified with or compared with early people. For instance, the schools that we visited included those for Pahadi Korwa community, whose primitive way of life has been recognised. However, often strong biases and criticism has been raised by teachers and others about their hunting and gathering practices. Hence, if children from this community are expected to conduct such a survey of asking parents or neighbours, element of embedded biases are likely to emerge. It is probably a challenging task for classroom scenario to handle them especially for smaller children who are just 8 years old.

The apple card is a game card and involves answering a set of question. On the top of the page there is box with 16 numbers written on it. There are 16 questions as follows - What did early people eat? How did they cross the river? etc. below it. It is expected that these questions are then written on small slips of papers. As a game then children supposed to close their eyes and touch a number in the number chart, then open the eyes identify the number written in the column, and then pick up the slip, read the question and answer it.. A game like this is more akin to a quiz, and has no particular element of fun involved. The questions per se are not different from other questions under the concept.

The Grapes card has elements of comparison, such as modern versus early tools used and food that is eaten raw or cooked. However, some of the questions are misleading, or incomplete. For example, with regards animals which were domesticated by the early people, or what early people wore, these have not been presented in the earlier text so it is not clear how children are supposed to answer such questions.

The colour cards (Pineapple logo) has images of a man sailing on raft and another of a man on a well-formed bullock cart which does not seem to be appropriate to the period in which it is being placed.

The textbook treatment of the topic: The textbook has a series of chapters on this topic, some of which have historical elements along with science and craft aspects like following. In Grades 4, chapter 6 begins with making paper boat and talking about what floats and what sinks. Following this, children are introduced to thinking about how people may have crossed rivers. There is a story in pictures and children are required to say what may have happened. Picture 1 shows two persons crossing the river with wood log across it. Picture 2 shows a person sitting on a log to cross the river and Picture 3 with set of logs tied together to make a raft and a stick in hand. Children are asked to think about the reason why the person is holding a stick. In picture 4a, boat shaped log with paddles etc. is presented. Further moving on, in picture 5 children are asked to imagine how modern ships may have emerged and changed the whole concept of ship sizes and floating etc. Later in chapter 18 – *ramgarh ki gufaien* – children are exposed to life in caves, including cave paintings. Even though the story line in that write up is artificial, it does expose children to a sense of time and an appreciation for the life in past. Hence, the lives of early people are in some sense seen from cultural as well as scientific exploratory features and not ignorant and wild.

In the MGML cards, exercises repeated in different cards involve the same ideas being repeated for recall, and there is nothing new that is being newly learned or constructed. The learning that is understood at least in these sets of cards is that of information recall. The textbook on the other hand provides children with newer notions. However, both of the textbook and the MGML cards have not given enough opportunities for children to engage with the sense of time.

3.4.7 Some additional observations on sequencing, selection and treatment

In addition to the selection of two sets of cards discussed above, other cards were also browsed through, though not necessarily in a systematic and detailed manner. A few broad observations pertaining to the cards are summarised:

It may appear that the textbooks are designed to follow a sequential order in completing the chapters. This pressure however may not exist for chapters in EVS. Because in the cards there appears to be a more loose order in which the teachers can follow the concepts in EVS.

The twin objectives provided as the objective of the discipline at milestone 0 are making children attract to the discipline, to its logos and ladders and getting children to adjust school and home atmosphere. It is assumed that activities are the best medium to attract children to this. Given the fact that zero milestone in other subjects also deals with making children familiar with symbols, which are birds animals, fruits etc. There is a sense of irony when there are milestone cards that introduce “our fruits” “our birds” “our animals” into the learning list in Grades 1 and 2 EVS. What exactly should a 6/7 year olds know about a particular fruit or bird cannot be easy point of agreement. A basic question is which of these fruits or birds will be – available in their village/ area. How will the colour and taste expected to be known, true that there could be children who may have tasted them and could share it. But when can such sharing happen given the fact that children may also be doing it individually. Hence, apart from teaching children to write the words and activities such as ‘identify the images’ there is probably nothing that is uniquely emerging from an EVS perspective but from a language perspective. Moreover, the rhymes created around these Grades 1 and 2 cards may not have much poetics in it.

Here again selection of food items are a serious challenge: fruits or vegetables unfortunately look like those available from the market or produced for it, than those that are available in their own locality. Cards like 7 Milestone Apple, Snake and Ladder game on healthy food appears to be slightly deterministic – with vegetables and milk being given all the importance and near silence on meat products which are more likely to be prevalent for most people in the state.

For certain concepts like industries, agriculture and tourism related topics (example milestones 58) – these seem to be a tendency to push more information based text than in the textbook. Identifying and labelling products and districts through maps oversimplifies the learning process. It is not clear how children at this age are able to know where the raw material will come and why factories need labourers. Traffic signals and facilities are present only in

MGML and not in the textbook. It end ups being redundant for 8 or 9 year old children, when the emphasis is on symbols [milestone 56].

Concepts like *aakashiya pind* milestone 63 (solar system, eclipses, etc) impact of rotation revolution on the climate in milestone 61 are left out of syllabus for class 4. Thus there is some sort of crunching down (pushing down of concepts) that happens which may also be avoided while concept is being revised. Or when these concepts are covered in class 3 textbooks they are pitched at a much lower level than expectations made in these milestones.

3.4.8 Concluding Remarks

- There is a need to bring a better synthesis of the perspective and syllabus from which EVS is taught in MGML and textbooks
- While going through certain cards it appears learning is sometimes assumed as retaining information and therefore certain concepts especially those in Grades 4 may have to be moved out of primary school. Some concepts may need better explanation or some concepts need to be re-written with perspective that is more inclusive.
- The basic text in cards is sometimes in poem and stories. The element of story and rhymes in them however are rather artificial and boring. Especially narrative texts that are in dialogue between adult (teacher, officers, farmers etc with children) are only information written as dialogues. Crafting information in dialogue format does not necessarily make it child friendly text. Before including them in revised set of cards these may be closely evaluated from these perspectives.
- It is significant that MGML has spelt out that methods that are expected from disciplines of science and social studies – however these need to be more carefully thought through. Method cannot stand alone without text. In certain lower Grades, it may not be possible and relevant to have all different concepts that are introduced. Specifically certain cards like survey / theatre etc. are often better done in front of whole classes than made to do as individual tasks.
- While MGML does give prominence to peer to peer learning – it was unclear how cards are created with this purpose.
- MGML does provide children with opportunities for free drawings and colouring. Images in EVS cards need serious thinking – while the MGML Hindi Readers have raised the standard of images – images in cards are not well conceived. Images are used either for explaining the concepts or fillers. Images need to be drawn from different medium as well as diverse styles. It should also consider including children's drawing in them.
- "Does it allow children to go back and forth with the concepts and what is the degree of linearity?" With reference to the way these cards are arranged, it may be noted that there is no chance for the children even to look at the coconut card. It seems children are expected to know the answer while doing cards that follow them except the painting card.

- By going through the cards it is not very obvious in the context of EVS how the teacher's role is visualised. However a cross reading of the Srujan seem to indicate the teacher is provided a certain amount of freedom in choosing the topics more freely– say for example, can begin a set of cards on seasons in accordance with the seasonal changes or set of concept festivals as they occur. Teacher's role is crucially un-articulated as how the survey analysis and discussion will be conducted, especially since these cards are often placed under Mango, a partially teacher assisted group.
- In certain concepts like sources of water, one does notice better integration to child's local context. However as described elsewhere when it comes to including social concerns like the lives of early people this integration is nearly absent and not sensitive enough. It is also important to realise that integration was not always thought through because content selection includes certain concepts like the solar system which are beyond the abilities of children at these levels. Thus artificially attempting to relate changes in seasons seems more of a problem than a solution.
- There is no reference or use of the child's language or Chhattisgarhi in the cards. However as the Grade 1 EVS cards are expected to be done only through oral, one may assume that the teacher uses child's language for interacting with the child. Per se while introducing various districts in the state, which is an information text there is a question posed about the 'dialect' of the district. However, there are no references to local languages like Chhattisgarhi, Sargujia or Oraon, etc. used within the text.
- It is important to note that SCERT and NCERT have focused on single set of learning material for the interaction for teachers and students – textbooks. Even when other source of learning material in the form technology – radio / digital etc. were all visualised, often these are seen, as in addition to textbooks than becoming central to the teaching learning material. It is often argued in policies that teacher should have the option to choose from the different learning material which they utilise in the classroom. In certain sense MGML has created an alternative way of arranging learning material, outside the textbook framework. The NCF 2005 has proposed that there be multiple textbooks or learning materials or programmes. Hence alternative ways of arranging learning material, like that of MGML need not be completely abandoned even while re-thinking the way concepts are arranged and created needs to be located in a strong academic perspective.

3.5 A Review of the Overall Conception and Design

The MGML programme invites comparison with 'Mastery Learning' of Bloom. Mastery learning programmes involved step by step learning of content by the child at her own pace. The primary principle on which master learning was based was that every child can master the minimum that is required from her/him provided they have sufficient time for it.

The approach compares well with Bloom's 'mastery learning' (Bloom, 1971/1975). "Most students (perhaps 90 percent) can master what we have to teach them and it is the task of instruction

to find the means which will enable our students to master the subject under consideration. A basic task is to determine what we mean by mastery of the subject…" Challenging the normal distribution of learning achievement, Bloom proposes that rather than be treated as a result of variations in abilities; 'aptitude' should be interpreted as on account of the variations in "the amount of time required by the learner to attain mastery of a learning task". A key consequence of this is that every child can achieve mastery level of a given concept/unit of learning if they were given the time they require for this. "We believe that if every student had a very good tutor, most of them would be able to learn a particular subject to a high degree. It is the good tutor who attempts to find the qualities of instruction (and motivation) best suited to a given learner." Individualisation of learning creating conditions under which students will persevere and providing them with support to understand instructions and control pacing are key to 'mastery learning'.

Bloom however does visualize all this to take place in close interaction and supervision of a teacher. Also, all his examples of mastery learning are in the area of school subjects which have minimal pre-requisites. He cites examples from high school and college introductory courses. He also says the method is better suited for learning a second language rather than the mother tongue, where learning needs would be far more heterogeneous. While large parts of the curriculum could be organized for mastery learning, he also points out that not all of the curriculum needs to be 'mastered' in this sense. It is more suited to curricula where there is an emphasis on convergent thinking than on process thinking. It may be noted that MGML approach is used for initial learners in grade 1 and 2, where it is not sure if 'mastery learning' needs to be the basis and dominant form of the curriculum, although we may concede that addition of aspects to the mastery learning of the curriculum would be warranted.

The MGML programme is on the whole designed as a learning programme which is individualised. The classroom is approached largely as a collection of individualised learners each of whom may be at a different level/grade. The programme is organised partially with this expectation (as will be discussed with regards the pedagogy implicit in peer groups). There is an expectation that teachers will engage and instruct children at the beginning of each cycle of learning after which they receive less and less support and supervision by the teacher. As learners move into group that are assisted or partially assisted by peers, there is an implicit assumption that these peers will be more capable peers who can assist and quasi supervise and support learning. The programme thus almost requires the presence of such older and more capable children to assist and induct young learners into the learner process and also to some extent support their learners, in a quasi-monitorial fashion. The programme, thus, does not make sense if it is effectively 'monograded' (as the Chhattisgarh version seems to have done) where there is a separation of milestones grade-wise and also where now the programme has been limited to Grades 1 and 2 only. The programme is designed to have a range of children from grades 1 to 4. While it may work with only older group children (say only grades 3 and 4 together), it is less likely to work effectively with only grades 1 and 2.

The ability of such a programme design to meet the learning needs of grade 1 children in particular, but also grade 2 children presents a conceptual challenge. Emergent literacy

and numeracy as well as being inducted into the culture of the school and enabling all round development needs the active and constant effort and engagement of the teacher. Very young children need the monitoring and supporting presence of the teacher, virtually all the time. The expectation that they will occupy themselves in group work with may not require the teachers attention is problematic. In a more mixed age group, this role of the teacher may be taken on by older children (say in grades 3 and 4) who effectively may monitor young children. In the absence of these older and more capable children, it is unlikely that the method can be worked effectively in the manner in which it has been designed.

The MGML programme positioning of the teachers' work is the most difficult part to conceptualise and the part that most challenges more conventional wisdom on why teachers are necessary for learning in schools and what roles they should be expected to play. The expectation that children will monitor their own progress is very problematic as children can whiz through ladders and milestones, but without the teachers involvement, it is not clear whether they are learning or what they are learning. The need for a supervisory eye and a witness to learning as well as the confirmation of learning by a teacher would be essential. It is difficult to imagine children's learning without such an adult eye. One may on the other hand argue that such a supervisory eye of the teacher is provided in the MGML at the start and the end of each milestone. This would be more workable if the number of children was small and the teacher would tutor and assign individual work which she would then follow up. The potential scenario presented by the card is considerable repetition, as each child reaches a milestone. It is possible that the question of pacing, while valuable, is made into a fetish beyond reason.

The claim that MGML can induct irregular and special needs children into the classroom flow is problematic as such children need the specific attention of the teacher in order to address their learning needs. While flexibility in expectations and provision to handle their needs separately is essential and necessary, this in itself is not sufficient and additional teacher time to support such children cannot be discounted.

In principle, there need not be any difference between the content of the textbook and the cards. One can imagine the material of all the cards being printed and presented to the child in the form of a textbook. Similarly even with a textbook, children could be expected to move along content in the prescribed page order as they do with the cards following the ladder. So to be considered, is the nature of pedagogic advantage gained by presenting content in independent cards as opposed to a textbook. Teachers in particular note that having a single card enables children to focus more on the material on hand. One teacher had also taken apart earlier textbooks and pasted each page on a card with a similar desire to enable children to focus more on the material on hand. As much as the textbook content forms a central focus, so also in MGML the material forms the central focus. As much as in the textbook system all the content of the textbook is covered in the manner prescribed by the textbook, so also in MGML content is covered following the prescriptions of the card. Other than pacing, there is little in the control of the child or for that matter in the control of the teacher.

The unitisation of content into such self learning units is questionable. As has been noted by the reviewers above, much of the content in the MGML Chhattisgarh programme has taken the form of recall knowledge rather than concept formation and problem solving. This approach in the case of early literacy and numeracy is particularly problematic.

Engagement with learning or activity in the classroom by the child, which is not totally dependent on the person of the teacher, is made possible by design in this programme. Also, the programme instils an agency in the child independent from the total didactic control of the teacher. Both of these features are welcome as they liberate the child from the totalising control by the teacher, rendering children totally passive and waiting for direction from the teacher. In this programme the teacher accepts the child's agency in the matter of selecting learning material and moving around the classroom following the ladder and groups. This is of value and this achievement needs to be taken seriously and due thought given to how it can be realised as an active principle in conventional classrooms as well.

The MGML approach is an attempt to make a multigrade situation workable with a pragmatic approach to how a teacher can most effectively use her time and apportion it to children, and minimising the 'waiting' that children would otherwise be doing. However it does not treat the multigraded situation as a pedagogic resource and desirable as a principle of education planning as opposed to monograde classrooms. An alternative approach would be to design activities that could engage with the whole class, with children doing tasks based on it, according to their learning grade. For example, a whole class could hear a story and the tasks based on the story could be different for different groups. Similarly in problem solving multigrade and multi level groups could work effectively together. The MGML does not have activities of this kind. In general the 'whole class' is de-emphasised.

3.7 Conclusions

The MGML material has moved away from conventional textbook structure and typical classroom arrangements. Organisation of class in groups with children doing activities alone or with peer has been a departure from the earlier system enabling children to move around freely, and work on their own. However, the content of the MGML cards and their organisation in subjects such as Mathematics, Hindi, and EVS is at times problematic. In all three disciplines, it has been identified that quality of illustration along with text has not been imaginative enough, except in the Readers prepared for Hindi. Material for Grades 3 and 4 is predominated by information load rather than other expectations of the discipline. Activities that the child is supposed to do as per the cards are sometimes convoluted to suit information recall. It is pointed out that the overall pedagogical philosophy of the MGML is actually embedded in the older paradigms of Bloom (1971/75) which overemphasises mastery learning. The MGML approach also stresses primarily on individualised learning by the child although for early grade, teachers' attention and inputs are more crucial than what the material expects it to be.

Chapter 4

Status of Implementation of MGML

Chapter 4: Status of Implementation of MGML

This chapter presents findings from our survey, pertaining to the status of implementation of MGML in schools across the Districts. We first present the background of the schools covered and then present how MGML was seen being implemented on the ground. We also bring in discussion on factors that affect its implementation as we gathered through the study.

4.1 District-wise coverage of schools.

A total of 120 schools in 9 Districts were surveyed. Of these 55 schools were 'recommended' to us for inclusion, by the local Resource Persons. These districts are spread across 3 different regions of the State and included multi-caste villages as well as single tribe dominated localities.

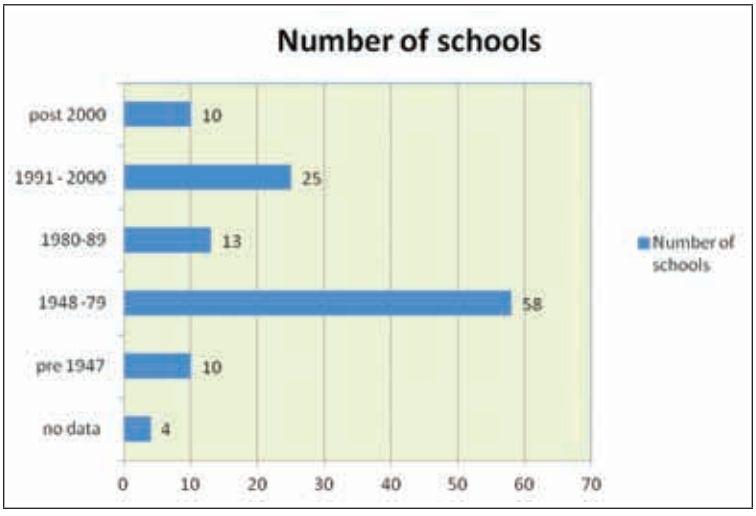
Table 4.1 District wise Number of Schools visited

No	District (blocks)	Number of schools	Recommended
1	Baloda Bazar (Simga)	10	4
2	Bemetara (Berla)	8	5
3	Bilaspur (Bilha)	8	4
4	Durg (Dhamda)	7	5
5	Gariyaband (Churra / Fingeshwar)	16	9 (5/4)
6	Jashpur (Duldula / Kansabel)	20	6 (3/3)
7	Kanker (Bhanupratapur / Kanker)	21	11 (6/5)
8	Mahasamund (Bagbahara)	10	4
9	Sarguja (Bataoli / Ambikapur)	20	7 (3/4)
	Total	120	55

4.2 The Schools

4.2.1 Period of Establishment

Figure 2: Distribution of Schools Established by Decade



The schools that we visited were both old and new in terms of when they were established. The oldest school in our sample was established in 1890. A significantly large proportion, close to 25% were established in the decade of 1991-2000. Two schools were very new, having been established in 2007.

4.2.2. Size of the Schools:

While comparing school establishment with the significant policy phases in the State, we see that the DPEP emphasis on primary education in the decade of the 1990s coincides with the increase in the number of small or very small schools. In classifying the schools that we visited, four categories were made; very small school with enrolment of 30 or less number of children, small schools with enrolment between 31 and 70 children, medium schools with enrolment of 71 to 140 children and large schools with enrolment above 140 children.

Table 4.2 Distribution of Schools by Significant Policy Phases

Size of school by No. of children	Year Est.					
	No of schools	Established pre 1947	Between 1947 - 1989	Between 1990 - 1999	After 2000	No year recorded
Very small 1 to 30	13	0	3	3	6	1
Small 31 to 70	50	0	29	18	1	2
Medium 71-140	38	6	27	3	2	
Large 141 –or more	18	4	12	1	1	
enrolment not recorded	1					
Total	**120**	**10**	**71**	**25**	**10**	**3**

The distribution of schools as per their size varied. Some schools had as low as 9 children and largest school had 370 children. The most prominent category for school size in our sample was the small school (50 schools in this category). Here it is notable that most schools that were established pre-independence were large or medium schools. We also find that majority of the large schools in our sample were established before 1989 (i.e. before DPEP era) . In contrast, most of the very small schools in our sample were established after 1990, particularly after state formation in 2000.

4.2.3 Remoteness of the Schools:

It was felt necessary to record the remoteness of the schools. This was done by documenting the location of schools in relation to their distance from the district headquarters. In our sample, majority of the schools were more than 16 kms away from the district headquarters. We also see that size of the schools did not have a bearing with their remoteness from the district headquarters in our sample.

The other indicators used to record the remoteness of schools was whether it was located in a forested area and if there was a transport system available to reach the school.

In the state of Chhattisgarh there is no government run public transport system and hence the question was to understand access to transport including regularly plying auto-rickshaws or

other modes of transport. Often this becomes crucial as teachers may depend on these timing to schedule the work hours. From our sample, we found that schools located in non-forested areas had a higher proportion of access to transport than those located in forested areas.

Table 4.3 Size of the school and Distance from District Headquarters

Distance	Number of schools	Percentage	Distance from district headquarters	
School size			Less than 15 Km	More than 16 Km
Very small -1 to 30	13	11%	4	9
Small -31 to 70	50	42%	10	40
Medium -71-140	38	32%	8	30
Large -141 or more	18	15%	5	13
No data	1			1
Total	**120**		**27 (23%)**	**93 (77%)**

Table 4.4 Access to transport and school location in relation to forests

Forest	Transport			Grand Total
	Transport available	Transport not available	No record on transport	
Forested	24	17	2	43
Non-forested	56	14	4	74
Forest data not recorded	1	2		3
Total	**81**	**33**	**6**	**120**

When we see the period in which the school was established with its location in a forested region, we find that in our sample, most of the schools established soon before independence and soon after until 1979 were not in forested regions. On the other hand, our sample covered more schools in the forested regions that were established during the '90s which is the DPEP period.

Table 4.5 Period of school establishment with location in forested region

Significant policy events	Forest			
	Number	Forested	Not forested	No record
before 1947 – pre independence	10	1	9	
1947 to 1979 – early phase after Independence	59	19	36	4
1980 to 1990 – National Education Policy 1986 and Operation Blackboard	13	6	7	
1990 to 2000 – DPEP phase: school within 1 km policy under Madhya Pradesh (EGS schools)	25	11	14	
post 2000 – Chhattisgarh formation	10	5	5	
Data not available / recorded	4			
Total	**120**	**42**	**71**	**4**

We also recorded the remoteness of the school in terms of its proximity to a middle school. We found that that 96% of our sampled schools had a middle school within 3 kms radius.

4.2.4 Enrolment and Attendance

A majority (almost 91%) of the schools that we visited were co-educational schools (TABLE 6). 94% schools had only primary section (Grades 1-5) and were not located in the same campus as a middle or high school. (TABLE 7)

Table 4.6 Type of Enrolment

Type of enrolment	Number of schools	Percentage of total
co-educational	109	91%
only boys	3	2.5%
only girls	8	7%
Total	**120**	**100%**

Table 4.7 Levels in the Schools

Levels in the schools	Number of schools	Percentage of total
Primary	113	94%
Primary and Upper Primary	7	6%
Total	**120**	

Table 4.8 Type of the School

Type of school	Number of school	Percentage of schools
Aided	1	1%
Ashram shala	6	5%
Urban	12	10%
Village school	101	84%
Total	**120**	

A majority of the schools (84%) that were studied were village schools coming under the management and control of the Panchayat (TABLE 9). Five percent of the schools were Ashram shalas providing residential facilities to the tribal children and being run by the Tribal Welfare department. We also studied an government aided school which was run by a private management.

4.3 Profile of the Community in which the School is Located

The study also captured data about the communities around the school and this was done by asking teachers for this information.

Castes: The data reported both official categories and specific caste and tribe names. The primitive tribes that were identified included Kamar and Pahadi Korwa. In our sample, there were 4 schools that catered to special categories of primitive tribal communities such as the Kamar, and the Pahadi Korwa. The classrooms were generally heterogeneous with children coming mainly from SC, ST and OBC families. The proportion of children from

General category in schools that were studied was found to be very less. Some schools were almost completely single-social category schools. There were also very few schools with Muslim children. Additionally, MGML is not provided in Urdu medium and hence this would exclude Urdu medium schools where the enrolment of Muslim children would be higher. Twenty-four percent of all the schools had children from ST and OBC communities followed by 21% with OBC, SC and ST communities.

Table 4.9 Social categories in the communities where schools are located

Community	No of schools	Percentage of total schools	Select districts where these communities were found
ST, OBC	29	24%	Jashpur, Sarguja, Kanker, Bilaspur, Mahasamund,
ST, SC, OBC	25	21%	Gariyaband, Baloda Bazar,
ST	22	18%	Jashpur, Sarguja, Kanker
ST, SC, OBC, General	19	16%	Durg, Gariyaband, Baloda Bazar, Bemeatra
SC,OBC	9	8%	Durg, Gariyaband, Baloda Bazar, Bemetra
OBC	7	6%	Durg, Gariyaband, Baloda Bazar, Bemetra
SC	4	3%	
All (including Muslim)	3	3%	
OBC, General	1	1%	
SC, Muslim	1	1%	
Total	**120**		

Occupations: The main occupation for the communities living around the school was agriculture. In as many as 110 schools (92%), children belonged to families of landless labourers or small farmers. There were only three schools where researchers mentioned large land owning families. In urban areas, families of children were employed as rickshaw drivers, house maids, cart pullers, etc.

Literacy: There were three categories in which we recorded the literacy levels prevalent around the schools - High, Medium and Low. This was largely based on information provided to us by the teachers. Teachers responded to the question if the village adjoining had literacy rate of more than 80% or between 60% to 80% or less than 60%, which were marked as High, Medium and Low literacy levels respectively. We were not able to locate village level literacy data from 2011 census for this. Thus, 38% of the schools that we visited were located in communities with medium literacy level, and 34% were in communities with low literacy level and 28% were in communities with high literacy level.

Table 4.10 Literacy Levels in Villages around the Schools

Literacy levels	Number of schools	Percentage of the total
High Literacy (80%+	33	28%
Medium Literacy (60% to 79%)	46	38%
Low Literacy (59% less)	41	34%
Total	**120**	

4 Teachers

A majority of the sampled schools were multi-graded and did not have teachers allocated for every grade. The modal number of teachers per school was three. About sixty percent of all the schools had 2 or 3 teachers for the five grades.

Table 4.11 Number of Teachers Appointed in the School

No. of teachers on roll	Number of schools	% of total
1	2	2%
2	29	24%
3	44	37%
4	21	18%
5	9	8%
6	6	5%
7	6	5%
9	2	2%
No record	1	1%
Total	**120**	

Besides lack of teachers, our sampled schools were also multigraded because of space constraints (only 2 classrooms available). Almost one-fourth of our sample schools had only 2 classrooms. One-third of our sampled schools had three classrooms.

Our sampled schools showed the following Teacher: Pupil Ratio (table 4.12). A majority of schools we visited had one teacher for 30 children or less, which is as per the prescriptions under RTE. In one-fourth of the schools we found this to be much higher than the RTE prescribed norms.

Table 4.12: Teacher Pupil Ratio

Teacher Pupil Ratio distribution	1: 3 to 1: 15	1: 16 to 1:30	1: 31 to 1:50	1:51 to 1:65	not recorded	Total
Number schools	21	58	26	4	11	120
	18%	48%	22%	3.33%	9%	

4.4.1 School size and Teacher Appointments

As mentioned in earlier in this chapter, there was a range of sizes among the schools we had sampled. The smallest school that we visited had just 9 children and the largest had 371 children.

When we analyse this with the number of teachers appointed in the school, we find that although there is a broader pattern of larger schools having more teachers than the small schools, there are also exceptions. For instance, four very small schools had three teachers and with one of them having 9 children and 3 teachers. There were three large schools that had only 4 teachers, which means that in these schools the Teacher-Pupil ratio was more than what has been prescribed (1:30). There were also 2 single teacher schools, one with 17 children and the other with 65 children. However, the largest school with 371 children had 7 teachers.

Table 4.13 Size of the School and Number of Teachers Appointed

	Number of Teachers									Total	%
Size of school	1	2	3	4	5	6	7	9	No record		
Very small	1	8	4							13	11%
Small	1	16	28	5						50	42%
Medium		5	12	13	7	1				38	32%
Large				3	2	5	6	2		18	15%
No recorded									1	1	0.8%
Total	**2**	**29**	**44**	**21**	**9**	**6**	**6**	**2**	**1**	**120**	
	5%	**24%**	**37%**	**18%**	**8%**	**5%**	**5%**	**15%**			

4.4.2 Teacher attendance

On the day of the visit, teachers absence was recorded as follows (TABLE 14). We noted the teacher absence as per the size of the school and as per the time period when the school was visited (before the Shiksha Karmi strike or after strike). We found that 'no-absences' were recorded for more schools during the non-strike period than in the strike period. During the non-strike period, 10 out of 70 schools (14%) recorded no teacher absenteeism and most of them were either medium or small schools. 16 of the 70 schools (about 23%) had one teacher absent and a majority of these were small schools. We found that more than 3 teachers absent on the given day in the school was largely seen in medium and large schools. During the strike period, only one medium sized school had no teacher absent on the day of our visit. A majority of them had one or two teachers absent and this was commonly seen in small and medium sized schools. The common reason cited for absence was medical/health reasons.

Table 4.14 Teacher absence in percentages for various types of schools

a) During non-strike period: Total school = 70

Number of teachers absent Size of the school	No teachers absent	1	2	3	4	5	6	No record	Total
Large		1				4	1	6	12
Medium	5	4		4	2	1		8	24
small	4	10	4	1	1			8	28
Very small	1	1		1				3	6
Total	**10**	**16**	**4**	**6**	**3**	**5**	**1**	**25**	**70**
	14%	**23%**	**6%**	**9%**	**4%**	**7%**	**1%**	**35%**	

b) During strike period: Total Schools = 50

Number of teachers absent Size of the school	Schools Recorded as Teacher not absent	1	2	3	4	5	6	No record	Total
Large					2	3	1		6
Medium	1	3	5	5					14
Small		4	15		1			2	22
very small		5	2						7
No data on size								1	1
Total	**1**	**12**	**22**	**5**	**3**	**3**	**1**	**3**	**50**
		24%	**44%**	**10%**	**6%**	**6%**	**2%**	**6%**	

4.4.3 Student Absence:

Students absence is often cited as a reason for their poor performance in learning. We therefore recorded children's regularity in school from the records of teachers for Grade 1 and Grade 2 children. We were able to collect record for 1441 children from 94 schools including 45 schools where we took records of Grades 1 students and 49 schools where we took data for Grade 2 students. Here it was found that according to the teacher records, 82% of all the children were marked as being regular at school by the teacher in the attendance register and 18% were marked as irregular.

Table 4.15: Regularity of Children in Grade 1 &2 according to Teachers

Were children regular?	Number of children
Regular	1175 (82%)
Irregular	266 (18%)
Total	**1441 (100%)**

Table 4.16 Range of Children's Absence on the Day of Visit

Size of school	Total	Low absence		Medium absence		High absence		Very high absence	
		0-20%		21-50%		51-80%		81-100%	
Very small	13	5	1	0	5	1	1		
Small	50	13	8	9	11	4	2	2	1
Medium	38	6	3	11	10	3	0	0	1
Large	18	2	1	6	4	1	0	0	1
No info	1								
Total	**120**	**26**	**13**	**26**	**30**	**9**	**3**	**2**	**3**

During the survey we also recorded children's absence from schools. Here the analysis tries to look at the range of absence along with schools size and in two periods – during the Shiksha Karmi strike and when they were not on strike. It does not appear that there a significant high rate of absence during the strike for very small and large schools. However, in small and medium sized schools it appears that there is some impact.

4.4.4 Teachers' Background

Our study covered a total of 99 teachers. This section provides a background of the teachers that is relevant for understanding their role in MGML.

Table 4.17 Distribution of Teachers Age

Gender	Age						No data recorded	Grand Total
	Less than 24 years	25-29 years	30-34 years	35-39 years	40-44 years	45 +		
Male	5	13	7	7	5	14	1	52
Female	4	17	7	4	3	9	3	47
Total	**9**	**30**	**14**	**11**	**8**	**23**	**4**	**99**

In our study, the proportion of male and female teachers was approximately the same. The modal category for age of the teachers was 25-29 years. The largest proportion of teachers interviewed was less than 35 years. These teachers have approximately 25 years of service left. Of these 85%

were currently responsible for the MGML grades (1 and 2). 11% were indirectly responsible as they were head teachers. A majority of the teachers spoke Hindi and Chhattisgarhi, and only a few could speak the local dialect spoken by the children. A majority of the teachers interviewed did not live in the same village but traveled to school from outside. A majority of the teachers were 57.5% Shiksha Karmis appointed as Grade 3 Sahayak Shikshak-Panchayat. Only 33 teachers belonged to permanent staff. A majority of the teachers who were interviewed had been appointed between 2006 and 2010.

Table 4.18: Status of Teachers Interviewed

Status of Teachers	Number of teachers	Percentage
ShikshaKarmis	69	57.5%
Permanent Teachers	33	27.5%
No information	18	15%
Total	120	

Table 4.19: Teachers in Relation to MGML

Teachers in relation to MGML	Total
MGML Teacher	81
MGML Teacher + head teacher	4
Ex-MGML Teacher	2
Head teacher	11
Not recorded	1
Total	**99**

Table 4.20 Year in which teacher joined service

Year of teacher joining the service	Total
Before 1995	27
1996 – 2000	9
2001- 2005	13
2006 to 2010	46
After 2011	1
Not recorded	3
Total	**99**

4.4.5 Qualifications

Table 4.20 Educational Qualification by Age of teachers

Edu. Qualification	Age						No data	Grand Total
	<24 years	25-29 years	30-34 years	35-39 years	40-44 years	45 and above		
Class 10						6		6
Class 12	2	8	6	6	3	6	1	32
Bachelor Degree	4	5	4	3		4	1	21
Postgraduate Degree	2	17	3	2	5	5	1	35
Data not recorded	1		1			2	1	5
Total	**9**	**30**	**14**	**11**	**8**	**23**	**4**	**99**

Table 4.21 Teachers' Professional Qualification

Professional Qualification status	Age						No data recorded	Grand Total	%
	Less than 24 years	25-29 years	30-34 years	35-39 years	40-44 years	45 +			
Before joining service		2	3	1	4	3		13	13%
After joining service / undergoing now	3	18	4	4	2	18	3	52	52%
Not yet qualified	4	3	3	3	2			15	15%
Not recorded	2	7	4	3		2	1	19	19%
Total	**9**	**30**	**14**	**11**	**8**	**23**	**4**	**99**	

Among the teachers sampled, about 35% of the teachers had post graduation degrees, majority of whom were between 25-29 years of age. About 32% of the teachers had Class 12 education. Among the 99 teachers we interviewed, only 13 had their professional training before joining the service. This means that majority of the teachers started teaching in primary schools without any formal professional qualification. Thus, their ability to understand young children as learners, knowledge of the subjects to be taught, pedagogical skills of using a textbook are not likely to have been professionally honed. A large proportion underwent training for a professional qualification after joining their service and had just completed or were in the process of completing the course provided by the Department or privately, and on a part time basis. 15 teachers still do not have any professional teaching qualifications.

Teachers who had attained professional qualifications and those undergoing their D.Ed were asked what they had learnt during the 'pre-service' training. It was found that only a few teachers remembered that learning has to be child-centred and joyful, going from simple to abstract and at child's pace. However, they did not remember how they were taught to do it. None of them mentioned they had been taught how to use textbooks or how to teach young learners. One teacher mentioned having learnt the importance of getting the children to first learn recitation of the alphabet and then writing it in sequence, although he did not know why it should be done in that manner.

4.5. Status of Implementation

History of implementation of MGML Programme

It was observed that MGML had a chequered history of implementation. There is an official year in which programme was implemented in different parts of the state and across different grades. However, teachers from different blocks and districts have their version about when the programme was implemented and when it was closed down. Government programmes are usually implemented all across a block for a particular academic year.

4.5.1 When did MGML begin?

However, we found that the version of when the programme was implemented varied largely. The following table (Table 4.22) summarises a block wise data of how teacher report the year in which programme began. It is unclear why such an error in the memory of teacher could

come up. Partly this could be because teachers who began the programme are now transferred or do not remember it. Or it reflects the fact that teachers actually began the practice when the material finally arrived in their schools, and not when it was officially declared as being implemented. We found that it is not uncommon that the material was not distributed on time. Similarly, given the fact that textbooks were distributed simultaneously there is also the possibility that teachers continued using them and not the cards.

Based on the data collected from the schools and teachers about the year when MGML was launched in their school, we get the following picture. Half of the schools we visited said that the MGML was launched in 2008 and 2009, which refers to the early phase of the programme implementation. Ten schools (about 8%) had started the programme in 2011 and in 2012. However, over one-fourth of the schools were not able to exactly tell us when the programme was started in their school. One of the schools incorrectly reported 2007 when the programme was actually not even launched.

Table 4.22 When did MGML start in your school

Block	Year of MGML starting						Not recalled	Grand Total
	2007	2008	2009	2010	2011	2012		
Ambikapur		3	1		1	1	4	10
Bagbahara		6	2				2	10
Batoli			5	2	1		2	10
Berala	1	5		2				8
Bhanupratappur		1	2	3		1	3	10
Bilha		2	1	1			4	8
Churra			3	1	2			6
Dhamda		1	3	2			1	7
Duldula		3					7	10
Kanker		3	5		1		2	11
Kansabel		4					6	10
Simga			1	4	3		2	10
Fingeshwar		7	2	1				10
Total	**1**	**35**	**25**	**16**	**8**	**2**	**32**	**120**

When we compare the official records for the starting of MGML in specific blocks and the data provided by the teachers, we find there are discrepancies. For instance, the programme was officially launched in Bilha block in 2008-09 but according to 2 teachers it started in 2008, 1 teacher in 2009, 1 in 2010 and 4 teachers do not recall when the programme was started. Similarly for Bataoli, the programme was officially started in 2009-10 but 5 teachers said that it started in 2009, 2 teachers said in 2010, 1 said in 2011 and 2 teachers do not recall the year.

We also came across schools where we were told that the MGML programme is not being implemented. Table 4.23 shows this data provided to us by the schools we visited as per the blocks. We find that more than half of the schools told us that the programme was still being implemented in the school. About 22 % (26 schools) reported that they had stopped the programme only since 2012. This was largely on account of the confusion

that they were now required to follow CCE and MGML did not support it and due to the rumours that the programme was going to be shut down in any case. However, even the 63 schools where it was claimed to be running, we found that the manner in which the programme was being implemented varied significantly. We discuss this in our next section.

Table 4.23 Current Practice of MGML

Block	Year MGML stopped					Schools where it was claimed to be running	Grand Total
	2009	2010	2011	2012	No record		
Ambikapur			1		1	8	10
Bagbahara	1	1		1		7	10
Batoli		1	1			8	10
Berla			4	3	1		8
Bhanupratappur			1	5		4	10
Bilha				1		7	8
Churra				1	5		6
Dhamda					7		7
Duldula				1		9	10
Kanker			3	2		6	11
Kansabel			1	1		8	10
Simga				4		6	10
Fingeshwar			1	7	2		10
Total	**1**	**2**	**12**	**26**	**16**	**63**	**120**

4.5.2 In what Grades was MGML implemented

Although the programme was expected to be implemented in Grades 1 to 4, our data through key informant interviews indicates that in many districts and blocks, it did not really start in classes 3 and 4. Several schools had received no material for Grades 3 and 4 to start with. However, even districts where it was implemented for those grades, our data showed that it was completely closed down since academic year 2012-13 because of schools transitioning to the CCE system. It is important to note that many teachers have a feeling that MGML is a 'provisional' / 'temporary' programme and has not been understood as meaningful way to make children's learning happen. So many teachers did not even start the practice in classrooms. These are indeed different from the official position.

How was MGML being implemented in the schools?

Although schools claimed that MGML was being implemented, our study probed into the manner in which this implementation was taking place in terms of classroom design and infrastructure, pedagogies followed, and teacher preparedness. This section presents these findings for all the schools.

4.5.4 Classroom design and infrastructure

It is not uncommon to find that classroom material culture is often thinly thought about in Indian school system. Often learning itself was not visualised beyond the usage of verbal interaction between the teacher and the student. For many decades since the Independence,

there was almost nothing other than textbooks, blackboards, chalk, and seating facilities available in schools. It was probably during the 'Operation Blackboard' in 1980s that efforts were taken to make classrooms as meaningful learning spaces. Yet even during that period, it was often charts, models, and maps that got some place into the classrooms. Programmes like DPEP, as one of the teachers responded during the interview, expected the teachers to think about, design, and implement TLM into the classroom. Or for the first time, we saw schools being painted with stories for children, or with national symbols. Then there were occasional programmes that came with much fanfare from the likes of the technology lobby, by bringing in computers or radio or TV that were expected to aid or replace the teacher. All of these, however, were not fully operational or remained locked up or unused. Technology elements were often seen as additional components rather than being built into the teaching learning process. It is into this educational / schooling context, a programme like MGML gets implemented. Here learning is not necessarily centred on the verbal interaction between the learner and the teacher but it is also set within a classroom material culture.

Classroom structure in an MGML programme has a set of design aspect. These can be identified from aspects that are central to it like racks, ladder, group charts, children's blackboards and so on. It is highly commendable that most schools had this infrastructure in place.

4.5.5 Racks

During the visit to the schools, researchers documented this infrastructure. In general, racks were made of 3 or 4 different material: stone slabs; plastic stands; plywood with iron railings; plywood. Racks that were made of stone slabs were most common and were fixed to the scenario of the classroom. But those with plastic trays could be moved around. The plastic trays were found more in urban schools and in general, these plastic ones had circular trays which did not fit in with the square cards. Those made of plywood and iron railings were in slightly worse condition than those with stone. Often across a Block, this infrastructure had similar material. For instance, schools that we visited in the same Block had similar material used like the stone slabs built into the walls for storing racks, or use of plastic racks in another place or steel and plywood in another block. This indicates that perhaps there is some common planning to execute infrastructure requirements.

Table 4.24 Rack Availability and Condition

	Rack Condition			Total & percentage
Rack availability	**Bad**	**Good**	**No record**	
Available	21	69	7	97 (81%)
Insufficient	6	7	6	19 (16%)
No record			4	4 (3%)
Total	**27**	**76**	**17**	**120 (100%)**

The cards are expected to be collected by children themselves as they move up in the ladder and their learning progresses. Hence, it is necessary that these are built at the level of children. Trays and racks are also expected to be marked with logo of the cards. In describing the condition

of the racks it was often observed that these logo stickers have fallen off. But in fact children did not really find that too much of a challenge as they would hunt out the cards by looking into the tray and pick up the cards, if they are familiar or if the teachers have been using the cards in the school. However, there were also situations where cards were either locked up. In such situation, access to them was difficult. Over all, we find that racks as a basic infrastructure is available in most schools and in more than half the schools, it is in a good condition. Given the uniform design used in them, unless they were locked up in the cupboards, access too was not a problem. We found that access to the racks was easy in 75% of the schools that were studied.

Table 4.25 Children's Access to Racks

Access status	Number of schools	Percentage of total
Easy	90	75%
Difficult	9	7%
No Information	21	18%
Total	**120**	

4.5.6 Card and Readers

The basic learning material under MGML programme has been the cards. It is imperative that these cards are there in schools and are accessible to children. While textbooks were central to the learning system, they were given to children individually. Under MGML scenario, the entire school has a set of cards or two. The fact that all children in a class will use these cards at least once, it is not unlikely that that they are spoiled. Sometimes, children may also tear them down. The more usage there is, more likely that these are spoiled. In some schools these were well maintained with teachers sometimes taking the effort to photocopy and replace them. There were also occasions where cards were locked up in the trunks in Head teacher's room. Our data shows that in 48% of the schools studied, the cards were available whereas in 43% of the schools they were insufficient.

Table 4.26 MGML Card Availability and Condition

	Card Condition			Total & percentage
Card availability	Bad	Good	No record	
Available	15	38	5	58 (48%)
Insufficient	27	23	1	51 (43%)
Cards not available	1		5	6 (5%)
No information			5	5 (4%)
Total	**43**	**61**	**16**	**120**

Table 4.27 Children's Access to Cards

Card Access	Number of schools	Percentage of total schools
Difficult	21	17.50%
Easy	82	68%

Not Applicable	2	2%
NI	15	12.50%
Total	**120**	**100%**

Children's access to cards was found to be easy in 68% of the total schools studied. In 18% of the schools studied, children's access to the cards was difficult. Data gathered through our observations shows that there was dust and cob-webs on the cards, which in certain sense is an indication of the absence of regular use. In one particularly bad case, the scenario can be described as: "There is a permanent rack built into the wall. It is accessible to children. All cards are kept in the boxes but not according to the grade and milestones. All of them are mixed. Logos on the box are not in good condition. Many cards are lost. Cards are not in good condition." This bad condition partly could be because it has been used over many years or because it was misused by children like in some classrooms where researchers observed it being "chewed"; folded; and so on. When cards were insufficient, there were prominently two different explanations, that – 1) they never arrived; 2) they were taken away by children. In situations where it was not arrived we did find it across the schools in a particular block or cluster and these were not really isolated cases it was later explained that the headteacher started buying from the market when that was made available during the last/current year. There were also observations like cards being completely unused based on the condition of it. Even when condition of cards was good, it did not mean that they were being used. For example, in a particular school the researcher reports, "There were monkey reading cards, which was kept in office, not easily accessible to children. The most interesting part was that they were not aware of the monkey reading card, that this is in the MGML card." When things were working and cards were used, teachers even took the efforts to reuse them.

One of the best features of the MGML is the Hindi Readers. There are 50 small booklets with stories running in about 6 to 8 pages. Within the Hindi cards, children are expected to read them under the logo of a reading monkey. Its very attractive images and short stories can indeed be appropriate for children at this level. Our survey tried to capture the status of these Readers in the schools. Their condition is evaluated and data compiled is given in table 4.28.

Table 4.28: Availability of Readers and Condition

Reader availability	Reader Condition			Grand Total
	Bad	Good	No record	
Most-All		22	3	25 (21%)
Some-few	9	6	7	22 (18%)
None	3		60	63 (53%)
Not recorded			10	10 (8%)
Total	**12**	**28**	**80**	**120**

Over half of the schools (53%) did not have any Readers. 18% of the schools had some to few Readers available and in only 21% of the schools, almost all the Readers were available. In schools where the Readers were available, most schools had maintained them in good condition.

4.5.7 Ladders and group charts

Between Grades 1 and 2, there are 8 Ladders that need to be on display in a classroom. If there were at least 5 charts we considered them to have "most" available. There were not many schools that had all the charts in place. EVS and English ladders were the most commonly missing in the schools. Yet about half the schools had most ladders. As for maintaining these, the teachers were following the expectations given by BRC or CAC who visit them. As seen in *'Kabho kabhi BRC/BRG ke log aate hai aur bolte hai kabhi aise rakho, toh kabhi waise rakho'*. 'It was hung on the walls near racks at the rear end of the class. There were two nails, on one nail there were 2 ladders for grade 1 & 4 and ladder for grade 2 on hung on other nail'. The location of the Ladders is very important to understand how the children are able to use it. In MGML they assume that children locate their own cards everyday and looking at their levels. Hence if they are hung high up on the wall they cannot be considered being really used. The usage of the chart is likely to wear it off over 3 or 4 years of usage. Sometimes the teachers took great care, by framing them or laminating them and this symbolises the nervousness within the system that there are people who verify the presence of these things in their performance which is assessed on the basis of material culture provided to the school.

The presence or absence of group charts on the wall is an indicator of the classroom practices happening in groups prescribed by MGML. Just about half the schools have the charts available. There are 6 group charts that need to be there. These groups are expected to be of 4 to 6 children, depending on the children in the particular grades. Even small schools may organise the children in this pattern. However, it appears that the practice has definitely not been fully understood by the teachers.

Table 4.29 Ladder Availability and Condition

Ladder availability	Ladder Condition			Grand Total
	Bad	Good	Blank	
Most-All	6	42	6	54 (45%)
Some-few	22	23	1	45 (38%)
None			13	13 (11%)
Not recorded			7	7 (6%)
Total	**28 29%**	**65 67%**	**27 28%**	**120**

Our data shows that in less than half of the schools studied (45%) almost all the ladders are available. In 38% of the schools, some to few ladders are available and in 11% of the schools, ladders were not available at all. In the schools where almost all the ladders were available, a large number of schools had them in good condition, whereas in schools where only some-few ladders were available, half of the schools had them in bad condition.

Table 4.30 Group Chart Availability and Condition

Availability	Group Condition			Grand Total
	Bad	Good	Blank	
Most-All	1	58	5	64 (53%)

Some-few	13	15	5	33 (28%)
None			14	14 (12%)
Not recorded			9	9 (8%)
Grand Total	**14**	**74**	**32**	**120**

A little over half of the schools (53%) studied had almost all the Group Charts (Samuh charts). In 28% of the schools, only some to few group charts were available. In 12% of the schools, none of the group charts were available. In schools where the group charts were available, most of them were also in a good condition.

In overall comparison on the basis of basic infrastructure, we found that all the 3 basic infrastructures – racks, cards and group arrangements were available only in 31 schools that we visited. We cannot assume that MGML programme is currently practised in these schools. And none of these schools were large schools (that is with children over 200 being enrolled). There were 7 very small schools that with less than 39 children and 17 small schools (enrolment of 40 to 99 children) and 7 medium schools with less than 200 children. If we try to identify the size of these schools where cards were available they can be classified as – 7 very small school (with enrolment of less than 39 children) 17 small schools (with enrolment of 40 to 99 children) and 7 medium schools (with enrolment of 100 to 199 children). None of these were large schools that had enrolment of 200 children. This infrastructure was fairly evenly distributed across schools that were established in different phases, there were both new as well as old schools. The schools that had good infrastructure were located in villages that had following type of distribution of communities around them. Most of them were located in ST habitations or ST and OBC habitations. The literacy level of communities around these 31 schools was as follows: 8 schools were in villages where most people are literate, 11 schools were in villages where that had half the people literate, 12 schools were in villages where most people are illiterate.

4.5.8 Maths TLM

For Mathematics teaching, some specific Teaching Learning Material (TLM) is required to be used in MGML classrooms. During the last decade, these TLM have been prescribed both within textbooks as well as MGML cards. We tried to find its availability, condition and access. In one of the interviews a teacher mentioned, that from the time of DPEP they were asked to use them in classrooms but it was only with the arrival of MGML they actually managed to get hold of them. The presence or absence of it in classroom does not necessarily mean than they were used for teaching learning, and probably "bad condition" could also mean that they were used by children and got spoiled rather than being locked inside the almirah.

Table 4.31: Maths TLM Availability, Condition & Access

Maths Material Status		Straw	Marble	*Pasa* /Dice	*Gintara*/ abacus
Availability	Available	34	26	52	34
	not available	70	76	59	71
	No record	16	18	9	15
Total Schools		120	120	120	120

Condition	Good	22	17	28	24
	Bad	8	2	18	7
Access	Easy	17	14	30	16
	difficult	10	3	13	10

The data shows that the Maths TLM material was not available in most of the schools. Pasa/Dice was most commonly available although in less than half of the schools studied. It was also found that the Pasa/Dice was in a bad condition in larger number of schools than the other material. Wherever material was found to be available, it was also found to be easily accessible in most of the schools.

On the bright side, there were teachers who had collected things like ice cream sticks or as described by the researcher in one school. Money was given, which was spent on buying trays. It was insufficient for the other things. A dice was made in the school with hard board, pebbles were collected. Or as in one school, seeds of local *seethaphal, imli*, fruits were used to teach subtraction and the researcher saw them being used. Dice was made from a wooden cube which the teacher had bought and she wrote on it with chalk so it could be reused. All these were purchased with teacher's fund of Rs. 500. However, on most occasions, researchers found children preferring to use their fingers and not any of these TLM for doing their calculations during the assessment tests. At least one block with urban schools seemed to have started buying plastic numbers with the money provided as part of school funds.

4.5.9 Records

Teachers are expected to maintain a series of records about the children. These are sometimes mentioned as a challenging task. We tried to trace the presence of them in the schools. Three records that we checked were diary, scrapbook and portfolio.

Here again we note that if the programme is actually implemented, these records need to be up-to-date. However, as we can see several schools do not maintain them and even when they are maintained they are not up-dated regularly. The diary was maintained only by 47% of schools, portfolio was maintained by only 31% of schools and Scrapbooks maintained by only 11 percent of the schools that were studied. However, only 43% of the schools had maintained the diary up-to-date, 38% had maintained the portfolio up-to-date and 23% of the schools had maintained up-to-date scrapbooks.

Table 4.32: Records Availability & Maintained

Diary	number of schools	Portfolio	number of schools	Scrapbook	number of schools
Maintained	56 (47%)	Maintained	37 (31%)	maintained	13 (11%)
Upto date	24 (43%)	Upto date	14 (38%)	Upto date	3 (23%)
Not upto date	15 (27%)	Not upto date	12 (32%)	Not upto date	2 (15%)
no information	17 (30%)	no information	11 (30%)	no information	8 (62%)

Diary	number of schools	Portfolio	number of schools	Scrapbook	number of schools
Not Maintained	43 (36%)	Not maintained	65 (54%)	Not maintained	89 (74%)
No information	19 (16%)	no information	18 (15%)	no information	18 (15%)
Total	**120**		**120**		**120**

The idea of CCE did not emerge from MGML per se, but from the legal requirement under the RTE. The various records maintained by the teachers under MGML are much more rigorous way of tracking child's progress in learning than CCE. It was during this academic year that training in CCE was started for teachers. Many schools have already begun the process of keeping records. There were instances where sometimes teachers and the head teacher asked the researcher if they would like to see the record about the CCE. It has been mentioned by some resource persons that during the last year's summer training, there was a widespread rumour that CCE is meant to replace the MGML even though both the programmes have not meant to substitute one another. The fact that such ideas could be brought in together is itself an irony! One researcher noted that the day he visited was the day head teacher bought the registers from the market. Researcher noted that the head teacher instructed the teachers to fill the rows and columns which will be required from this year. The data shows that less than half (43%) of the schools had maintained CCE records. Only 15% of all the schools had up-to-date records.

Table 4.33 CCE Record Keeping

Status of CCE maintained	Number of schools	Pecentage of total
CCE maintained	**51**	43%
Upto date	18	15%
Not upto date	12	10%
No info recorded	21	18%
Not maintained	**43**	36%
No record	**24**	20%
Total	**120**	**100%**

4.5.10 Blackboards for children

This is a unique feature of the MGML programme as it enables children to write and practice on it. However, during visits it often appeared that children were not actually using them. The usage can also be noted down from the fact the black boards were maintained well. Each child's name was written on top of the board though of last year's students with permanent paint and teacher could not remove it so it is as it is. A permanent paint would mean that teachers ensure that these are either painted every year fresh, but it is unlikely that such a situation exists. In a majority of schools (87%) the blackboards were available. In 55% of the schools, these were also of good condition.

Table 4.34 Children's Blackboard Condition and Availability

Availability Quality	**Number of schools**
BB available	**104** (87%)
Good	57 (55%)
Bad	40 (38%)
quality not described	7 (7%)
BB not available	**10** (8%)
No record	**6** (5%)
Total	**120 (100%)**

4.5.11 Children's art work display

Children's art work is hardly ever taken seriously in most school based programmes. MGML has however created space through which these could be taken up and displayed. These are basically strings that are tied across the walls so as to make a 'roof'. Every MGML classroom has these 4 iron strings criss-crossing the room that are used to hang the art work of children. As the table below shows, children's display was seen in 45% of the schools only 54 schools out of 120 schools visited.

Table 4.35 Display of Children's Paintings and Conditions

Children's work display	**Number of schools**	**Children's work display condition**	**Number of schools**
Yes	54 (45%)	Good	28 (52%)
No	60 (50%)	Bad	17 (31%)
No record	6 (5%)	No information	9 (17%)
Total	**120 (100%)**	**Total schools with children's display**	**54 (100%)**

4.5.12 Libraries

During the last few years, there have been efforts to renovate libraries in schools. We tried to identify them during our school visit. In most cases, these books did not exceed 200 odd books which included general magazines or other government distributed books or even books that would be meant for adults. Very often they were locked up in the cupboards or trunks and were all kept together. Sometimes, the researchers reported children saying that they never touched any of those books. There were also occasions when books were displayed on the walls of the classroom on strings. Some teachers did claim that there were separate schedule for making children read the books as well. There were also very positive situations where teachers had stored the '*maa ki kahani*' into their libraries. In 64% of the schools, a library was available. In this, in 38% of the schools, the condition of the library was considered to be good.

Table 4.36 Library Availability and Condition

Library Available Condition	**Number of schools**
Yes	**77** (64%)
Bad	22 (29%)
Good	29 (38%)
Blank	26 (34%)

Library Available Condition	Number of schools
No	**30** (25%)
No Record	**13** (11%)
Total	**120**

4.5.13 Wall displays

There are standard list of images that are often on the wall. However, there were not as many portraits of Gandhi, Nehru, Tagore, Bose, Ambedkar or they were present only in older schools. From one school, we learnt that a new series of portraits were officially distributed by the SCERT. A teacher was slightly apologetic that she still had not found time to hang the portraits. This new list includes Deen Dayal Upadhyay, Shyama Prasad Mukherjee, Rani Durgavati, Vivekananda etc. Inevitably, all schools had Goddess Saraswati on the walls. Then there were also proverbs, maps, one numerical chart torn & thrown in corner, Days of the week in English, charts with fruits, numerals, words, multiplication charts, parts of body, 5 senses, solar system, national symbols and state symbols, road symbols. Some schools seemed to be providing glass and combs as well. The school observations were of qualitative descriptive nature. These were summarised into three categories for 120 schools. In 44% of the schools, the wall displays were found to be of good quality, of medium quality in 18% of the schools and of bad quality in 29% of the schools.

Table 4.37 Other Wall Displays in Schools

Wall display in schools	Number of school
Good	53 (44%)
Medium	22 (18%)
Bad	35 (29%)
No Information	10 (8%)
Total	**120 (100%)**

4.6 Was MGML being Practiced?

4.6.1 Artifactual Evidence

Key Items: Overall, when we analyse the schools based on artifactual evidence of MGML (in terms of cards, ladders and charts *(samooh thali)* which we regard as essential for the practice of the method, with the year in which MGML had started in the school, we find the following.

Table 4.38 Artifacts and year when MGML started in schools

Key MGML artifacts	Year beginning						No info	Grand Total	%
	2007	2008	2009	2010	2011	2012			
insufficient	1	35	21	16	9	2	5	89	74%
sufficient		16	11	3	1			31	26%
Total	**1**	**51**	**32**	**19**	**10**	**2**	**5**	**120**	

More schools with sufficient materials had started MGML in 2008 while there were more schools among those where it had started after 2009 showing unsufficient materials evidence.

4.6.2 Children's response

Among various questions that we asked, we tried to ascertain the practice of MGML by asking children independently if they had used cards or textbooks during the previous year. And the response was as following. Sixty-one percent of the schools where Grade 2 children were assessed said that they had used MGML last year and 67% of the schools where Grade 3 children were assessed said that they had used MGML last year.

Table 4.39: Children's Response to Practice of MGML during Previous Year

	Grade 2	Grade 3
No. of schools saying YES to previous years use of MGML	34 (61%)	41 (67%)
No. of schools saying NO to previous years use of MGML cards	15 (27%)	14 (23%)
Not recorded	7 (13%)	6 (10%)
Total	**56 (100%)**	**61 (100%)**

In both the situations we find more than half the children responding that they did practice MGML during the previous year.

In 21 schools, children were tested to understand if they had followed the method using a small test (Tool 5). Here is what the data indicated.

Table 4.40 Number of Children Familiar with the MGML Method

Number of children being able to do the method	Number of schools
Both children did not do the method	3
One child was able to do the method	3
Both children were able to the method	11
No information recorded	4
Total	**21**

This shows that in over half of the schools, both the children who were tested on Tool 5 were able to demonstrate their familiarity with the method.

4.6.3 Teacher interviews and classroom observations

Based on the teacher interviews and classroom observations, we found the following. Almost half of the schools (48%) were not practicing MGML method, 21% of the schools were practicing the method with a correct understanding and in 17% of the schools, the teachers were practicing the MGML method but either mixing it with textbook teaching or adapting its use or using it not as per the expected design.

Table 4.41 Was MGML Practiced: Through Observations & Interviews

Was MGML being practiced?	Total	Percentage of the total
Not practicing	57	48%
Practicing with understanding	25	21%
Practicing but mixed/adapted/not as per the expected design	20	17%
Not recorded	18	15%
Total	**120**	**100%**

In many schools that were practicing the methods with adaptation, the teachers were teaching the card, or groups were not formed properly, or material was inadequate and MGML was practiced with whatever was available. In some cases, the teachers were combining textbook teaching with the use of cards, where cards were mainly used as teaching aids as in 'show and tell'. A number of schools had stopped practicing MGML from the beginning of this academic year. The reasons for discontinuing included – lack of material and non-replacement of damaged cards, lot of record keeping, rumours that it would be closed down and no one from the Department had bothered to ask, transfers of teachers who were trained in MGML, lack of resource support to clarify doubts, and multi-graded schools where teachers had were overloaded. We did not see MGML being practiced in Grade 3 and 4 in any school.

It should also be noted that the schools were MGML was not being practiced were NOT schools where the textbook method was being followed. It is likely that these were schools where teachers taught with methods they were used to—usually involving repetition of alphabets or numbers.

4.7 Teachers' Knowledge and Understanding of MGML

4.7.1 Training in MGML

We did not come across schools where not even one teacher was trained in MGML although there were instances where the teachers trained in MGML were not the ones handling Grades 1 and 2. In 43% of the schools, there was one teacher trained in MGML and in 28% of the schools, two teachers were trained in MGML.

Table 4.42 MGML Trained Teachers

Number of MGML teachers	Number of schools	Percentage of total schools
1	52	43%
2	33	28%
3	8	7%
4	10	8%
5	3	3%
no record	14	12%
Total	**120**	**100%**

Training of teachers in the new approach was an important component of the programme. The study asked teachers about their experience of training in MGML. Almost half of the teachers were not satisfied with the training. They said they did not learn anything and that is one of the reasons they could not practice MGML approach in their school. A few teachers said that the training was not practical, did not demonstrate the method and it would have helped if it was carried out and shown to the teachers. One of the teachers said that he was not able to grasp the core elements of the method during the training and thought it was *'bakwas'*, but after trying it in the class, he realized that it worked well with children. There were also cases where the teachers thought it would be easy to practice during the training session but after trying it they found it very difficult and not practical. The other half of the teachers was satisfied with their training experience. They were happy with the manner in which it was conducted, and what they had learnt.

In some schools it was found that the teachers who were well-trained in the method did not practice it and those who were not trained had been assigned the MGML classes. Some of the teachers had undergone training for as little as two days and they said it was inadequate to give them the confidence and clarity of running the programme. Given the complexity of the method itself and the attitudinal change it required at a more fundamental level, the teachers felt that it was difficult to practice the method as per the expected design with only a few days of training.

Some of the teachers said that the trainers were themselves not clear about the method and had not tried it themselves. Hence they were unable to answer their queries and also demonstrate the method convincingly. In these cases, the trainers were not able to even explain the rationale of introducing MGML and had told the teachers that they had to do it because it is 'orders from above'. Added to this teachers said that resource support and monitoring was inadequate and it did not provide the teachers the required confidence and conviction about the method.

The training conducted on MGML was not uniform and there were mixed responses from the teachers (like some said the trainers were excellent and demonstrated through role plays while others said the trainers had insufficient knowledge and it was not practical). This could be a result of when the training was conducted and by whom. But the importance of a rigorous training was strongly underlined by almost all the teachers.

4.7.2 Teachers Professional Knowledge and Knowledge of MGML

We also asked questions to assess teachers' professional understanding of learning and their reflections on pedagogy. Based on their responses to our questions, we classified them into three categories- Good, Average and Poor. Teachers with good reflections were those who had thought about how children learn, what is the role of teacher, what practices have worked in the past although these were not necessarily supportive of MGML. Teachers with average reflections were those who were able to formulate their questions and had shared limited (1 or 2) reflections or shown through their limited practice an understanding about how children learn. This was also not always supportive of MGML. Teachers with poor reflections were those who were hardly able to articulate any insight or show through their practice any interest or insight into children's learning and role of teachers. We found that 40% of the teachers reflected poorly on these important aspects of education while 11% showed strong positive reflections by the teachers. This indicated the extent to which the teachers themselves were engaged and reflective about what they were doing in the class and how children's learning took place.

Table 4.43 Teachers' Reflection on Learning /Professional Understanding

Teachers' reflection on learning/professional understanding	Total	Percentage of total
Good	14	12%
Average	28	23%
Poor	46	38%
Not recorded	32	27%
Total	**120**	

Teachers' knowledge about MGML:

We examined teachers' understanding of MGML. Almost 40% of the teachers had poor understanding of the method. In several of these cases, the teachers themselves said that they did not know enough about MGML to be able to practice it. 22% percent of the teachers had a good understanding of the method.

Table 4.44 Teachers' Understanding of MGML

Quality of understanding of MGML	Total	Percentage
Good	26	22%
Average	24	20%
Poor	46	38%
No information	24	20%
Total	**120**	

Teachers were asked what they knew about the MGML method. Some teachers said they knew nothing about the method and some others had a weak sense of the method. They thought the groups are to be formed based on what children know and their intelligence levels, and though that the teacher and partially teacher supported groups were for children who needed help, while more capable children would simply learn on their own. They thought the cards were to be used as teaching aids along with textbooks to explain how various objects looked, they thought in MGML children learn by themselves looking at the cards, and said that in MGML meant children learnt by participating in singing and other group activities. A few teachers did not know which cards are to be given to which grade. This type of knowledge was classified as 'poor'.

"Bacche chitra se pahdte hain, card se padhte hain". (Children learn from the pictures and from the cards)

"hosiyar bachhe khud kar dete thhe and hum logon ko kamjori bachho ko hi dekhna padta thha." (Intelligent children do the cards on their own and we have pay attention to only those children who are not intelligent)

About 38% of teachers interviewed had such poor and inadequate knowledge of the MGML programme. Among the teachers who had better knowledge about MGML, there was still lack of clarity about the formation of groups. However, they knew it was a method that recognised children's agency. Some said:

"ye jo paddhati hai sir, isme bachhe ra, ka, la, ha, paddhati se sikhte hain" (In this method, children learn with alphabet ra, ka, la, ha)

"isme jo hai bachhon ka 'rattatmak' (rote learning) paddhati khatam ho jata hai, aur isme bachhe chitra ki sahayata se samajh bana k sikhte hain" (in this method, rote learning is removed. Children learn from the pictures by developing an understanding)

Such knowledge was classified as 'average' and was attributed to about 20% of the teachers. Only about 22% of teachers had knowledge of the MGML which could be considered as a

reasonable understanding. The teachers with a good understanding of the MGML said:

> *" MGML helps the child to think, a5 its both visual and mental"The cards were better than the book because they focused the children attention better on the task on hand. And hence made it more interesting for them. The MGML's main strength is that it is unitized and as it is colourful, so children find the cards more interesting".*

When we review this data with the year in which MGML was reportedly started in the school, we find the following picture. We find that over a half of the teachers with a good understanding of MGML were those where MGML had started in 2008 or 2009. However, we also find that half of the teachers with poor understanding were also those where MGML had started in 2007, 2008 or 2009.

Table 4.45 Quality of understanding of MGML with year of starting MGML at school

Quality of understanding	Year beginning						No record	Total
	2007	2008	2009	2010	2011	2012		
Good		7	9	1	3		6	26
Average		10	4	3	2	1	4	24
Poor	1	16	6	6	3		14	46
No record		2	6	6		1	9	24
Total	**1**	**35**	**25**	**16**	**8**	**2**	**33**	**120**

We also analysed the teachers' quality of understanding of MGML with the manner in which MGML was being practiced. We found that schools where MGML was being practiced with understanding and as per the design of the programme also had majority of teachers with good to average understanding of MGML although one-fifth of these schools were practicing with poor understanding of the method itself. This may be possible in cases where the teachers were managing the MGML classes as per the expected norms like a routine without actually knowing what the method is about. About half of the teachers who were practicing through mixed and adapted methods had poor understanding about MGML, perhaps therefore leading to its adaptation and mixing it with other methods. But it is important to note that more than half of the schools where MGML was not being practiced were schools with teachers having poor understanding of the method. We therefore also conclude that when there was a good understanding of MGML, more schools followed MGML in some form or the other while when the understanding was poor, a majority of the schools did not practice MGML.

Table 4.46 Quality of Understanding of MGML with was MGML being Practiced

	Quality of understanding of MGML				
Was MGML being practiced?	**Good**	**Average**	**Poor**	**No record**	**Total**
Not practicing	12	11	30	4	57
Practicing but mixed/adapted and not as per design	4	6	9	1	20
Practicing with understanding and as per design	10	7	5	3	25
No information			2	16	18
Total	**26**	**24**	**46**	**24**	**120**

4.8 Classroom Transactions

In our study, we also observed the classroom transactions and pedagogies used in order to understand what was being done if not the MGML method.

4.8.1 Distribution of children on various milestones

Table 4.47 Range of Children on Milestone

School	Number of children in the range whose milestone was recorded in each school	Hindi Milestone recorded		Maths Milestone recorded		Remarks on the Spread
		Lowest	Highest	Lowest	Highest	
A	3 children	0	1	0	1	Narrow
B	9 children	3	5	3	7	Narrow
C	14 children	0	1	0	2	Narrow
D	8 children	7	13	8	15	Wide
E	7 children	1	3	1	4	Narrow
F	7 children	0	1	0	3	Narrow
G	12 children	1	12	1	15	Wide
H	20 children	0	1	4	23	Mixed
I	10 children	0	2	1	Not recorded	
J	7 children	3	6	2	5	Narrow
K	5 children	2	4	3	6	Narrow
L	1 child	3	Not recorded	4	Not recorded	NA
M	8 children	9	17	1	21	Wide
N	12 children	1	19	1	6	Mixed
Total	**121 children**					

In schools that were using the MGML method, we captured the distribution of children across various milestones. We considered it important to identify the range in which children are located on various milestones. The underlying premise of the MGML method is that children learn at different speeds and their levels are varied and hence the whole class approach may not take into account these differences in the levels of learning found in a classroom. Tool 4 was administered for Grades 1 and 2 in order to capture the range of learning among children in the same grade. The school record that we gathered on the range of children in different milestones across subjects is presented below.

This data captures range of milestones at which children are placed in the ladders for Hindi and Mathematics. In the 14 schools (out of 25 where MGML was being practiced), we found that the range was narrow in half of the schools (7 schools). It was fairly wide in 3 schools. In two schools, the children were spread out across a range of milestones in one subject but not the other. This indicates that the children were more or less placed in clusters around specific milestones and were not moving ahead on ladders at very wide range of pace. We also found that the record keeping itself was very poor in most of the schools and the milestones recorded were not always based child's actual learning status.

4.8.2 Engagement of Children with Classroom Activity

During the classroom observation and teacher interviews, data was collected about the nature and extent to which children were engaged in the classroom activity, irrespective of the approach used i.e. whether using MGML or not. It was found that in half of the schools children were more or less engaged in the classroom activity, including where MGML was used and where it was not and in the remaining half of the schools, the children were found to be not engaged with the classroom activity. In these classrooms, children were either doing nothing, or playing and fighting with each other. These were the classrooms where nothing much was happening in terms of learning. In a few schools that were following the MGML approach, children were seen to be dependent on the teacher for identifying the next card to be done and without teacher's attention, children were not found to be on any task. Even in schools where children were engaged, it was found that there were some children who were not engaged and with the class. It was observed that the teachers rarely paid attention to these children. When the class was doing a chorus repetition (in schools that were not practicing MGML), some children were seen to be not academically engaged with the process.

4.8.3 Engagement of Teachers

The study also inquired into what was being done in the classrooms through guided observations. In most of the schools, the timetable was not being followed. In almost half of the schools in the classes that were observed (Grade 1 or Grade 2), children were left unattended for significant amount of time and left without instruction. In these situations, children were left to write numbers and alphabet in their books or slates (even when both these Grades were sitting together) and no kind of teaching was taking place. Even after our researchers asked them to teach, some of them did not go to the class and teach. In the other schools, we observed both conventional teaching as well as MGML. In one of the schools, the teacher shared *" main yahan pe ek aisa culture bana diya hoon ki hum teacher nahi bhi rahe to bhi bade bachhe prayer karwa k sabhiko theek se bitha denge, aur silently sare bachhe apna apna padhai karte rahengea aur maje ki baat ye hai ki main iska order nahi deta. Bachhe khusi se apna apna responsibility pura karte hain".*

In conventional teaching, the common practice was teachers reading out a chapter or showing a maths problem on the black board. There was little explanation of concepts, discussion or interaction with children. In such classes, we observed that all the children were not engaged in the class. The practice of taking the notebooks and slates to the teacher for correction was very common, and in all the cases, it was observed that the teacher only placed a tick mark without actually correcting what the children had written. The children were also seen to be engaged in loud chorus repetitions.

In a few schools where MGML was being practiced, the teacher was found to be moving around, helping children understand how to do the activity on the card, paying individual attention but letting children do their work. However, this happened in very few schools.

In a number of cases, teachers were found bringing their own young children and infants and were therefore distracted from their primary functions.

Typical Records of School Functioning

Typical description of a school functioning poorly was as follows:

In a wide verandah, open overlooking the road, two adjoining classes, very noisy. Drowning the teacher's voice, not very clean, flies on mats, one side teacher's chair and table, other side board. So children change orientation based on what the teacher is doing. Floor is uneven with lot of gap in between tiles gathering dust and sand. Mats not enough for all children. Fan available, no lights.

Typical description of schools functioning well were as follows:

Classroom was well ventilated with a chair. As the space was sufficient but they require it more as the both grade 1 & 2 children were sitting together. The room was clean. There were display items as well like a pacts of human body, Barahkhari, alphabats were drawn on walls. MGML " Samuh card " was drawn on the walls and also blackboard for children with black colour painted at the bottom of the walls but was never used by children

In the class room, kids were found sitting in groups, mix standard kids sitting in groups. There are three groups. There is sufficient space, clean and learning atmosphere is there on the wall. Few charts are there of numbers, alphabets, there are few drawings of children hung on the strings.

4.8.4 Seating arrangements

One of the major design aspects of classroom is the way children and teachers are expected to be present in the classroom. Tables and chairs for teacher are seen as obstacles for the direct interaction, and square mats are expected to help children sit in groups as suggested by MGML as against mat rolls where children are expected to sit in rows. Rolls of mats have been a traditional mode of seating arrangements for keeping children in rows. Almost half of the schools (46%) had children sitting on the rolls while in 38% of the schools, they were sitting on the square mats.

Table 4.48: Children's Seating Arrangements

Type of seating facility	Number of schools
Square mat	46 (38%)
Roll	55 (46%)
Bench	1 (1%)
No record	18 (15%)
Total	**120 (100%)**

It probably would have been too much to expect the teacher chair to completely vanish from the classroom yet we did find that there were classrooms like that! However within the

classroom design of MGML, teacher is expected to be interacting with children by moving from one group to other. They are expected to sit along with children. Our data indicates that in most of the schools (78%) chairs were available for teachers to use in the classroom.

Table 4.49 Chair in Classroom for Teachers

Chair for teacher in classroom	Number of school
No chair	26 (22%)
Chair available	94 (78%)
Total	**120 (100%)**

4.9 Concerns of Teachers and Other Stakeholders:

4.9.1 Usefulness to specific groups of learners

In the teachers' handbook *Srujan*, it is claimed that MGML approach is useful because it addresses the problem of irregularity among school children, especially in rural areas. With this method, the irregular children can easily take off from where they had left and thus the adverse effect of such breaks on their learning is minimized. In the schools that were visited, the problem of irregularity was observed. The reasons for children's absence as informed by the teachers included: the preceding Diwali break, working on farms, migration with the family in search of work, event in the community such as marriage, birth or death, village market and ill health.

However, a number of teachers mentioned that irregularity of children actually poses a problem for running the MGML programme in schools. They said that children can take their text book with them and learn from it, but with cards, children are unable to keep in touch with the school work and they forget when they come back. They also said that such children require more attention which they are not always able to provide because there are so many children.

The MGML approach is meant to also cater to children with special needs. Among the schools that were visited, 8 children in 8 different schools were found to have disabilities. However, the teachers said that they did not know how to handle these children. Even in schools where MGML was being used, the teachers expressed their inability to support these children in their learning. Thus, it appears that marginalization of children with disabilities within the classroom is irrespective of the teaching approach followed by the teachers.

4.9.2 Awareness and responses of the Parents

The teachers were asked if they had conducted any orientation programme for the parents. About one-fourth of the teachers said that they had explained the MGML approach to the parents. Parents had asked how the children would learn without any books and bags. In the remaining schools, the teachers said that they had either not done the orientation because they were not aware themselves or because the parents were seen as disinterested. The teachers also expressed that the SMCs wherever active monitored the Mid-day Meal scheme but was not aware of the MGML programme.

4.9.3 Teachers' attitudes Towards the family backgrounds and to educability

The study also examined the attitudes of the teachers towards children's family backgrounds through interviews with teachers. We were able to gauge the teachers' attitudes in almost half of all the schools visited. Among these schools, it was found that a majority of teachers considered children's illiterate, poor families being responsible for children's poor attainment and their lack of interest in schooling.

Table 4.50: Perception of Regarding Educability of and their Family Background

Perception of educability of parents and children	Total	Percentage of total
Positive/Sensitive	13	11%
Neutral/Indifferent	7	6%
Negative/Despair	40	33%
Not recorded	60	50%
Total	**120**	**100%**

A number of teachers saw parents being solely interested in the mid-day meals that are offered in schools and not having any interest in children's learning. With the 'no detention' policy, the teachers said that the parents knew the child will be in school for eight years and thus get meals once a day and it was immaterial to them if they learnt or not. Parents' own lack of schooling made it difficult for them to offer academic support to children at home and this was seen by teachers as being the main factor why children were not able to read, write or do basic arithmetic. According to the teachers, this posed a serious difficulty for their own teaching at school because children were unruly and not academically supported or disciplined. Some of the teachers complained that children do not do their assigned homework and "they go home, hang their bags on the wall, and forget all about school". Thus, the pressure on the teachers to teach is much more onerous.

A few teachers also observed that the children's names are registered but the parents are not interested in sending children to school. As they are left unsupervised by working parents, there is no one to even check if the children attend school or not. It was observed that the teachers made these remarks about children's family backgrounds while comparing them with middle class educated parents inferring that the culture of sending children to school, following up on the school work at home and being interested in their learning were responsible for their better attainment while these deficits left the children in government schools where they are. Some of the teachers also attributed children's learning levels to their caste backgrounds, their backwardness, their cultural practices, linguistic differences, and lack of time spent with children.

Teachers also expressed their views on the educability of children. One of the teachers clearly said MGML as well as traditional method stop working as some children simply do not learn. Majority of teachers saw children as not valuing education, tearing off the textbooks, tearing cards, taking them home or behaving in an unruly manner in the school. Many of them expressed that some children (not referring to the children with special needs) are unable to

learn no matter how many times they are told because they cannot grasp concepts, have poor intelligence (*kam dimag*) or are playful and carefree about schooling. Teachers also mentioned that they have to scold the children a number of times to ensure discipline. Some of the teachers also said that the children do not learn anything because they are irregular at school and so when the children come to school, they allow them to be there although are seen as 'difficult' children.

We also saw corporal punishment being used in some schools. One of the teachers said, said *" sir, hamare zamane mein hum kitne maar khaye hain tab jake hum padhte thhe aur ye bachhe to bahut gandi jagah se aate hain inko aap bina mare padha hi nahi sakte."*

Teachers also expressed negative attitudes towards children's home language. A majority of teachers asserted that the mother tongue of children was Chhattisgarhi, even though they came from tribal backgrounds known to have their own dialects. Besides this denial of children's home language, some of the teachers saw it as 'crude and rude' and having to substitute its use with 'Shudh Hindi' as that is the official language.

4.9.4 Perceptions about why MGML was introduced

Why was MGML introduced: A majority of the teachers said that MGML was introduced because children's learning was to be made more interesting and activity based because the conventional teaching was not resulting in learning (such as *'to help the children improve or progress in their Vastavik Gyan and to have Sarvangan Vikas and to learn through Khel- Khel ka method'* or because *'every child has its own pace of learning'* or for *'learning without fear' or 'to remove the focus on recitation and ensure overall development'* or *'to keep children motivated as the earlier method has not worked'*).

A few teachers thought it was introduced for practical reasons such as facilitating the management of multi-grade classrooms better or combating the issue of lack of teachers. Some teachers said that it was introduced because the top officials wanted it and it was 'ordered from above'. A few teachers also mentioned that this method was introduced only for children in rural areas coming from poor and illiterate backgrounds and not enforced in urban schools or private schools.

Some of the Block Resource Persons said that the MGML is not new but a culmination of ideas that were introduced and experimented in the earlier government programmes. He said that MGML began primarily because there were fewer teachers than required about 3 years ago. And if there are one or two teacher in a school for class 1 to 5, one of them will take care of all the administrative activities attend the meetings other will take care of school. And secondly, there are children at different levels in a school. No one single teacher can address the needs of all these children at different levels at the same time. Education must make sure children who are below average should be brought up at least to the level of average. Good children will be there in every school and they will learn anyway. Or education should bring all children to a single level.

Is the Dept. interested in MGML'? : The study found that a number of teachers perceived that the Department is not interested in running the MGML programme in schools. Various reasons were offered in explanation. Firstly, the teachers had heard rumours that the programme is going to close down and hence were reluctant to invest their energies into it. Secondly, almost all the schools complained that they were not given adequate material to conduct the programme and wondered how they could run it without this basic support. Thirdly, they said that there was hardly any monitoring with little resource support in case they had doubts about the methodology itself. Some of the teachers also said that the CACs also did not know enough and were not able to clarify the doubts raised by the teachers. Fourthly, teachers said that no one asked them if MGML was even followed and what was happening. Thus, the overall perception was that they had to do it because there were orders from above and even if they did not carry it out, it was alright. The fact that schools were also given textbooks added to the confusion and the teachers did not know what method was to be followed. A few teachers also attempted to follow MGML with limited resources but when no resource support was forthcoming and when they discovered that other teachers were not using it, they abandoned the project. A BRP mentioned that the teachers are not serious about the programme because they think that it will come and go as so many other programmes.

Comparison with textbook: We also received mixed responses when comparing textbooks with MGML. One of the teachers said that it is better than textbook because it sparks interest among the children.

One of the teachers said: *'I think the MGML method was better since the curriculum was divided into bits while in the textbooks, everything was put together. Even now, the new textbooks, all the concepts are coming together and are not divided into smaller parts that the children can understand. But I think textbooks are better than using MGML. With a textbook there is a possibility of follow-up at home because the child carries the textbook home, but with MGML cards that is not possible'.*

A few of teachers said that textbooks are better because children who are irregular can carry it with them when they migrate and revise while this is not possible with MGML cards. For some teachers, the rationale for teaching alphabet in a particular order was not clear. *'MGML method is a ghumaoo method. Regardless of how you teach 52 alphabets only have to be taught. So, method really does not matter'.* A teacher who was using MGML effectively said, *'MGML is better than the traditional system because children are free, they come and touch me or my saree without any hesitation. They touch the cards freely, they move around, interact with friends'.* Another teacher said that it is easier to identify where the child is facing difficulty when we use cards: *'Textbook me nahin bol payega ki kisme kasht ho raha hai lekin MGML cards mein bol sakte hein, ki unko kahan kasht hai'.*

Some of the teachers asserted that Hindi was a very important subject and that if Hindi was not taught well, the children would not be able to understand even subjects like Mathematics etc. They said that in MGML the children failed to identify letters of the alphabet. They copied from each other while doing the cards, and many times while they were able to tell either numbers

or letters in sequence, they were not able to identify the ones in the middle. A few teachers said that adding English to this was burdensome. A couple of teachers also said that children do not like to do English cards because they cannot understand the logos and the pictures. One teacher said that the logo of tubelight on the cards looks like a cigarette to children.

A few teachers pointed out that the method is not as important as the training and attitude of the teachers. As one of the teachers shared *"sir, sare padhhati (methods) achhe hote hain. Sarkar murk nahi hai jo isko lagu kar dega bina soch samajh ke. Baat hai, teacher kitne jimmedari k saath isko mante hain aur apna kartabya pura karte hain. Baat ye nahi hai ki padhhati kya ho balki baat ye hai ki ek sahi soch teacheron mein kaise daal payein, Jis se wo in bachoon ko apna bachha samajh k inka bhavisya ka ek sahi aakar dene ka prayas karenge".*

Role of children and teachers in MGML: Teacher interviews and class observations revealed that the role of the children was to pick their card and carry out the activities. In schools where it was being practiced well, children were found to be confident, in control of their learning and approaching the teacher with queries as well as to show their work. In some schools, the teachers were taking the lead in distributing cards and teaching them while children were more passive participants in the learning process. We did not see much peer learning taking place. In Samuh 3 and 4 too, children were largely carrying out parallel activities and we did not get to observe peer-supported learning. In some schools, children were not familiar with the cards fully, did not know where they were on the milestone and were dependent on the teacher. In a couple of MGML schools, teachers were moving around the classroom and also maintaining records.

Some of the teachers were very quite articulate in their reservations about the method and the role of the teachers therein. As one teacher shared, *"ye jo MGML hai iska pura pura naam kya kehte hain hamare idhar k log pata hai aapko? Murk Guruji Murkh Ladka. Ye ek aisa paddhati hai jis se teacher bhi murkh ban raha hai aur bachha bhi murk ban raha hai. Hum to apne tarike se padhate hain apne bachhe samajh ke islye bachhe achhe kar lete hain. Aur sun ne mein aa raha hai ki ye bahut jald band ho jane wala hai."*

Lack of material: Almost all the schools said that they did not receive all the material that was required to run the MGML programme effectively. Sometimes no cards were given at all (in schools with less than 20 students), or cards for specific grades and specific subjects were not given, or some cards were missing from the set, Hindi readers were not given, other material was not provided and not purchased by the schools, registers and record formats were not provided and were out of stock in the market. The damaged and torn cards were also not replaced anywhere. Although a few teachers did make attempts to acquire them (giving money to resource persons or trying to photocopy cards or sending feedback to the CAC), these hardly ever materialized. One of the BRPs mentioned that in his block, the programme started with 20% less material than what was required and this deficit was never made up in subsequent years. Another BRP complained that there was no kit provided to the Block Resource Centre itself despite several requests and reminders. On the other hand, the BRPs receive a set of textbooks in July itself.

Lack of resource support- Several teachers said that they did not have a copy of the Teachers' Handbook *Srujan* and therefore they did not have anything to fall back on. In addition, resource support and monitoring was not provided and a majority of the teachers (especially those who were convinced about the method) mentioned that they had no one to guide them. This acted as a major demotivating factor resulting in discontinuation of the programme.

Transition to non MGML grades: There was a mixed response to whether the children learn faster after they transition to the regular teaching in Grade 3 or Grade 5. Some teachers pointed out that children find it difficult to sit in one place, demand cards and are hard to discipline, they have to be thought everything again. Other said that children come with on understand and it is easier to teach them.

Remediation: With regards to remediation, there was no difference in the strategy adopted by teachers following MGML method and those following the conventional practice. Teachers indicated that they ask the children to repeat the cards in the MGML schools. In the conventional schools, the teachers asked the children to write again. Another strategy followed was to ask other children to help the child who is lagging behind. The question about the effectiveness of both these strategies in remediation remains. Although the school schedule indicates that the last school hour is to be spent in remediation, none of our school observations indicated this happening. We did also not observe remediation happening in schools that were not practicing MGML.

Record keeping: Almost all the teachers spoke about feeling overburdened with record keeping. There were too many records to be maintained, there was a lot of duplicity and unnecessary data that needed to be filled in on a daily basis for every child and the teachers found it very difficult to maintain these. Many teachers said that they filled these records at home as there was no time to do it in school and some of them had actually kept the records at home. According to one teacher, the daily diary was toughest to maintain. One children may do many cards another child may do only one. With 36-40 children in a class, it is difficult to keep track. Children also forget what card they had done.

Teachers also said that the formats for maintaining records were not provided by the Department and these were also not available in the market as they were out of stock. In many cases where MGML was not practiced, teachers were found to be still maintaining records about child's milestone, which logo card the child is doing as completely fictitious accounts. In most of the cases, these were also not maintained up-to-date. Some teachers said that there is no one that they can go to if they had doubts on record keeping. No one came to check these records also and hence these were poorly maintained. They suggested that one additional person is provided only to keep records. In addition, they also had other administrative work and data that the CACs asked them to put together. This took a considerable amount of time. During the schools visits, we found some teachers occupied with administrative work leaving the class unattended. We were told that this was common whenever data is urgently to be sent to the officials.

4.9.5 Should MGML continue?

One teacher said that the programme of this nature should atleast run for ten years to see the impact. The government kept changing programmes every few years and that was not good.

When asked if MGML should be followed in schools and if so to what grades and subjects, more than half of the teachers were positive towards MGML and expressed that they value the approach but some of them were not inclined to adopt it because of lack of material and resource support and excessive record keeping that was expected. The remaining felt that the approach does not work and hence thought it should be stopped. There was a mix of responses from teachers about the grades and subjects for which it should be followed. Some thought it should be followed even in higher classes, some thought it should only be in Grades 1 and 2, others thought it should be for higher classes and not for younger children as they cannot handle the material.

Table 4.52: Should MGML Continue: Opinions of Teachers

Should MGML Continue	Number of teachers	Percentage
Yes	52	43%
No	32	27%
Mixed response	11	9%
No information	25	21%
Total	**120**	

4.10 Summary of Key findings

Our findings with regards to the status of implementation can be summarized as follows. The actual year when MGML started as reported by teachers varied significantly within the block and from the official version, which indicates lack of institutional memory, irregular and uneven distribution of material and teachers' trainings that were necessary for the actual implementation. Only 63 schools claimed to be implementing MGML. However, our classroom observations and teacher interviews indicate that 21% of the schools were practicing MGML as it was meant to be and 17% were practicing MGML by adapting or mixing it with other methods such as textbooks. Almost half of the schools studied were not practicing MGML at all. We also found sufficient artifactual evidence of MGML material in more schools where it started in 2008 and 2009. In over half of the schools where MGML was followed, children showed a familiarity with the method. However, the spread of children on the milestone was narrow in most of the schools indicating that children tend to progress as a cohort even in an MGML class. Although all schools had atleast one teacher trained in MGML, several teachers did not feel confident about using the method because of the poor quality of training. Absence of resource structure lack of material and its poor replenishment were most commonly cited reasons for stopping the programme for Grade 1 and 2. Several stakeholders questioned if the government was indeed serious about implementing MGML. The lack of professional understanding among teachers about children's learning and the evident lack of meaningful activity and engagement in the classrooms that we observed highlights a serious crisis that has implications on children's learning.

Chapter 5

Status of Children's Learning

Chapter 5: Status of Children's Learning

The study looked at the status of children's learning through assessment tests for Language and Mathematics that were administered to Grade 2 and Grade 3 students. This chapter presents the findings of the tests. The responses of children to the tests were coded analysed in numerous ways to understand the status of children's learning. The response to each item was coded qualitatively and not only correct answers but also the types of errors being committed by children as well as the nature of response/non response were noted. This detailed analysis of the children's responses to the test items is presented in section 5.5 to 5.8. Children's responses to each item were also scored with 0 or 1, and Item wise analysis is followed by assessing performance of schools with regards language and mathematics. In this chapter, item wise performance in mathematics and language is presented.

5.1 Summary of performance in Mathematics

Table 5.1: Summary of Maths performance

	Item	Grade 2	score	Grade 3	score
	Number of children	229 (50.2%G; 49.8%B)		678 (51%G;49%B)	
1	Well formed writing of numerals	21% (17%G; 24%B)		84% (43%G; 40%B)	
2	Computation	18% using fingers/ manipulands 28% in the mind		5% using fingers/ manipulands 90% in the mind	
3	Single-digit sequence completion	66% (35%G;31%B)	1	60% (30%G; 31%B)	1
4	Double-digit sequence completion (involving decade crossover)	36% (15%G; 20%B)	1	39% (19%G; 20%B)	1
5	Addition (Single-digit)	57% (27%G, 30%B)	1	NA	
6	Addition (Double-digit) Column wise w/o carryover	31% (14%G; 17%B)	1	71% (35%G;36%B)	1
7	Addition (Double-digit) columnwise with carryover	NA		40% (18%G;21%B)	1
8	Addition (Double-digit) column wise & carryover & zero distractor			35% (16%G; 19%B)	1
9	Subtraction (single-digit)	28% (13%G; 15%B)	1	NA	
10	Subtraction (double-digit w/o borrow, with zero distractor)	17% (7%G; 9%B)	1	44% 21%G;23%B)	1
11	Subtraction (double-digit) involving borrow	NA		14% (6%G;8%B)	1
12	Subtraction (double-digit) involving borrow	NA		8% (3%G; 5%B)	1
13	Statement problems (addition)	NA		39% (19%G;19%B)	1
14	Statement problem (subtraction)	NA		30% (14%G;15%B)	1
15	Statement problem (multiplication)	NA		09% (4%G;5%B)	1
16	Statement problem (equal sharing)	NA		7% (3%G;4%B)	1
	Maximum score		6		12
	Minimum acceptable score		3		5
	Number of children performing above minimum acceptable score	95		49	
	% of all children performing above the minimum acceptable score	42% (19%G;22%B)		7% (3%G;4%B)	

As is apparent from the summary of performance in the table 5.1, in grade 2, about 66% children have knowledge of single-digit numbers and addition, however only about one-third children have knowledge of double-digit numbers. About 1/3 children can manage single digit subtraction and about 1/5 children can manage double digit subtraction. Even at grade 3 level, about 40% children have knowledge of the double digit sequence. A larger percentage of children are successful in double digit addition, but the number is still only about 40% or about 2/5. This is not even half of all children. Knowledge of subtraction computation without borrow is at 35% but with borrow is a mere 14%. Of concern is that a very large proportion of children in both grades did not attempt items at all. In grade 26% did not attempt completing the number sequence. This increased to over 60% for some of the items. The proportion of boys and girls who were able to complete various items was more or less equal, however, proportionate to the size of the respective gender group, a larger proportion of boys than girls were able to answer correctly.

From the analysis of the errors in Grade 2 (section 5.5), up to 16% of children who attempted still did not know two-digit numbers and an addition 11% made errors around the decade.

From the analysis of errors in Grade 3 (see section 5.6) at least 10% of children were still making errors around the decade. It was also evident that children had partial and incomplete knowledge of the algorithm and were not able to borrow or carry over in two digit addition and subtraction problems. In the case of statement problems, many of them seemed to be merely seeing the numbers and adding them, without reading the statements.

5.2 Summary of Language Assessment performance

24% of Grade 2 children were reading fluently or at the word level of a text of Grade 1 difficulty. Only about 12-15% children were able to spell using *matras*, in both grades. About 15% children wrote full sentences—complex or simple. Other children who did answer wrote only phrases or words. As many as 64% of children did not attempt to write at all (see detailed analysis in 5.7).

In Grade 3, about 32% of the children had reasonably legible handwriting. 16% of the children had good spelling. About 10% only wrote full sentences while another 17% wrote phrases or partial sentences. About 20% or 1/5 of the children were able to answer comprehension questions that were text-based correctly. 10% or less children could answer comprehension questions that were not direct text-based and involved inference, or critical thinking or were open ended. There was not much change in the proportion of children who were able to do well in language over the two grades and remained at approximately 25% of children.

Table 5.2: Summary of Language performance

	Grade 2	score	Grade 3	score
No of children taking the test	214 (54%G;46%B)		693 (51%G;47%B)	
Handwriting			4% well formed and 28% reasonably legible (17%G;15%B)	
Spelling	12% fully correct or with most matras (6%G;7%B)	3 with all or most matras 2 few matras 1 no matras most aksharas	4% fully correct and 12% with most matras	4 3 2 1 0
Quality of writing (words used)	38% creative, descriptive or key and related words (16%G;22%B)	4 creative, 3 descriptive or relevant words 2 key or related words 1 word form but meaning undecipherable		
Quality of writing (sentence structure)	13% full sentences or simple sentences (6.5%G;6.5%B)	4 Complex 3simple full sentences 2 phrases/partial sentences 1 single words	10% full complex or, simple sentences. 17% partial sentence, phrase or single word.	4 3 2 1 0
Maximum score for writing quality		11 (spelling, words and sentence structure)		
Reading fluency	43% attempted 24% fluent or word level readers (9%G; 15%B)	6 fluent 5 word level 4 sounds out word 3 most letters and matras recognised 2 all aksharas/some aksharas and some matras 1 few aksharas no matras	NA	
Comprehension	24% attempted		78% attempted	
Text based Questions	27 (13%)	3 (3 Q)	30% (15%G;15%B) 16% (9%G;7%B) 18% (10%G;8%B)	3 (3 Q)
Open ended/critical/ inferential Question	16 (7.5%)	2 (2 Q)	9% (6%G;4%B)	1 (1 Q)
Maximum score (Writing)		11 (Writing)		8(spelling+ comprehension)
Minimum acceptable score		6		3
Average	1.76		1.48	
Number of children performing above minimum acceptable score	45		106	
% of all children performing above the minimum acceptable score	21% (17%G;13%B)		18% (10%G;8%B)	

5.3 Analysis of children's learning achievements performance based on scoring

Table 5.3: Analysis of Language and Maths Performance

	Grade 2 reading	Grade 2 writing	Grade 3 language	Grade 2 mathematics	Grade 3 mathematics
Maximum score	6	11	8	6	12
Minimum acceptable score	3 (recognizing most aksharas and matras)	6	3	3	5
No of children assessed	213	214	693	229	685
Average score	1.77	2.53	1.48	2.34	3.97
No of children scoring 'zero'/not attempting	122 (57%) (36%G; 21%B)	95 (44%) 26%G; 18%B)	442 (64%) (33%G; 30%B)	50 (21%) 10%G; 11%B	83 (12%) (7%G; 5%B)
No of children above minimum acceptable score	64(30%) 12%G;18%B)	45 (21%) (8%G; 13%B)	184 (27%) (14%G; 13%B)	95 (42%, (19%G; 22%B)	268 40% (19%G; 20%B)
No of children scoring above 75%)	51 (23%) 19%G; 23%B)	21 (10%) (5%G; 5%B)	11% (6%G; 5%B)	41 (18%) (7%G;11%B)	65 (9%) (3%G; 6%B)
No of school where at least 50% children score above min acc. level			12 out of 59 schools		6 out of 59 schools

An alarmingly large proportion of children (between 40 and 60%) did not or could not attempt the language test in either grades 2 or 3. They scored a 'zero' indicating either that they did not attempt or could not get any item correct. In mathematics, the overall proportion of 'zeros' in the test was lower (between 10 and 20% of children). The proportion of children securing a score equal to or above the minimum acceptable score for that grade in language was about 20 to 30% and for mathematics was about 40%. About 20% of children in grade 2 and about 10% children in grade 3 secured above the 75% of the maximum score for that grade. The average scores were less than the minimum acceptable scores. In general the learning of most children had not reached the minimum acceptable score for the relevant grade. A large proportion of children in grade 2 were not showing any learning at all.

In the Grade 3 tests, there were a total of 184 children in the entire sample who scored more than score of 2. Of these, 120 children i.e. about 65% were in the 17 schools identified as schools where at least half or more than half the children performed at a level >2. There were 17 schools in which 90-100% of the children scored less than '1'on the test., out of which in 13 schools children scored a '0'.

5.3.1 By Districts and Blocks

Table 5.4 District and Block wise average scores

District	Block	Grade2				Grade 3			
		Reading		Mathematics		Reading		Mathematics	
		N	Avg	N	Avg	N	Avg	N	Avg
Baloda Bazar	Simga	20	2.15	20	1.65	80	0.86	76	3.34
Bemetara	Berala	15	0.47	15	2.60	51	1.92	56	4.55
Bilaspur	Bilha*	15	1.33	15	2.53	59	0.71	58	2.69
Durg	Dhamda	12	0.17	12	2.50	98	0.93	98	4.87
Gariyaband		24	1.29	27	1.96	90	1.70	82	4.39
	Chhurra	4	0.75	6	1.83	18	1.78	18	4.78
	Fingeshwar	20	1.40	21	2.00	72	1.68	64	4.28
Jashpur		35	2.00	37	2.78	99	2.12	99	3.90
	Duldula	15	1.13	17	2.24	40	1.93	40	3.50
	Kansabel *	20	2.65	20	3.25	59	2.25	59	4.17
Kanker		40	2.40	45	3.16	75	2.05	75	4.05
	Bhanupratappur	18	1.00	18	2.67	47	2.40	47	3.68
	Kanker	22	3.55	27	3.48	28	1.46	28	4.68
Mahasamund	Bagbahara	20	1.75	20	0.90	66	1.32	66	3.42
Sarguja		32	2.25	38	2.11	75	1.60	75	4.00
	Ambikapur*	17	2.24	18	1.94	43	2.12	43	4.77
	Batoli*	15	2.27	20	2.25	32	0.91	32	2.97
State Total		213	1.77	229	2.34	693	1.48	685	3.97

Note: the Blocks marked wit '*'are classified as educationally backward blocks.

Table 5.5: District ranking in the four tests

Grade 2 Reading		Grade 2 Mathematics		Grade 3 Mathematics		Grade 3 Language	
District	**Avg**		**Avg**		**Avg**		**Avg**
Kanker	2.40	Kanker	3.16	Jashpur	2.12	Durg	4.87
Sarguja	2.25	Jashpur	2.78	Kanker	2.05	Bemetara	4.55
Baloda Bazar	2.15	Bemetara	2.60	Bemetara	1.92	Gariyaband	4.39
Jashpur	2.00	Bilaspur	2.53	Gariyaband	1.70	Kanker	4.05
State	**1.77**	Durg	2.50	Sarguja	1.60	Sarguja	4.00
Mahasamund	1.75	**State**	**2.34**	**State**	**1.48**	**State**	**3.97**
Bilaspur	1.33	Sarguja	2.11	Mahasamund	1.32	Jashpur	3.90
Gariyaband	1.29	Gariyaband	1.96	Durg	0.93	Mahasamund	3.42
Bemetara	0.47	Baloda Bazar	1.65	Baloda Bazar	0.86	Baloda Bazar	3.34
Durg	0.17	Mahasamund	0.90	Bilaspur	0.71	Bilaspur	2.69

The Districts of Kanker, Sargujaand Bemetara had averages above the state average in at least 3 of the four tests that were administered. Jashpur and Gariyaband performed above the state average in Grade 3 for both mathematics and language. Educationally backward blocks of Kansabel, Ambikapur, Batoli and Bilha were found to be performing at the State average level at least.

5.3.2 Recommended schools

Table 5.6 Language and Maths performance in Recommended Schools

Recommendation Status	Language						Mathematics			
	Grade2 (writing) Max: 6 Min Acc: 3		Grade2 (Reading) Max:11 Min Acc: 6		Grade3 Max: 8 Min Acc: 3		Grade2 max=6, min acc=3		Grade3 max=12, min acc=5	
	N	avg	N	avg	N	avg	N	avg	N	avg
Recommended	85	2.75	84	2.06	370	1.38	92	2.62	365	3.92
Total	**214**	**2.53**	**213**	**1.77**	**693**	**1.48**	**229**	**2.34**	**685**	**3.97**

Approximately 40 to 50% of the population of children studied in schools that were 'recommended' by the local resource persons. Their performance was marginally better in grade 2, but comparable in grade 3.

5.3.3 By the social groups in the community

Table 5.6 : Language and Maths performance in the Social Groups in the Community

Community profile of habitation	Language						Mathematics			
	Grade2 (writing) Max: 6 Min Acc: 3		Grade2 (Reading) Max:11 Min Acc: 6		Grade3 Max: 8 Min Acc: 3		Grade2 max=6, min acc=3		Grade3 max=12, min acc=5	
	N	avg	N	avg	N	avg	N	avg	N	avg
Mixed caste and tribe groups	43	3.87	49	1.84	102	1.16	48	2.71	92	4.33
Mixed caste and tribe groups and muslim	6	0	6	0.67	11	0	6	2.17	11	3.91
General +OBC					23	1.22			22	3.68
muslim & SC	4	1	4	1.25			4	1.25		
OBC	23	3.13	23	2.35	52	1.46	25	1.56	52	4.37
OBC&SC					117	1.7	1	5	128	4.37
OBC&SC&ST	41	2.71	41	1.32	162	1.72	44	1.89	154	3.8
OBC&ST	63	1.59	56	1.41	79	1.34	65	2.28	79	3.7
SC	8	2.75	8	1.75	33	0.09	8	1.75	33	2.88
ST	26	2.58	26	2.92	114	1.89	28	3.54	114	3.84
Total	**214**	**2.53**	**213**	**1.77**	**693**	**1.48**	**229**	**2.34**	**685**	**3.97**

Children living in habitations with mixed caste and tribe groups seemed to perform better and had better average scores as compared to other habitation types.

5.3.4 By literacy level of the community

Table 5.8: Language and Maths performance by Literacy Level of Community

Literacy level of communities around school/in habitation	Language						Mathematics			
	Grade2 (writing) Max: 6 Min Acc: 3		Grade2 (Reading) Max:11 Min Acc: 6		Grade3 Max: 8 Min Acc: 3		Grade2 max=6, min acc=3		Grade3 max=12, min acc=5	
	N	avg	N	avg	N	avg	N	avg	N	avg
High	77	3.78	70	2.59	178	1.61	75	2.75	174	3.67
Medium	60	1.63	67	1.3	347	1.41	70	2.27	350	4.17
Low	77	1.99	76	1.42	168	1.47	84	2.04	161	3.84
Total	**214**	**2.53**	**213**	**1.77**	**693**	**1.48**	**229**	**2.34**	**685**	**3.97**

In general it seemed that children from high literacy communities scored better in language. No noticeable difference was noted in the case of mathematics.

5.3.5 By gender

Table 5.9: Gender wise performance in Language and Maths

Gender	Language						Mathematics			
	Grade2 (writing) Max: 6 Min Acc: 3		Grade2 (Reading) Max:11 Min Acc: 6		Grade3 Max: 8 Min Acc: 3		Grade2 max=6, min acc=3		Grade3 max=12, min acc=5	
	N	avg	N	avg	N	avg	N	avg	N	avg
Female	106	2.2	115	1.31	357	1.52	115	2.17	344	3.74
Male	108	2.89	98	2.3	329	1.46	113	2.49	334	4.2
Blank							1	5	7	4
Total	**214**	**2.53**	**213**	**1.77**	**693 (7 blank)**	**1.48**	**229**	**2.34**	**685**	**3.97**

The average scores of boys were better than the average scores of girls. A larger proportion of girls in class 2 did not attempt or scored '0'on the test. A significantly larger number of boys were able to read.

5.3.6 By Caste

Children from the SC communities seemed to be performing the worst, and with the exception of Grade 2 writing where they scored high, their scores in all other subjects and grades was the lowest. However, other than this, no significant pattern with respect to caste was noticeable.

Table 5.10: Children's performance by Caste Groups

Caste	Language						Mathematics			
	Grade2 (writing) Max: 6 Min Acc: 3		Grade2 (Reading) Max:11 Min Acc: 6		Grade3 Max: 8 Min Acc: 3		Grade2 max=6, min acc=3		Grade3 max=12, min acc=5	
	N	avg	N	avg	N	avg	N	avg	N	avg
Gen	2	2.5	1	3	8	1.63	1	3	7	4.57
muslim minority	4	3	5	1.4	3	2	3	3.33	3	0.67
OBC	90	2.42	89	1.57	341	1.74	93	2.4	339	4.52
SC	36	3.19	30	1.63	134	0.81	32	1.69	132	2.98
ST	82	2.34	88	2.01	182	1.48	90	2.37	182	3.75
No information					25	1.28	10	3.3	22	3.41
Total	214	2.53	213	1.77	693	1.48	229	2.34	685	3.97

5.3.7 Other Criteria

Data was also gathered with regards pedagogical practices (MGML or other pedagogies) and teachers' perceptions regarding educability etc. These have been analysed and presented in chapter 6 where there is a discussion on the MGML programme effects, if any, on children's learning.

5.3.8 Comparison with assessment findings from other studies

We present our findings in comparison with three other studies of children's learning in the state—The Education Initiatives (EI) Study for 2010, the Baseline study conducted by the State in 2007, and the ASER findings for 2012. The comparability is limited on account of the differences in the purposes of these other studies and hence differences in the form of reporting.

(a) Baseline and EI studies for Grade 3

Data from Districts where we also have data have been compiled into a single table

Table 5.11

		Language (Grade 3)			Mathematics (Grade 3)		
Sr. No	District	Baseline 2012 (Primary)	EI	TISS 2013	Baseline 2012 (Primary)	EI	TISS 2013
		%	%	(max 8)	%	%	(max 12)
	State average	71.1	52.7	1.48	67.9	54.3	3.97
1	Balodabazar			0.86			3.34 [6]
2	Mahasamund		47.2	1.32		52.5 [4]*	3.42 [5]
3	Sarguja	69.8	61.4	2.12	65.6	62.8 [1]	4.00 [3]
4	Jashpur	72.5	60.5	1.93	64.6	60.3 [2]	3.9 [4]
5	Bilaspur	56.4	49.3	0.71	51.9	50.1 [5]	2.69 [7]
6	Durg	76.6	53.1	0.93	73.7	60.1 [3]	4.87 [1]
7	Kanker	55.0	46.9	2.4	47.2	48.4 [6]	4.05 [2]

* Rank order is indicated in brackets

While there is data from overlapping districts, the comparisons between district averages *per se* do not tell us much, as we do not have information on the exact items that were being used in either the baseline study or the EI test.

(a) ASER 2012 competency wise comparison between the ASER findings and our findings are tabulated in Table 5.11 and 5.12.

Table 5.11: Language

Grade	Cannot read even letters	Read letters	Read words	Read level 1 (Std. 1) text	Read level 2 (Std. 2) text	TOTAL %
ASER 2012 Grade 2	20.3%	35.9%	22.8%	10.9%	10.1%	100
TISS 2013Grade2	44% tried by could not/said they could not/ did not read	13% *Aksharas* w/ wo *matras*	10%	15%		
ASER 2012 Grade 3	11.9%	26.2%	23.2%	17.2%	21.4%	100

Table 5.12: Mathematics

Grade	Could not/did not recognise numbers	Recognising numbers		Can subtract	Can divide	TOTAL
		Numbers 1 - 9	Numbers 10 - 99			%
ASER 2012 Grade 2	16.3%	39.3%	31.3%	10.3%	2.8%	100
TISS 2013 Grade 2	24%	66%	36%	28% single digit 17% double digit w/o borrow		
ASER 2012 Grade 3	8.7	30.3%	34.7%	19.6%	Did not test	100
TISS 2013 Grade 3	20%	60%	39%	44% double digit w/o borrow 14% w borrow		

We find that the number of children able to read according to our test is lower than the ASER finding. In comparison, in our test we find that more children are able to do mathematics.

5.4 Performance of schools

The Grade 3 scores of children were used to make an assessment of the schools performance. This was regarded as a having some significance as in Grade 3, all the children of that grade who were present, were tested. (the same was not done in grade 2 as only 4 children per school were tested). Thus, an analysis of 'schools' was carried out using the scores of the grade 3 children, for 59 schools where grade 3 testing was carried out. The analysis of the performance of schools presented in this section is for a sub-sample of schools. All districts and blocks have been covered.

5.4.1 School Average

Using the scores of grade 3, the performance of schools was analysed. The average score for each school was computed separately for mathematics and for language. The minimum acceptable score for mathematics was 5 (max=12). For language it was 3 (max=8). For a large number of schools (more than 75%), the school average was less than the acceptable level. Only in 5% of the schools was the school average high.

Table 5.13: School Average

Range of school average	Number of schools	Proportion of schools
Mathematics		
0-4.99	45	76%
5-7.99	11	19%
8.88-12	3	5%
Grand Total	59	
Language		
0-2.99	46	81%
3-4.49	7	12%
4.49-8	4	7%
Total	**57**	

5.4.2 Performing Schools

A 'performing school' has been defined as a school where at least 50% or more children achieve the minimum acceptable score or more. The schools which were 'performing in both subjects', or performing in only one of the subjects (language or mathematics) were identified (see table 5.14).

- 4 schools were performing in both subjects
- 13 schools were performing in only language
- 2 schools were performing in only mathematics i.e.
- 19 schools were 'performing' in both or either subject.

The characteristics of these schools were noted. A larger proportion of these schools were in areas which have medium or high literacy. The schools were all small or very small. More importantly these were all schools which reported small to very small extent of student irregularity. 12 of the 19 schools were identified has not having sufficient materials to carry out MGML. In the 4 schools which were performing in both subject areas, adapted or modified forms of MGML were found being practiced by the teachers in grade 1 and 2. The pedagogy in 4 of these 19 schools was 'negligent' with the teacher absent or missing or inattentive. In 3 schools there was conventional pedagogy.

Schools where none of the children scored above the minimum acceptable score for the subject area were identified as 'not performing'. 8 schools were not performing in both language and mathematics. They were all located in low to medium literacy areas. They were

small or very small schools. 6 of these 8 schools did not have sufficient MGML materials. In only 2 schools was MGML being practiced, with understanding. 3 schools had a mix of ST and OBC populations, 3 schools were ST and 2 had all caste groups. Additionally, 2 schools were 'not performing' in language. These two schools shared the characteristics described earlier; here teachers were following modified MGML pedagogies. As many as 38 schools were not performing in mathematics. The average scores of the schools was between 0.71 to 3.90, indicating that there were children who were able to achieve some scores, still as not even 50% of children had the minimum score of '5', they were classified as 'not performing'. These 38 schools, large to small, with a range of absence levels and in communities with various levels of literacy and caste group backgrounds. In 9 of these schools MGML was being followed and in 19 MGML was not being followed.

Table 5.14

school code	PERFORMING SCHOOLS									Language				Mathematics			
	year of establishment	community profile	literacy level	sch size	relative absence	MGML infrastructure in grade 1/2	Recommended School	type of pedagogy in grade 1/2	N	School average	SD	% proportion of children in school >min acc. Score '3'	N	Average	SD	% proportion of children>minacc score '5'
Performing schools in langugae and mathematics: 4 (more than 50% of children achieving more than minimum acceptable grade in both subjects)																
103	1996	obc sc st	high	v small	v small	insufficient	Y	MGML+MA	6	5.50	2.88	83%	6	4.33	3.61	50%
104	1962	st obc	Medium	small	small	sufficient	Y	MGML+MA	3	3.00	2.65	67%	3	4.67	4.04	67%
112	1971	all	Medium	small	small	sufficient	N	MGML+MA	10	3.70	3.65	50%	10	5.80	3.26	80%
71	1932	ST	Medium	small	small	insufficient		MGML+MA	13	3.38	3.52	54%	13	4.23	2.45	50%
Performing schools only in langugae :13 (more than 50% of children achieveming more than minimum acceptable grade in only language but *not in mathematics*)																
10	1973	st obc	high	small	small	insufficient	N	negligent	6	3.33	1.37	83%	6	5.67	1.75	0%
21	1981	obc sc st	Medium	v small	v small	insufficient	Y	negligent	4	2.75	3.77	50%	4	3.25	2.63	0%
22	1993	st obc	Medium	small	v small	insufficient	Y	C+PE	6	2.00	2.00	50%	6	7.00	3.22	0%
30	2005	st obc	Medium	small	small	insufficient	N	NI	12	3.00	3.07	50%	12	8.08	2.54	0%
37	1996	all	Medium	small	v small	insufficient	N	negligent	1	7.00		100%	1	6.00		0%
41	1997	all	low	small	v small	insufficient	N	negligent	10	3.10	3.00	60%	10	2.60	2.76	0%
54	1996	ST	low	v small	v small	sufficient	Y	C+PE	6	6.33	1.03	100%	6	8.67	0.82	0%
63	1963	ST	high	v small	v small	sufficient	Y	C+E				67%	3	2.00	1.00	0%
82	2006	obc sc	Medium	v small	v small	sufficient	Y	NI	2	1.50	2.12	50%	4	3.50	3.32	8%
83	1995	st obc	high	v small	v small	insufficient	Y	MGML+U	6	2.17	2.79	50%	6	2.00	2.10	0%
87	1987	obc sc	Medium	small	small	insufficient	N	NI	16	2.88	2.60	63%	16	6.00	2.88	0%
95	1956	obc sc	Medium	small	small	insufficient	Y	NI	14	2.86	2.88	50%	14	7.14	3.51	0%
101	2007	obc sc st	low	v small	v small	sufficient	N	NI	2	6.00	0.00	100%	2	9.50	0.71	0%
Performing schools only in mathematics :2 (more than 50% of children achieveming more than minimum acceptable grade in only mathematics *but not in language*)																
115	1964	obc sc	low	small	v small	sufficient	N	MGML+MA	4	1.00	2.00	25%	4	6.00	1.83	75%
3	1975	SC	high	small	small	insufficient	N	MGML+MA	12	0.25	0.87	8%	12	4.58	2.11	58%

Detailed analysis of children's performance in the achievement tests

5.5 Grade 2: Mathematics

The class II mathematics test data was compiled for 229 children. 50% were girls and 49% boys. 40% of the children were OBC, 39% were ST and 14% were SC. In the case of girls, 36% were OBC, 43% were ST and 16% were SC. In the case of boys, 45% were OBC, 35% were ST and 12% were SC.

Table 5.15: Profile of Children Tested Caste and Gender

Social category		Gender		Total
		F	M	
Gen	N		1	1
	%			
Minority(muslim)	N	1	2	3
	%	0.87%	1.77%	1.31%
OBC	N	42	51	93
	%	36.52%	45.13%	40.61%
SC	N	18	14	32
	%	16%	12%	14%
ST	N	50	40	90
	%	43%	35%	39%
No record	N	4	5	10
	%	3%	4%	4%
Total	**N**	**115**	**113**	**229**
	% of total	**50.22%**	**49.34%**	**100.00%**

The analysis presented is item-wise. In the first part, the analysis is for the performance of all the children with comparison for boys and girls. The second part comparisons are made across caste.

5.4.1 Numeral formation and Computation strategy

Table 5.16 Numeral formation

Numeral formation	F	% of all girls	M	% of all boys	No record	Total	% of all children
Not Applicable/NA	57	50%	60	53%		117	51%
Well formed numeral/WF	20	17%	27	24%	1	48	21%
ill formed numeral/IF	38	33%	26	23%		64	28%
Total	**115**	**100%**	**113**	**100%**	**1**	**229**	**100%**

Out of the total 229 children tested, more than half of the children did not attempt any question. Of the remaining, a majority of the children (28% of the total) were able to write only ill-formed numerals while 21% of all the children had well formed numerals.

Table 5.17 Computation strategy used by children

strategy	F	% of all girls	M	% of all boys	(blank)	Grand Total	% of all children
Not Applicable/NA	53	46%	46	41%		99	43%
Used fingers manipulands/UM	21	18%	20	18%	1	42	18%
Did in the head/DM	41	36%	47	42%		88	38%
Total	**115**	**100%**	**113**	**100%**	**1**	**229**	**100%**

38% of the children did the computation in their head without using any manipulands while 18% used fingers/manipulands.

The data analysed for the items on which children were tested shows the following:

5.5.2 Number knowledge

Table 5.18: Item 1: Simple sequence completion of single digit number

Item: 3, ____, ____, ____, ____, 8.	F	% of all girls	M	% of all boys	(blank)	Grand Total	% of all children
Not attempt/NA	9	8%	14	12%		23	10%
correct/C	79	69%	70	62%	1	150	66%
Incorrect (detailed analysis of error types below)							24%
Error type: cannot tell	17	15%	20	18%		37	16%
Error Type: Inappropriate sequence	10	9%	8	7%		18	8%
Error copied question		0%	1	1%		1	0%
Total	**115**		**113**		**1**	**229**	**100%**

Table 5.18 presents the performance of children on the item testing for simple sequencing not starting from '0' or '1'. 10% of children did not attempt this question. 66% got the answer right, and 24% got the answer wrong. Of these, about 8% of the children wrote a number sequence, but not the appropriate one. Close to 16% made errors which could not be deciphered or classified.

Table 5.19: Item 2: sequencing of involving double digit numbers and going across a decade

Item: 28, ____, ____, ____, ____, 34.	F	% of all girls	M	% of all boys	No record	Total	% of all children
Not attempt/NA	26	23%	29	26%		55	24%
Correct	34	30%	47	42%	1	82	36%
Incorrect (error types below)	55	48%	37	33%	0	92	40%
Error type: could not decipher	18	16%	11	10%		29	13%
Error Type: Inappropriate sequence/IS		0%	1	1%		1	0%
Error type: around the decade/ED	19	17%	7	6%		26	11%
Error Type: Doesn't know 2 digit no's repetition of single digits/RSD	18	16%	18	16%		36	16%
Total	**115**		**113**		**1**	**229**	**100%**

Table 5.19 shows that in the item involving a higher level of number sequencing requiring children to demonstrate their knowledge of the number sequence involving double digit

numbers, 24% of children did not attempt the question, 36% answered correctly and 40% answered incorrectly. 16% of the children merely copied the question. 11% of children made errors around the decade. A significantly higher percentage of boys than girls answered the question correctly (42% of all boys as opposed to 30% of all girls). A larger percentage of girls made errors around the decade (17% as opposed to 6% boys).

5.5.3 Addition

Table 5.20: Item 3: Simple addition of single digit numbers

Item: 5 +3	F	% of all girls	M	% of all boys	No record	Total	% of all children
Not Attempted	32	28%	28	25%		60	26%
Correct	62	54%	68	60%	1	131	57%
Incorrect	21	18%	17	15%	0	38	17%
Error Type: cannot decipher	9	8%	8	7%		17	7%
Error type: Counting Error of 1/ CE1	3	3%	5	4%		8	3%
Error Type: copied question/CQ	9	8%	4	4%		13	6%
Total	**115**		**113**		**1**	**229**	**100%**

26% of all children did not attempt the question involving simple addition of one digit numbers. 57% children answered correctly (60% of boys as opposed to 54% of girls). 17% children made errors, of which 3% seemed to be errors of counting.

Table 5,21: Item 4: Column-wise addition of two digit numbers not involving carry over

Item: 25 +13	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	44	38%	41	36%		85	37%
Correct	31	27%	39	35%	1	71	31%
Incorrect	40	35%	33	29%	0	73	32%
Error Type: cannot decipher	36	31%	28	25%		64	28%
Error type: Counting Error of 1		0%	1	1%		1	0%
Error Type: copied question/CQ	4	3%	4	4%		8	3%
Total	**115**		**113**		**1**	**229**	**100%**

Table 5.21 shows that about 37% of the children did not attempt the question of column wise addition of two digit numbers, not involving carry-ver. 31% answered correctly, with 36% of boys and 27% of girls getting the answer right. 32% of the children answered incorrectly.

5.5.4 Subtraction

Table 5.22 shows that 34% of children did not attempt the question for simple subtraction of one digit numbers presented in column-wise format. 28% only answered correctly, with significantly more of the boys at 31% than girls at 25% answering this question correctly. About 37% of children did not answer correctly.

Table 5.22: Item 5: Subtraction of one digit numbers in column wise format, not involving borrowing.

Item: 7 -5	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	41	36%	38	34%		79	34%
Correct	29	25%	35	31%	1	65	28%
Incorrect	45	39%	40	35%	0	85	37%
Error Type: cannot decipher	19	17%	9	8%		28	12%
Error type: Counting Error of 1	1	1%	1	1%		2	1%
Error Type: copied question/CQ	19	17%	16	14%		35	15%
Error type: added instead of subtracted	6	5%	14	12%		20	9%
Total	**115**		**113**		**1**	**229**	**100%**

Table 5.23 Item 6: Two digit subtraction in column format, not involving borrow, but involving a zero distractor

Item: 34 -32	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	59	51%	51	45%		110	48%
Correct	16	14%	22	19%		38	17%
Incorrect	40	35%	40	35%	1	81	35%
Error Type: cannot decipher	22	19%	13	12%		35	15%
Error Type Subtraction-left to right		0%	2	2%		2	1%
Error Type:Counting Error of 1	6	5%	4	4%		10	4%
Error Type: copied question/CQ	6	5%	17	15%	1	24	10%
Error type: added instead of subtracted	3	3%	4	4%		7	3%
Error Type: Zero Distractor	3	3%		0%		3	1%
Total	**115**		**113**		**1**	**229**	**100%**

Table 5.23 shows that close to 50% of children did not attempt the question involving two digit subtraction presented in column format without carry but including a zero-distractor, with many more of the girls (51% of all girls) as compared to the boys (45% of all boys) not attempting. Only 17% of children answered correctly (19% of the boys as opposed to 14% of the girls). 35% of all the children did not answer correctly. The extent of meaningful errors was small and most of the errors either could not be deciphered or involved children simply copying the question.

5.6 Grade 3: Mathematics

The class 3 mathematics test was administered to 678 children. About 51% were girls and 49% boys. 49% of the children were OBC, 26% were ST and 19% were SC. In the case of girls, 52% were OBC, 25% were ST and 18% were SC. In the case of boys, 47% were OBC, 28% were ST and 21% were SC.

Table 5.24 description of the class 3 children who were tested for mathematics.

Category		Gender			Total
		F	M	(blank)	
Gen	N	4	3		7
	%	1.16	0.90		1.02
Minority(Muslim)	N	2	1		3
	%	0.58%	0.38%		0.44%
OBC	N	178	158		336
	%	51.74%	47.31%		49.05%
Sc	N	61	71		132
	%	17.73%	21.26%		19.27%
ST	N	87	94		181
	%	25.29%	28.14%		26.42%
No record	N	12	7	1	19
	%	3.49%	2.10%		2.77%
Total	**N**	**344**	**334**	**1**	**678**
	% of total	**50.74%**	**49.26%**	**0.44%**	**100.00%**

The analysis presented below provides findings on every item that the children were assessed on. This is also compared by gender.

5.6.1 Numeral formation and Computation strategy

Table 5.25: Grade 3 Numeral formation

Numeral formation	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not Attempted/NA	8	2%	6	2%		14	2%
Well formed numeral/WF	292	85%	276	83%	1	573	84%
Ill formed numeral/IF	44	13%	52	16%		98	14%
Total	**344**	**100%**	**334**	**100%**	**1**	**685**	**100%**

A large majority of the Grade 3 children who were assessed had well formed numerals. Girls were slightly better than the boys. Fourteen percent did not have well formed numerals.

Table 5.26: Computation strategy by Gender

Computation strategy	F	% of all girls	M	% of all boys	No record	Total	% of all children
Not Attempted/NA	20	6%	16	5%		36	5%
Used fingers manipulands/UM	6	2%	23	7%	1	30	5%
Did in the head/DM	318	92%	295	88%		619	90%
Total	**344**	**100%**	**334**	**100%**	**1**	**685**	**100%**

Most of the children (90%) did the computation in their heads, among this girls were slightly more (92%) than the boys (88%). Five percent of all the children used their fingers and other manipulands.

5.6.2 Number knowledge

Simple sequencing of single digit number less than 10, not starting from 1: Table 5.27 presents the performance of children on the item testing for simple sequencing not starting from '0' or '1'. Close to 20% of children did not attempt this question. 60% got the answer correct and 20% got the answer wrong. Of these, about 3% of the children wrote a number sequence, but not the appropriate one. Close to 14% made errors which could not be deciphered or classified.

Table 5.27: sequencing of single digit number

3 और 8 के बीच के अंक लिखो: 3, ____, ____, ____, ____, 8.	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
A-1(1)Not attempt/NA	78	23%	136	17%		136	20%
A-1(2)correct/C	198	56%	210	62%	1	408	60%
Incorrect							20%
Error type: cannot tell	52	15%	45	14%		98	14%
Error Type: Inappropriate sequence	6	2%	13	4%		20	3%
Error copied question	10	3%	11	3%		21	3%
Total	**344**		**334**		**1**	**685**	**100%**

Sequencing involving double digit numbers and going across a decade: In the item involving a higher level of number sequencing requiring children to demonstrate their knowledge of the number sequence involving double digit numbers, 26% of children did not attempt the question, 39% answered correctly and 35% answered incorrectly. 3% of the children merely copied the question. 9% of children made errors around the decade. A significantly higher percentage of boys than girls answered the question correctly (62% of all boys as opposed to 56% of all girls). A larger percentage of errors were made around the decade.

Table 5.28: Sequencing double digit numbers

28 और 34 के बीच के अंक लिखो: 28, ___, ___, ___, ___, ___, 34	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
A-1(1)Not attempt/NA	108	23%	72	17%		181	26%
A-1(2)correct/C	130	56%	135	62%	1	268	39%
Incorrect							35%
Error type: cannot tell	35	10%	60	15%		96	14%
Error Type: Inappropriate sequence	3	1%	3	4%		6	1%
Error Type: reversal of order in 2 digit						2	1%
Error Type: Error decade	30	9%	29	9%		59	9%
Error Type: does not know single digit number	28	8%	21	6%		49	7%
Error copied question	10	3%	12	4%		22	3%
Total	**344**		**334**		**1**	**685**	

5.6.3 Addition (Computation)

Column-wise addition of two digit numbers not involving carry over:10% of all children did not attempt this question. 71% children answered correctly (73% of boys as opposed to 70% of girls). 19% children made errors, of which 2% seemed to be errors of counting and 2% had only copied the question.

Table 5.29 Results for column wise two digit addition without carry

जोडना 25 + 13	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not Attempted	37	11%	28	8%		66	10%
Correct	240	70%	244	73%	1	488	71%
Incorrect	67	20%	62	19%	0	131	19%
Error Type: cannot decipher	54	16%	43	13%		97	14%
Error type: Counting Error of 1/ CE1	7	2%	10	3%		17	2%
Error Type: copied question/CQ	6	2%	7	2%		13	2%
Total	**344**		**334**		**1**	**685**	**100%**

Column-wise addition of two digit numbers involving carry over: About 13% of the children did not attempt this question. 40% answered correctly, with 44% of boys and only 35% of girls getting the answer right. 47% of the children answered incorrectly. A large percentage of errors (30%) were errors in carrying over.

Table 5.30: Column wise two digit addition with carry ores.

15 + 18	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	**45**	**13%**	**43**	**13%**		**89**	**13%**
Correct	**122**	**35%**	**146**	**44%**	**1**	**272**	**40%**
Incorrect	**177**	**52%**	**145**	**43%**	**0**	**324**	**47%**
Error Type: connot decipher	**46**	**13%**	**42**	**13%**		**88**	**13%**
Error type: Counting Error of 1	**7**	**2%**	**6**	**2%**		**13**	**2%**
Error Type: copied question/CQ	**8**	**2%**	**6**	**2%**		**14**	**2%**
Error Type: carry over error	**116**	**34%**	**90**	**27%**		**206**	**30%**
Total	**344**		**334**		**1**	**230**	**100%**

Column-wise addition of two digit numbers involving carry over and zero distractor: About 14% of the children did not attempt this question. 35% answered correctly, with 40% of boys and only 31% of girls getting the answer right. 50% of the children answered incorrectly. 32% of the errors were errors due to carry over. This is evidence of incomplete knowledge of the algorithm.

Table 5.31: Column wise two digit addition with carry and zero distractor.

24 + 36	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	53	15%	48	14%		102	14%
Correct	107	31%	132	40%	1	241	35%
Incorrect	184	54%	154	46%	0	342	50%
Error Type: connot decipher	48	14%	45	14%		93	14%
Error type: Counting Error of 1	2	1%	9	3%		12	2%
Error type: Addition from left to right			1	0%		1	0%
Error Type: copied question/CQ	9	3%	4	1%		13	2%
Error Type: carry over error	125	36%	94	28%		220	32%
Total	**344**		**334**		**1**	**685**	**100%**

5.5.4 Subtraction (computation)

Two digit subtraction in column format, not involving borrow, but involving a zero distractor: 18% of children did not attempt this question. Only 44% answered correctly, with 47% boys and 41% girls answering this question correctly. About 38% of children did not answer correctly. Most of the errors could not be deciphered. The question seems to have confused children with many adding instead of subtracting and several of them merely copying the question.

Table 5.32: Subtraction of two digit numbers in column format, not involving borrow involving a zero distractor.

34 - 32	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	67	20%	58	17%		126	18%
Correct	142	41%	157	47%	1	302	44%
Incorrect	135	39%	119	36%	0	257	38%
Error Type: cannot decipher	71	21%	59	18%		130	19%
Error type: Counting Error of 1	4	1%	7	2%		11	2%
Error Type: copied question/CQ	28	8%	21	6%		49	7%
Error type: added instead of subtracted	30	9%	19	6%		50	7%
Error type: Zero distraction error	2	1%	12	4%		14	2%
Total	**344**		**334**		**1**	**685**	**100%**

Two digit subtraction in column format, involving borrow: 24% of children did not attempt the question, with the girls (25% of all girls) as compared to the boys (45% of all boys) not attempting. Only 14% of children answered correctly (19% of the boys as opposed to 12% of the girls). 62% of all the children did not answer correctly. About 14% of the errors were mistakes in counting and about 16% on account of incorrect carry over suggesting incomplete or partial knowledge of the algorithm.

Table 5.33 Subtraction of two digit numbers in column format, involving borrow

27 -18	F	% of all girls	M	% of all boys	(Blank)	Total	% of all children
Not attempted	87	25%	74	45%		162	24%
Correct	41	12%	56	19%		98	14%
Incorrect	216	63%	204	35%	1	425	62%
Error Type: cannot decipher	91	27%	67	12%		159	23%
Error Type Subtraction-left to right	4	1%	3	1%		7	1%
Error Type:Counting Error of 1	49	14%	47	14%		97	14%
Error Type: copied question/CQ	14	4%	10	3%	1	24	4%
Error type: added instead of sub-tracted	2	1%	6	2%		9	1%
Error type: zero distract/ carry over	9	3%	4	1%		13	2%
Error type: carry over error	44	13%	65	20		109	16%
Error Type: Zero Distractor	3	1%	4	1%		4	1%
Total	**344**		**334**		**1**	**685**	**100%**

Two digit subtraction in column format, involving borrowing: Close to 26% of children did not attempt the question, with the girls (27% of all girls) as compared to the boys (25% of all boys) not attempting. Only 8% of children answered correctly (10% of the boys as opposed to 7% of the girls). 66% of all the children did not answer correctly. The extent of meaningful errors was small and most of the errors either could not be deciphered or involved children simply copying the question. A Large percentage (36%) of errors involved problems in doing carry over.

Table 5.34 Subtraction of two digit numbers in column format, involving borrow and carry over

60 -24	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	93	27%	86	25%		180	26%
Correct	23	7%	32	10%		56	8%
Incorrect	228	66%	216	65%	1	449	66%
Error Type: cannot decipher	59	17%	50	15%		110	16%
Error Type: copied question/CQ	23	7%	9	3%	1	32	5%
Error type: added instead of subtracted	25	7%	27	8%		52	8%
Error type: zero distract/ carry over	118	34%	126	38%		246	36%
Error type: carry over error	1	0%	65	20		109	16%
Error Type: Zero Distractor	2	1%	1	0%		3	0%
Total	**344**		**334**		**1**	**229**	**100%**

5.6.5 Word Problems

Almost one-third of the children did not attempt the question which included 36% of all girls and 30% of all the boys. 39% of the children answered the question correctly with an equal percentage of boys and girls (39% of their cohort). 29% of the children did not answer the question correctly.

Table 5.35: Statement with addition

"Hari had 17 toys. His aunt gave him 5 more toys. How many toys does he now have?	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	122	36%	100	30%		222	32%
Correct	133	39%	131	39%		267	39%
Incorrect	89	26%	103	65%	1	196	29%
Error Type: cannot decipher	36	10%	50	15%		92	13%
Error Type: copied question/CQ	40	12%	39	12%	1	32	5%
Error type: counting error of 1	11	3%	8	2%		19	3%
Total	**344**		**334**		**1**	**685**	**100%**

Table 5.36: Statement with subtraction

Mohan had 9 chocolates. He ate 5. How many does he now have?	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	161	47%	140	42%		301	44%
Correct	97	28%	106	32%		205	30%
Incorrect	89	26%	88	26%	1	179	26%
Error Type: cannot decipher	34	10%	40	12%		74	11%
Error Type: copied question/CQ	26	8%	22	7%	1	50	7%
Error type: counting error of 1	1	0%	3	1%		4	1%
Error type: has only added	23	7%	22	7%		46	7%
Total	**344**		**334**		**1**	**685**	**100%**

As many as 44% of the children did not attempt the question. 30% answered it correctly and 26% answered it incorrectly. 7% of the children only added the numbers.

Table 5.37: Statement with repeated additions multiplication

In a garden there are 7 mango trees in one line. There are five lines. How many trees are there in all?	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	190	55%	174	52%		365	53%
Correct	30	9%	31	9%		62	10%
Incorrect	89	26%	88	26%	1	258	38%
Error Type: cannot decipher	34	10%	40	12%		93	14%
Error Type: copied question/CQ	22	6%	25	7%	1	49	7%
Error type: counting error of 1	2	1%	0	0%		2	0%
Error type: has only added	54	16%	54	16%		109	16%
Total	**344**		**334**		**1**	**685**	**100%**

In the case of this question, over half of the children (53%) did not attempt the question. Among those who attempted, 10% answered correctly and 38% answered incorrectly. A large proportion of children (16%) merely added the numbers.

This question was not attempted by a majority of the children (61%). Eight percent answered it correctly and 31% answered it incorrectly. Ten percent of the children had only added rather than using division.

Table 5.38: Statement form equal sharing / division.

If in one box you can keep 4 pencils, then how many boxes would be needed for 32 pencils?	F	% of all girls	M	% of all boys	(blank)	Total	% of all children
Not attempted	216	63%	201	60%		419	61%
Correct	23	7%	27	8%		51	8%
Incorrect	89	26%	106	32%	1	215	31%
Error Type: cannot decipher	105	31%	46	14%		94	14%
Error Type: copied question/CQ	17	5%	28	8%	1	46	7%
Error type: counting error of 1	1	0%	0	0%		1	0%
Error type: has only added	37	11%	31	9%		169	10%
Total	**344**		**334**		**1**	**685**	**100%**

As can be seen from the analysis of the errors children had partial and incomplete knowledge of the algorithm and were not able to borrow or carry over in two digit addition and subtractions problems. In the case of statement problems, many of them seemed to be merely seeing the numbers and adding them, without reading the statements.

5.7 Grade 2: Language - Reading and Writing

The Reading test was based on an MGML Reader for Grade 1 students. The Reading Monkey to go under reader No.38: *Patang* is a 6 page book with 52 words. It is a colourful and well illustrated book with at least 75% of the total book space dedicated to illustrations. The reader was supposed to have been a familiar passage and in the normal course of MGML method would have been read by all students who were taught using the MGML method in the schools.

The Reading test analysis was divided into two parts. The first part analyzed the reading of 213 children. If the children were able to read fluently or at the 'word level', then their reading was further analyzed using other criteria such as Word Count Per Minute, error rate, accuracy rate and comprehension. This was done by keeping a running record of students.

Table 5.39 Description of the Grade 2 children who were tested for Language

		Girls	Boys	Total
General	N		1	1
	%			
Minority (Muslim)	N	2	3	5
	%	1.74%	3.06%	2.35%
OBC	N	44	45	89
	%	38.26%	45.92%	41.78%
SC	N	21	9	30
	%	18.26%	9.18%	14.08%
ST	N	48	40	88
	%	41.74%	40.82%	41.31%
Total	**N**	**115**	**98**	**213**
	% of total	**53.99%**	**46.01%**	**100.00%**

The Grade 2 Language test data are for 213 children. 54% of the children were girls and 46% were boys. 42% of the children were OBC, 41% of the children were ST and 14% were SC. In the case of girls, 38% were OBC, 42% were ST and 18% were SC. In the case of boys, 46% were OBC, 41% were ST and 9% were SC.

5.7.1 Status on Reading

As shown in Table 5.40, of the 213 children tested, 44% were able to read, 23% tried to read but could not read, 25% did not read and 9% said they couldn't read. There are a significantly greater number of boys who could read: 54% of the boys while only 35% of the girls were able to read. 28% of girls made an attempt to read and 16% of the boys made an attempt to read—however they were not able to. A greater number of girls at 11% expressed their inability to read while only 6% of the boys expressed their inability to read. Also seen is that 26% of the girls did not read and 23% of the boys did not read.

Table 5.40

Reading Status	Girls	% of girls	Boys	% of boys	Total	% of all children
Reads	40	34.78%	53	54.08%	93	43.66%
Tried but could not	32	27.83%	16	16.33%	48	22.54%
Said I can't read	13	11.30%	6	6.12%	19	8.92%
Did not read	30	26.09%	23	23.47%	53	24.88%
Total	**115**	**100%**	**98**	**100%**	**213**	**100%**

5.7.2 Reading fluency

For those children who could read indicated in table 5.40, a more detailed analysis of the type of reading and their fluency was carried out. The children's reading was analyzed over 8 levels. Children who were able to read at the Fluent stage and at the Word Level stage were considered to be good readers and will be further analyzed in the next section.

Of the 93 children (44%) who read, 35% were able to read fluently, 19% read at word level. More boys were fluent readers than the girls at 40% as opposed to 30% of the girls. Similarly boys fared better at the word level at 21% as opposed to the 18% of the girls. However a larger proportion of girls sounded out words as compared to boys (8% vs. 4%).

Table 5.41: Reading Levels

Fluent reader – *van ke sabhi janavar ...*
Word level – [decoding slow but in the mind, not out loud] *van [pause] ke [pause] sabhi [pause] janavar [pause] ...*
Sounding out the words – *vajan ke v, nal ke n; van/ kamal ke k, e ki matra; ke/ salwar ke s, bhaTe ke bha; sabhi ...* OR may not need aloud decoding for up to 2 letter words.
Most aksharas with matras - *vajan ke v, nal ke n; van/ kamal ke k, e ki matra; ke/ -- -- , bhaTe ke bh; sabh*(भ)*/ jag ke j, aa ki matra, ja; nal ke n, vajan ke v, rath ke r;* जनवरा or any other wrong word (may or may not say जानवर or any other word for that matter; after reading the letters / syllable) ... . OR very few read syllable by syllable without aloud decoding -> v n ke s bhi ja n v r pa tan ga le ka r na di ... [ß these did not culminate into comprehension.]
Many most aksharas without matras - vajan ke v, nal ke n; van/ kamal ke k, / salwar ke s, bhaTe ke bha/ ...
Few aksharas with few matras – *vajan ke v, nal ke n, kamal ke k,* [omitted *sabhi*] *jag ke j; a ki matra ja, nal ke n, vajan ke v,* -- -- ... (may or may not say जानवर but still may guess *patang* after *patang ke p, taraju ke t, gamale ke g -> patag -> patang, as it was a known word.*
Few aksharas with matras - *
In HINDI
Fluent reader – वन के सभी जानवर ...
Word level – [decoding slow but in the mind, not out loud] वन [pause] के [pause] सभी [pause] जानवर [pause] ...
Sounding out the words – वजन के व, नल के न; वन/ कमल के क, ए की मात्रा; के/ सलवार के स, भटा के भ, ई की मात्रा; सभी/ ... OR may not need aloud decoding for up to 2 letter words.
Most aksharas with most matras - *वजन के व, नल के न; नल/ कमल के क, ए की मात्रा; के/ -- --, भटा के भ, -- की मात्रा; सभा/ / जग के ज, आ की मात्रा; जा/ नल के न/ वजन के व /रथ के र ;जानवर या जनवरा या अन्य गलत उच्चारण* (may or may not say जानवर or any other word for that matter; after reading the letter/syllable) ... . OR very few read syllable by syllable without aloud decoding -> व न के स भी जा न व र ... [<- these did not culminate into comprehension.]
All/many/most aksharas without matras - *वजन के व, नल के न, कमल के क, सलवार के स, भटा के भ, जग के ज ...*
Few aksharas with few matras/sight words only – वजन के व, नल के न, कमल के क, -- --, जग के ज, आ की मात्रा; जा, नल के न/ वजन के व / -- -- ... (may or may not say *जानवर* but still may guess पतंग after पतंग के प, तराजू के त, गमले के ग à पतग à पतंग, *as it was a known word.*

Table 5.42: Analysis of reading

Type of reading	Level	girls	% of girls	boys	% of boys	Total	% of all children	% of all children who read
Fluent reader	8	12	30.00 %	21	39.62%	33	15%	35.48%
Word level	7	7	17.50%	11	20.75%	18	8%	19.35%
Sounding out the words	6	3	7.50%	2	3.77%	5	2%	5.38%
Most aksharas with matras	5	4	10.00%	4	7.55%	8	4%	8.60%
All aksharas without matras	4	2	5.00%	1	1.89%	3	1%	3.23%
Few aksharas with few matras	3	6	15.00%	6	11.32%	12	6%	12.90%
Few aksharas with matras	2			2	3.77%	2	1%	2.15%
Few aksharas without matras	1	4	10.00%	6	11.32%	10	5%	10.75%
(Blank)		2	5.00%			2	1%	2.15%
Reads total		40	34.78%	53	54.08%	93	44%	43.66%
Total		**115**	**100%**	**98**	**100%**	**213**		**100%**

Analysis of fluent readers:

A running record of the children who were able to read at the fluent and the word level stage was taken and the record was analysed for Word Count Per Minute (WCPM), Error Rate, Accuracy rate, Self Correction rate and Comprehension.

(a) Word Count Per Minute (WCPM)

Table 5.43 is an indicative table showing the WCPM of children across Grades 1-6. These studies show that children in school in Grade 2, at 7 years, average above 60 WCPM.

Table 5.43: Fluency Standard Table

Research Study Recommendations Words Per Minute (WPM)			
Grade	**Rasinski**	**Manzo**	**Harris & Sipay**
1	80	(1.8) 30-54	60-90
2	90	(2.8) 66-104	85-120
3	110	(3.8) 86-124	115-140
4	140	(4.8) 95-130	140-170
5	150	(5.8) 108-140	170-195
6	180	(6.8) 112-145	195-220

We found that none of our children were achieving the WCPM expectations even at the conservative estimate of Manzo's category for Grade 1 and therefore we created a new WCPM band for the purpose of the current field study.

The WCPM of the 51 children tested was thus divided into bands (see table 5.44) based on the data available from the field and the Fluency Standard Table.

Table 5.44 WCPM Bands as per the field trial in Chhattisgarh 2012

Struggling Reader			Slow Reader		Average		Good
>5 -0	**>10 -6**	**>15 -11**	**>20 -16**	**>25 -21**	**>30 -26**	**>35 -31**	**>40 -36**

Table 5.45 presents the description of band wise reading of the children who read at the word level or at the fluent level. 41% of the children are reading at a WCPM of less than 15 which is indicative of a laboured reading or of a diffident or struggling reader. 4% of the children are good confident readers, while 10% of the children are average readers. 31% of the children are slow readers.

Table 5.45 Description of the Word Count Per Minute of children who read fluently or at Word level

Description	Struggling Readers			Slow Reader		Average Reader		Good R	NA	
WCPM	>5	>10 -6	>15 -11	>20 -16	>25 -21	>30 -26	>35 -31	>40 -36	Blank	Total children
Children N	4	9	8	9	7	2	3	2	7	51
Total	**21**			**16**		**5**		**2**		**51**
%	**41.2%**			**31.4%**		**9.8%**		**3.9%**	**13.7%**	**100%**

(b)Analysis of Error rate

Table 5.46 : Error rate by Gender

	High error rate						Medium error rate			Low error rate			O Error rate	
Error rate	**2**	**3**	**4**	**5**	**6**	**7**	**9**	**10**	**13**	**17**	**26**	**52**	**0**	**Total**
Female		2		4	1	2	2		1		4	3	2	**21**
Male	1	4	1	2	2	0	2	2	3	1	4	3	5	**30**
Total	1	6	1	6	3	2	4	2	4	1	8	6	7	**51**

*** Note: Error rate is expressed as a ratio and is calculated by using the following formula: Total words / Total errors = Error rate**

For example:

99/8 = 12.38, or 12 is rounded to nearest whole number. The ratio is expressed as 1:12. This means that for each error made, the student read approximately 12 words correctly.

Table 5.46 shows the error rate of the 51 students who read across genders. The Error Rate has been subdivided into high error rate; medium error rate, low error rate and 0 error rate.

High error rate includes errors ranging from 2-7. That is to say one error for two to seven words which are read. 37% of the 51 children fall under this category. Of this, 43% were girls and 33% were boys. Medium error rate includes errors ranging from 9-13. That is to say one error was made for nine to thirteen words read. 19% of the 51 children fall under this category. Of this 23% were boys and 14% were girls. Low error rate includes errors ranging from 17-52. That is to say one error was made for seventeen to fifty-tow words read. 29% of the 51 children fall under this category. Of this 27% were boys and 33% were girls.

No error rate means a 100% accuracy. That is to say no errors were made for all the 52 words read. 14% of the 51 children fall under this category. Of this 16% were boys and 10% were girls.

(c)Accuracy Rate

The Records were also analyzed for the accuracy rate. Accuracy rate is expressed as a percentage. You can calculate the accuracy rate using the following formula: (Total words read - Total errors) / Total words read x 100 = Accuracy rate

Example:

(99 - 8) / 99 x 100 = Accuracy rate

91/99 x 100 = Accuracy rate

.919 x 100 = 91.9%, or 92% rounded to the nearest whole number

Out of the 51 children who read, only one child had an accuracy rate which was at 36%. All the other 50 children read at an accuracy rate of above 50%. While 7 children had perfect accuracy. 5 were boys and two were girls.

Table 5.47: Error Rate = 0

Error rate	0	%
Female	2	9.52
Male	5	16.6
Total	**7**	**13.73**

5.7.3 Comprehension

Out of 213 children tested, only 51 children were in a position to answer the comprehension questions. The story was a familiar story taken from the MGML Reading Monkey Reader No 38. This has same story used to test children on reading for Grade 1. There were 5 questions asked based on the book. The questions were pre-decided to test on three categories: Text based, Inferential and Critical. The questions were as follows:

Comprehension Question Categories (the details)

1) Text based- *Chinta kyon khush hua? – Chinte ko Haathi chhota dikha* (Question 1 was subsequently not considered in the analysis as children's answers were sometimes inferential and not only text-based leading to ambiguity in interpretation)
2) Text based - *Kaun patang par chadha? - Chinta patang par chadha*
3) Critical response - *Kachhuye ne chinte ko kyon bachaya? - Chinta doob raha tha, aur kachhua chinte ka dost tha.*
4) Text based - *Kaun patang udaa raha tha? - Hiran*
5) Inferential - *Sabhi ne kachhue ko shabaashi kyon dee? - kyon ki usne chinte ko bachaya*

Subsequent to the field trials, Question 1 was omitted as too hard and was not taken into consideration in evaluating the children's performance.

The table 5.48 summarizes the performance of the children who were able to answer all the questions correctly. Out of the 51 children, only 16 children were able to answer ALL the questions correctly.

Table 5.48 Caste and Gender of the 16 children

Social Category	Gender		Grand Total
	Female	Male	
OBC	1	5	6
SC	2	1	3
ST	2	5	7
Total	**5**	**11**	**16**

However, if the category of critical question is considered to be too difficult for Grade 2 children and is exempted from the tally, even then we find that only 19 children out of the 51 children are able to answer the other three questions correctly. Again if the inferential category is also exempted from the tally then 27 children are able to answer both the text-based

questions correctly and 36 children out of 51 children are able to answer at least one text-based question correctly.

We noticed that when children's comprehension is classified based on the WCPM, there was one child whose WCPM was 5 and yet he was able to answer all the questions. Out of the 16 who got all the comprehension answers correct, 11 were slow readers, 3 were average and 2 were good readers.

Table 5.49 WCPM of the 16 children

	WCPM	Total
Slow Readers	5	1
	12-15	5
	16-25	5
Average Reader	29-33	3
Good Reader	40	2
Total		**16**

5.7.4 Writing

Class 2 children were given a writing test. They were given an unfamiliar picture. Instruction on the page said, *chitr ko dekho. Chitr dekhkar uske bare me apane shabdon me likho. Chitr ka varnan karo*. There are similar exercises of describing the pictures in many of the MGML cards. Usually this was done after children completed reading the story. It may not be the same students who read the story who did the writing activity. Children were given about 10 minutes to write whatever they wanted to write.

Responses of the children are summarised in Table 5.50. We notice that just about half of the children attempted to answer. We considered their answers as attempted when they wrote at least sentences or words. We see that out of the 214 children who were tested, only 121 children actually attempted to write anything while 91 children did not attempt. Two children only copied the question again in the blank space provided.

Table 5.50 Overall Status of Answers Given by Children

Answer Status	Total
Attempted	121
Copied the question	2
Not attempted	91
Total	**214**

Table 5.51 shows the classification of children's answers by gender. There were 106 girl and 107 boys answering the questions. A larger proportion of girls did not attempt this test. Table 5.52 shows the classification of children's answers by social category. Out of the 121 children who attempted, 48 belonged to OBC and 44 to ST community.

Table 5.51 Children's Answers Status by Gender

Answer Status	Gender		Total
	Girls	Boys	
Attempted	50	71	121
Copied the question	1	1	2
Not attempted	55	35	91
Total	**106**	**107**	**214**

Table 5.52 Children's Answer Status by Social Category

Social Category	Answer status			Total
	Attempted	Copied the question	Not attempted	
Gen	1		1	2
Muslim minority	3		1	4
OBC	48	1	40	89
SC	25		11	36
ST	44	1	37	82
Total	**121**	**2**	**91**	**214**

All children's writing, words, phrases and sentences were analysed, coded into relevant (meaningful) or not, (meaningless) and classified (see table 5.53). Only 3 children were able to write complex full sentence in answer. As many as 64% of the children did not attempt or provided irrelevant answers which were meaningless. Although some of the children had articulated answers in Chhattisgarhi or their local dialects, the responses expected were in Hindi because that is the language the children were supposed to be learning at the school, through MGML or textbooks.

Table 5.53 Answers and the Relevance to the Image

Relevance	Answer type	Number of children	Percentage
Meaningful	complex full sentence	3	1 %
	simple full sentence	25	12 %
	Phrase	16	7 %
	single word	33	15 %
Meaningless	Not attempted or irrelevant	137	64 %
	Total	**214**	

The quality of children's response on the basis of spelling sumarised in table 5.54. We find that only 8 children out of the 214 (4%) were able to provide all matras while another 36 (17%) children were able to write a few matras.

Table 5.54 Spellings

Spellings	Number of children	Percentage
all *matras*	8	4 %
most *matras*	18	8 %
few *matras*	36	17 %
no *matras*	18	8 %
Not attempted or irrelevant	134	63 %
Total	**214**	

5.8 Grade 3 - Language

During the field work, our research team conducted testing of Grade 3 children in 65 schools. All children in these classes (693 children) were tested. On the day of testing, largest school had 49 children and there were 3 schools children with single child being present on the day. As many as 23 schools had children less than 10 on the day of testing. The test included reading a small story of about 20 sentences and answering 4 questions based on it.

Time given for writing the test was 20 minutes. While children were writing the tests, the research team observed that children who were able to read well used to finish reading the passage in about 3 to 5 minutes. Those who could answer them would return the sheets back to the researchers by about 10 or 15 minutes.

Profile of the children

We had roughly equal number of female and male children who answered the questions (Female-357 and Male-328). Children who participated can be broadly classified under various social categories as follows.

Table 5.55

Social category	Gender			Number of children
	Female	Male	Gender not recorded	
General	5	3		8
Muslim	2	1		3
OBC	187	154		341
SC	64	70		134
ST	91	91		182
Social category not recorded	8	9	8	25
Total	**357**	**328**	**8**	**693**

Children were expected to first write their name on the top of the sheet. Though this was not very significant it was interesting to note that most children were able to write their name on the sheet but there were 93 children who were not even been able to achieve this literacy.

5.8.1 Writing name and attempting answers

Table 5.56 Children Writing Their Names

Writing the name	Number of children	Percentage
Yes-correctly	517	75%
Yes-with mistakes	75	11%
Not able to write	93	13%
Names missing	8	1%
Total	**693**	

In analysing the answers at the basic level, we tried to understand how many children even attempted to answer the questions. We notice that a large number of children tried to answer them as given in the table 5.57. About 78% children attempted the question.

Table 5.57 Number of children attempting to answer

Children writing answers	Number of children	Percentage
Attempted	544	78%
Not attempted	149	22%
Total	**693**	

5.8.2 Handwriting and Spelling

One of the other basic aspects that we tried to observe was quality of handwriting and spelling. We notice that only a very small percentage of children have written work that is very neat and readable (4 %), about 28% had reasonably legible handwriting and most children's hand writing was hard to read (46 %). Answers of children were evaluated on the basis of their spellings. Here again, the number of children who can actually spell correctly remains as low as 4% and children who had got most *matras* were only 12%.

Table 5.58 Handwriting and Spelling

Handwriting	Number of children	Percentage	Spelling	Number of children	Percentage
easy to read and neat	31	4%	all *matras*	27	4%
mostly legible	191	28%	Most *matras*	84	12%
hard to read	321	46%	Few *matras*	66	10%
(non attempted)	150	22%	no *matras*	30	4%
			(not attempted or not readable)	486	70%
Total	**693**		**Grand Total**	**693**	

5.8.3 Sentence Formation

There were 4 questions that children were expected to answer. Three of these questions were simple and children could answer them in single sentences. They were based on the story that was given. One question was open ended and expected them to think and answer. We note that only 43 that is 6% children were able answer all questions correctly. If we consider Question 4 as more complex and discount for it, then we have 71 (10%) children answering questions correctly.]

Among these 43 children, we find that 29 children were girls or 14 were boys (see table 5.60). We notice that the children who got all their answers correct belonged to OBC, SC and ST communities. Further among these 29 children, 18 children had all their spellings correct and while 7 children had legible hand writing.

Table 5.59 Type of Answers

Answer type	Number of children	Percent of children
complex full sentence	30	4 %
simple full sentence	92	6 %
partial sentence	15	2 %
copied from text	43	3 %
Phrase	21	13 %
single word	18	2 %
Blank	474	68 %
Total	**693**	**100%**

Thus, a majority of children had left a blank and not answered the questions and only 30 children were able to write answers in full complex sentence.

5.8.4 Comprehension

Table 5.60 Social category of children who were able to answer all questions correctly

Social category	Gender		Total
	Girls	Boys	
OBC	19	8	27
SC	3	3	6
ST	6	3	7
Social category not given	1		1
Total	**29**	**14**	**43**

(a) Textbased Questions

23% of the children are able to answer question 1 correctly. 15 % of children are able to answer question 2 correctly. 16% of children are able to answered question 3 correctly.

Table 5.61 Question 1: What was Mili learning? (Mili *kya seekh rahi thi*?)

Quality of the answer	Number of children	Percentage of relevant answers
Copied from text-relevant	43	6 %
Correct own answer	162	23 %
Copied from text-irrelevant	242	35%
Copied the question	48	7%
Wrong answer / Not attempted / irrelevant	198	29%
Total	**693**	

Table 5.62 Question 2: Did Tosiya know how to ride a cycle ? (*kya Tosiya ko cycle chalana aata tha?*)

Quality of the answer	Number of children	% of relevant answer
Copied from text-relevant	4	0.57%
Correct own answer	104	15 %
Copied from text-irrelevant	177	26%
Copied the question	44	6%
Not attempted	142	20%
Wrong answer	57	8%
Illegible or irrelevant	165	24%
Total	**693**	

Table 5.63 Question 3: What did Tosiya teach Mili? (*Tosiya ne Mili ko kya sikhaya*?)

Quality of the answer	Number of children	Percentage of relevant answer
Copied from text-relevant	12	2%
Correct own answer	111	16%
Copied from text-irrelevant	103	15%
Copied the question	41	6%
Not attempted	231	33%
Wrong answer	30	4%
Irrelevant	165	24%
Total	**693**	

(a) Inferential and imaginative elaboration

The answer to this question could not have come from the text. It asked children to think of an imaginary situation. 10% of the children were able to answer this question correctly.

Table 5.64 Question 4: What would Mili have done if Tosiya was not there? (*Tosiya na hoti to Mili kya karti?)*

Quality of the answer	Number of children	% of relevant answer
Copied from text-relevant	1	0.14 %
Correct own answer	70	10 %
Copied from text-irrelevant	68	10%
Copied the question	36	5%
Not attempted	303	44%
Wrong answer	50	7%
Illegible or irrelevant	165	24
Total	**693**	

Thus we see that between 15 to 25% of the children were able to answer direct text based questions. Only 10% were able to write imaginatively going beyond the text.

5.9 Key Findings and Conclusions

Thus we find that in grade 2, about 66% children have knowledge of single-digit numbers and addition, however only about one-third children have knowledge of double-digit numbers. Only about 1/3 children can manage single digit subtraction and about 1/5 children can manage double digit subtraction. Even at grade 3 level, only about 40% children have knowledge of the double digit sequence. A larger percentage of children are successful in double digit addition, but the number is still only about 40% or about 2/5. Of concern is also that a very large proportion of children in both grades did not attempt items at all. The proportion of boys and girls who were able to complete various items was more or less equal, however, proportionate to the size of the respective gender group, a larger proportion of boys than girls were able to answer correctly.

Only 23% of Grade 2 children were reading fluently or at the word level of a text of Grade 1 difficulty. Only about 12-15% children were able to spell using matras, in both grades. Only about 15% children wrote full sentences—complex or simple. Other children who did answer wrote only phrases or words. As many as 64% of children did not attempt to write at all. More boys than girls performed above the minimum acceptable score in Language in both grades 2.

In Grade 3, about 32% of the children had reasonably legible handwriting. 16% of the children had good spelling. About 10% only wrote full sentences while another 17% wrote phrases or partial sentences. About 20% or 1/5 of the children were able to answer comprehension questions that were text-based correctly. 10% or less children could answer comprehension questions that were not direct text-based and involved inference, or critical thinking or were open ended. There was not much change in the proportion of children who were able to do well in language over the two grades and remained at approximately 25% of children.

An alarmingly large proportion of children (between 40 and 60%) did not or could not attempt the language test in either grades 2 or 3. They scored a 'zero' indicating either that they did not attempt or could not get any item correct. In mathematics, the overall proportion of 'zeros' in the test was lower (between 10 and 20% of children). The proportion of children securing a score equal to or above the minimum acceptable score for that grade in language was about 20 to 30% and for mathematics was about 40%. In general the learning of most children had not reached the minimum acceptable score for the relevant grade. A large proportion of children in grade 2 were not showing any learning at all. In the Grade 3 tests, there were a total of 184 children in the entire sample who scored more than 2. Of these, 120 children i.e. about 65% were in the 17 schools identified as schools where at least half or more than half the children performed at a level >2. There were 17 schools in which 90-100% of the children scored less than '1'on the test, out of which in 13 schools children scored a '0'.

Children from the SC communities seemed to be performing the worst, and with the exception of Grade 2 writing where they scored high, their scores in all other subjects and grades was the lowest.

Chapter 6

Is there an MGML effect?

Chapter 6: Is there an MGML Effect?

This chapter looks again at data from various sources to answer the question of whether there is a positive influence of MGML on aspects of education in particular those aspects that the MGML itself aims at influencing positively.

6.1 Delineating Key Claims and Expected Effects

The following are the key claims of how the MGML is better than 'conventional' programmes. For each claim, the relevant empirical dimension is delineated.

1) Education at the child's pace as opposed to child having to 'keep up' to a general pace, or having to miss out because of irregularity.
   - We should therefore expect to find children in a given grade and subject in a range of milestones.
2) Child is the 'active' agent (as opposed to the child being passive and the teacher being the active agent).
   - We should find children moving around the classroom and handling materials fearlessly, without waiting for instructions from the teachers. We should also find children approaching teachers and peers and asking them.
3) Teacher is facilitator and material is central, as opposed to Teacher being didactic.
   - Teachers can be expected to have more positive views with regards educability of children. Teachers can be expected to have better understanding of children's learning.
4) Better retention because of increased interest, as opposed to lack of interest in coming to school leading to irregularity and drop out.
   - We should find higher rates of retention and lower incidences of irregularity.
5) Irregular children and children with special needs are included in and participate in the learning process meaningfully.
   - We should find such children meaningfully engaged with learning and participating in their progress on the ladders.
6) Assured quality of learning: education outcomes—enabling all or most children to achieve required or expected learning.
   - Most children (in a given grade) should be able to complete the milestones for the grade and achieve the related learning for at least mathematics and language.
   - Children should achieve higher levels of learning.

Additionally, the first phase of the implementation of the MGML is widely regarded as having been better from the point of view of involvement and resource support

7) The first phase of the MGML implementation was the most effective and quality of training and monitoring was the highest. In subsequent phases, when the programme

expanded, the quality of implementation, training and monitoring was not adequate.

- Thus we may expect to see better evidence of implementation in phase 1 schools.
- Teachers in phase 1 schools should have better understanding of MGML and also evidence better understanding of children's learning and more positive perceptions of educability.
- We may expect to see better quality of learning outcomes in phase 1 schools.

6.2 What are the pedagogies, (MGML and other pedagogies)?

Keeping in mind the fact that while officially MGML is to be practiced by all schools, and that we were likely to find an attempt to display the practice of MGML for the benefit of the researchers, yet in fact, it may or may not be practiced, evidence regarding the extent of actual practice of MGML was gathered through multiple ways.

Firstly, the presence of artifacts pertaining to the MGML method were noted. Secondly, classrooms were observed and teachers were interviewed with regards their understanding of the method and also cross questioned with regards their classroom practices. Thirdly, the position of children on milestones was noted and children were queried with regards to their knowledge, experience and familiarity with previous cards in the ladder. Each school was separately characterised as having or not having the practice of MGML based on two separate sets of evidences: (A) Having or not having the practice of MGML based on the availability and display of the ladder and reasonably all cards for grades 1&2. (B) classroom observation and interview with teacher to determine if MGML was being practice with understanding, or being practiced in some adapted form or not being practiced or no information.

In 89 schools i.e. as high as 75% of the schools, the necessary MGML materials for the practice ie most cards, availability of the ladder and charts, were not available. In 25 schools, MGML was being practiced with understanding, however in a significant number of these schools (16 of the 25 schools), there wasn't sufficient materials for such a practice. In an additional 20 schools it was being practiced in a modified form. (ie total of about 45%). In 56% of the schools no MGML was being practiced and instead a range of conventional pedagogies were found. 10% of schools had classes which were totally neglected.

Table 6.1

Practice of MGML based on evidence gathered through CR observation and interviews with teachers						
Availability of MGML materials necessary for the practice (cards-ladder-chart)	**Not being practiced**	**Yes: in an adapted form**	**Yes with understanding**	**No information**	**Total**	**% of all schools (120)**
Not sufficient	45	13	16	15	89	74%
Sufficient	11	7	9	4	31	26%
Total	**56**	**20**	**25**	**19**	**120**	**100%**
% of all schools for which information was available for analysis (120-19=101)	56%	20%	25%			

6.2.1 Types of pedagogies

'No MGML' can not be taken as being equivalent to conventional textbook pedagogy. Data was examined also to understand what type of pedagogy characterized those classrooms which were not MGML. The following types of practices were noted:

Table 6.2

	Category			Exemplar field observations
(1)	Conventional teaching with teacher present and effort by the teacher (C+E)	23	19%	One girl standing in front and reading lesson no '14 Khel' in Hindi rest of the children were repeating after her. She read 4 lines. Then other child came and read same lesson and rest of the children repeating after her again. Textbooks were used to teach and children read from it. Children use notebooks and slate to write lessons and also numbers. Children use blackboards to write alphabets as well as they can scribble whatever they want. For all the classes only conventional method is followed. Teacher said there is a timetable for week. Teacher's interaction with children is on one to one basis. Teacher very nicely made children understand their mistakes. He uses Chhattisgarhi in class, keeps moving in class. All the children did common reading. Children of grade 1 and 2 speak Chhattisgarhi in school and upper grade children speak Hindi. Teacher was teaching on one to one basis. Teacher did not carry out any administrative task in school hour. He did not even leave classroom on its own. He was always in the classroom when he was teaching. Most of the children were engaged in the given activities.
(2)	Partial teacher engagement and teaching using conventional methods and partial class neglect (C+PE)	12	10%	This is primary school, three teachers are officially appointed in this school but two of them were absent from last three months. Only one teacher had to look after five classes. When I went in the classroom of grade 1 and 2 children were copying from the board, some of them were drawing pictures in notebooks and teacher was running class to class to make them engage by giving them some writing task.
(3)	Total neglect- class unattended (N)	12	10%	The teacher was not in the classroom through out the day. She was in the office or looking after her baby, going administrative tasks and talking with other teachers. I did not see any kind of teaching happening. The students were noisy, fighting amongst themselves and telling complaints to the teacher. I did not see them doing any work. I checked this several times during the day.
(4)	MGML with Understanding (MGML	25	21%	The class had its own active momentum and there was a quite buzz. The children were busy and engaged so hardly found any distractive or disruptive actions from children. The teacher did not even once have to tell them to pay attention, the children were doing so on their own. The teacher was moving around continuously. She was not just spending time with Samuh 1 or 2 but was all the time going around and supervising what every child was doing. She spent some time with children who were doing math. She showed them how borrowing can be done on top of what they had done. She spoke quietly and patiently with children and in a very matter of fact way, and explained the borrowing concept to the children by using questions and answers. She then gave the chalk back to the children and asked them to continue with the problems. The three girls who were doing it got back to their individual work. When they were writing on the walls, they were largely looking at their own work, so it was parallel activity. Sometimes, the girls stopped, looked at each others work, talked quietly and proceeded with their respective work. The girls were doing different problems and each of their wall spaces carried different but related work. When the teacher moved around, she was also checking if the children were doing their work correctly and then asking them to take the next card. She had a register and a record for daily work on the table with a pencil. She was simultaneously noting it in the record when a child completed a particular milestone. She was also referring to it to tell children what they could do next. Sometimes there was a small queue of children waiting their turn to talk to the teacher, cards and chalk in their hand.

	Category			Exemplar field observations
(5)	MGML modified and adapted (MGML+MA)	20	17	In the classroom there were clearly two different sections. On the left side class 2 children roughly in 3 groups and on the right side class one children, in 3 groups. One group in class one 1 seemed larger than others with 12 children, 5 in another and 7 in the third. There were group charts hung on the wall. Teacher "assigned" a card to each child or the group. Each child was then also asked to collect a card from the tray. He would dictate the number and the logo. It was not clear if he had kept a milestone record (and later realised there was no milestone record for class 1 children). They were not using the ladder chart. Sometimes birds like *hans* and duck or *cheel* and something else were confusing, basically it looked as if they were not trained into that whole lingo. There were frequent visit from individual child to the teacher asking questions. Teacher was trying to give individual instructions on various things by looking at the card, or verifying if the child has understood what they had completed in the card. Some child had just written his name on the slate and showed it to the teacher. After sometime a girl got her name written by a boy and then took it to the teacher and got it verified as well! Of course the teacher would not have noted that another child was copying things on her slate because he was busy with his own assignments with each child. Then he moved to the group one where there were about 12 children and read out the story. Now the group grew larger, after listening to the story from the book some children just walked away from the group. He was interrupted even as he was reading the story with request for loo as well as verification of child's writing. There were no milestone record maintained and displayed on the classroom. There was a chart for class 2 children. And interestingly milestone records of previous years were also below them.
(6)	No information on what kind of teaching is happening in the classroom if not MGML (NI)	9	8%	
(7)	No information on the classroom process/pedagogy	19	16%	
	Total	120	100%	

What we describe as 'conventional' cannot be taken as a 'textbook based classroom'. On the contrary, although textbooks were widely available, teachers did not in fact follow what textbooks were asking them to do. Rather they were following conventional forms of teaching, using the textbook in conventional ways such as making children repeat the text, and question-and-answers, and write numbers, and copy from the black-board. In the early grades, especially in grade 1, children were made to do a lot of copying from the blackboard of the *varnamala, barakhadi* and numbers 1 to 100. As has been explained in earlier chapter 4, in MGML classrooms also children often were copying the card, not necessarily following its instructions and doing what it wanted them to do.

MGML was being practiced with understanding in 21% of the classrooms observed. As can be seen from the table above, 28% of schools were found practicing conventional pedagogies and about 17% followed the MGML with adaptations and modifications and mixing conventional with the MGML methods. In 10% of the classrooms, teachers were negligent. We did not have information from 24% of classrooms.

6.2.2 Implications for comparisons and interpretations

The important implication of this is with regards making comparisons. There were no explicitly designated 'non MGML' schools as the official position was that all schools follow MGML. Hence in principle, the data presented and discussed in Chapter 5 could be presented and read as MGML effects/contribution to children's learning. However, from our visit to the field we found that in many places in fact there were a variety of practices that obtained, both conventional, MGML and 'negligence' or no practice. Thus the comparisons that we make cannot be read as experimental or quasi-experimental in the true sense and can only be taken as indicative of possible attributions to the programme material and methodology.

It would be unreasonable to compare the scores of children in schools classified as MGML-U or MA with all non MGML schools as the former group are schools where teachers were involved and invested while the latter includes schools where teachers did make an effort and those that did not.

(i) For the purpose of comparisons, only schools identified as C+E, C+PE, MGML-U and MGML-MA have been chosen, leaving out those schools which were identified as N or NI.

(ii) The comparison is of MGML with conventional teaching and NOT MGML with textbook method—as the textbook prescribed methods were in fact not being followed (as explained earlier).

6.2.3 Comparisons being made: Children and School comparisons

Children's achievements across all schools according to programme/pedagogic type as explained in 6.2.2 have been made. In addition, as was presented in 5.4 an index of 'performance of a school' being defined as the percentage of children who achieve above the minimum acceptable grade for the subject has also been used to make comparisons across schools according to programme type. This has been restricted to the class 3 achievement test findings alone as they involved test of all the children of the class, while class 2 involved sampling 4 children per school.

Table 6.3: Overview of Comparisons

Unit	Measurement	Programme types being compared				Tests
Child	Grade 2 language (writing) score	MGML + U	MGML + MA	C+E	C+PE	T-test
	Grade 2 mathematics score	MGML + U	MGML + MA	C+E	C+PE	
	Grade 3 Language score	MGML + U	MGML + MA	C+E	C+PE	
School	% of children achieving above the minimum acceptable score in Language	MGML(U and A)		C (E and PE)		Chi-2 Test
	% of children achieving above minimum acceptable score in Mathematics	MGML(U and A)		C (E and PE)		

6.2.4 Teacher Characteristics

Teacher characteristics in particular their attitudes towards children, their knowledge of the MGML method itself, and their professional knowledge and understanding of

children's learning was also regarded as important to assess and relate to children's learning achievement. It was regarded that any 'method' works along with teachers and cannot per se work 'inspite of' or 'independently of' them. [Though one could and should independently investigate the popular belief expressed by teachers and implied by some administrators that the MGML constitutes a 'teacher proof' method. These characteristics were regarded as aspects of the learning environment of the school and thus constitute the contribution of the school to children's learning, as opposed to home variables/background variables and attributes of the children. There were questions in the detailed interviews with teachers, to elicit information on these matters. These were interpreted and coded for teachers' perceptions regarding educability of children, teachers knowledge and understanding of the MGML method, Teachers professional knowledge and understanding regarding children's learning. For the purpose of the analysis of this chapter, teachers' perception of educability has been chosen for comparison.

Educability: the perception of the ability of children to respond to the teacher efforts/school curriculum based on views regarding caste and gender or poverty (positive and believing in children's ability to learn), neutral or indifferent, or negative (with low opinion on the ability of children to learn). Teacher Professional Knowledge and Understanding of Learning are discussed in Chapter 4). These comparisons are presented later using descriptive statistics without any claims of statistical significance of findings, but as indicative of trends.

Comparisons

Comparisons to investigate what can be attributed to the MGML are made in response to the questions listed.

6.3 Classroom environment and organization of learning

6.3.1 Catering to a range of learning levels and pace

Q1. Within each grade are children on a range of milestones? Is this more in areas where teachers reported/we found more incidence of children's absence and irregularity?

In the 14 schools, out of 25 schools where MGML was being practiced and where we were able to record the range of milestones that children were positioned in, we found that in over 50% of the schools (8 schools), the range of milestones was narrow and in only 2 schools the range was seen to be wide. In one school it ranged from Milestone 7 to 13 for Hindi and from Milestone 8 to 15 in Math. In the other school, it ranged from Milestone 9 to 17 for Hindi and from 1 to 21 for Math. This was applicable for Grade 2 students.

6.3.2 Agency of Children

Q2. Do children in classes where MGML is being practiced move around fearlessly and actively approaching and talking to their teachers and their peers? Are children in non MGML classes 'passive' in comparison?

The agency of children, in terms of their initiative, motivation, interest and confidence was found to be generally higher in schools where MGML was being practiced compared to where it was not. Our data from class observations show how children were getting up and going to pick the right cards, seeking material (like *pasa*, straws etc.) and guidance from teachers (for instance about how to do math problems correctly). In non-MGML classrooms, we found greater propensity among children to remain passive recipients, with the teacher sometimes not even having an eye contact with the children. Even in these classrooms, the initiative taken by the children was mainly to get their work examined by the teacher, which she often did by placing a tick-mark without reading the work. We rarely found children asking questions to the teacher in non-MGML classes. On the other hand, in MGML classes the children did approach the teacher for getting explanations about activities to be done for the particular cards. The overall classroom ambience was positive and allowed children to move around fearlessly in MGML classrooms unlike the non-MGML classrooms where they were regimented and under the control of the teacher.

6.3.3 Teachers' Views on Educability and Understanding of Learning (also with regard to the phase of programme)

Q3. Do teachers practicing MGML have more positive perceptions of educability of children and do teachers who practice MGML have better understanding of children's learning? Are there differences in these perceptions with regards to phases of implementation of the programme?

Table 6.4

T-Educability-perception									
Teaching type	**Positive**		**Neutral**		**Negative**		**NI**		**Total**
MGML-U	7	28%	3	12%	4	16%	11	44%	25
MGML-MA	1	5%	1	5%	5	25%	13	65%	20
C+E	2	10%	2	10%	11	52%	6	29%	21
C+PE		0%	1	8%	7	58%	4	33%	12
N	1	8%		0%	8	67%	3	25%	12
NI		0%		0%	4	13%	26	87%	30
Total	**11**	**9%**	**7**	**6%**	**39**	**33%**	**63**	**53%**	**120**

We were able to code the data for perceptions on educability for only about half the teachers. A large proportion of teachers practicing the MGML could not be coded (44% and 65%). Relatively higher proportion of teachers practicing MGML had positive views on educability of their children (28%) while relatively higher proportion of teachers using conventional methods (52% and 58%) had negative views on the children's educability. We also note that the highest proportion of negative views were among the teachers who were also negligent (67%).

On the whole a fairly large proportion of teachers (40%) had poor knowledge of children's learning nor were they very reflective on their own teaching and children's learning. A higher proportion of teachers practicing MGML were fairly reflective (36% and 20%) a reasonably high proportion of teachers using conventional methods were either high or average (14% and 38%) in their reflections on children's learning and their own practice. On the whole a

higher proportion of teachers using adapted methods in MGML or making partial efforts in conventional teaching were reflective and had understanding of childrens learning. Almost none of the teachers who were negligent demonstrated any reflection or understanding of children's learning.

Table 6.5

T-understanding of children's learning and reflections on teaching									
Teaching type	**Good**		**Average**		**Poor**		**NI**		**Total**
MGML-U	9	36%	5	20%	8	32%	3	12%	25
MGML-MA	1	5%	4	20%	8	40%	7	35%	20
C+E	3	14%	8	38%	8	38%	2	10%	21
C+PE		0%	1	8%	10	83%	1	8%	12
N		0%	1	8%	11	92%		0%	12
NI		0%	4	13%	4	13%	22	73%	30
Total	**13**	**11%**	**23**	**19%**	**48**	**40%**	**35**	**29%**	**120**

Table 6.6

Understanding of MGML									
Teaching type	**Good**		**Average**		**Poor**		**NI**		**Total**
MGML-U	10	40%	7	28%	5	20%	3	12%	25
MGML-MA	4	20%	5	25%	10	50%	1	5%	20
C+E	7	33%	5	24%	9	43%		0%	21
C+PE	2	17%	1	8%	8	67%	1	8%	12
N	3	25%	2	17%	7	58%		0%	12
NI		0%	2	7%	9	30%	19	63%	30
Total	**26**	**22%**	**22**	**18%**	**48**	**40%**	**24**	**20%**	**120**

With regards their understanding of the MGML itself, we found that a larger proportion of teachers who practiced MGML also had good to average understanding of the method. A fairly large proportion of teachers using adapted methods had poor understanding of the method (50%). About half the teachers who practiced the conventional methods had understanding of MGML that was good or average. On the whole a large proportion of all teachers (40%) exhibited poor understanding of the method. This could be a contributing factor to the limited extent of practice that we found and also to the willingness to give up the method given the ambivalent signals from the State. However, it may also be noted that a fairly large proportion of teachers who were negligent or only partially involved in their teaching using conventional methods, also had a good understanding of the MGML method. The knowledge and understanding of the method does not seem to have contributed to their willingness to teach.

Q4. Do those teachers who were trained in the first phase of MGML training have more positive views on educability and better understanding of children's learning?

We did not note any greater proportion of teachers with positive views from the first phase of the programme schools.

6.3.4 Retention and Drop out

Q5. Is there better retention and less drop out in those schools where MGML is being practiced?

We were not able to answer this question as data of retention over years was not available in any reliable way for us to check and answer this question. Data on key indicators available over years (see Section 1.3) actually indicates a drop in Net Enrolment Ratio and increase in children who are out of school from 2006-07 to 2011-12. However, it must be noted that this does not tally with the latest figures released by the SSA as part of the Annual Work Plan and Budget (2013).

Q6. Is there report of lower absence/irregularity in those schools where MGML is being practiced?

Table 6.7

Relative pupil absence and irregularity											
Teaching type	**Large**		**Medium**		**Small**		**Very small**		**N I**		**Total**
MGML-U		0%	1	4%	8	32%	15	60%	1	4%	25
MGML-MA		0%	1	5%	13	65%	5	25%	1	5%	20
C+E		0%	6	29%	6	29%	9	43%		0%	21
C+PE		0%	2	17%	4	33%	5	42%	1	8%	12
N		0%	2	17%	4	33%	6	50%		0%	12
NI	2	7%	2	7%	19	63%	7	23%		0%	30
Total	2	2%	14	12%	54	45%	47	39%	3	3%	120

A relatively higher proportion of MGML schools reported small or very small pupil absence (60%. 65% of schools). A higher proportion of schools with conventional teaching reported medium levels of absence and irregularity.

6.3.5 Meaningful inclusion of irregular children and children with special needs

Q7. In the schools where irregularity is reported is there involvement and engagement of all children in learning in MGML classes as opposed to other pedagogies?

The study brought out two categories of 'irregularity' among children; one was the enrolled children who had not attended school for extended durations and second, those who were intermittently irregular. Our data gathered through class observations show that in classrooms where teaching was happening, either MGML or through conventional system, intermittently irregular children were also able to participate. In schools where MGML was not being followed as per the design, children were still able to get hold of a card and carry out some activity. On the other hand, where poor conventional teaching was being carried out, participation of children who were irregular was limited. Our interviews with the teachers however indicated that irregularity of children was a big challenge for implementation of MGML because the children had to be brought again to the level of their milestone and some of them did not remember anything of what they had done. Thus, data from teacher interviews shows that the

claim of MGML serving the specific needs of irregular children was not endorsed by the teachers who in fact believed that it was a problem to implement MGML with irregular children.

Our data gathered through class observations and teacher interviews indicated that children with special needs were not able to fully and meaningfully participate in the MGML programme. Teachers told us that neither did MGML not offer anything specific for children with disabilities nor were the teachers adequately trained to teach children with disabilities using the MGML approach. Although some of the teachers had attended trainings in Inclusive Education, there was a lack of confidence and competence expressed by teachers in handling this group of children. This was seen in both – MGML as well as non-MGML classrooms.

6.3.6 Better implementation in phase I

Q8. Are more of the Phase 1 classes/schools equipped with sufficient MGML materials?

A larger proportion of schools from 2009 onwards reported insufficient materiels.

6.4 Quality of Learning/Children's Learning Achievement

Q 9. Do children achieve more in mathematics and language in the MGML programme as compared to other pedagogies?

Q10. Are schools which follow the MGML programmes better able to ensure that most children achieve as compared to other schools? Do schools following the MGML programme perform better?

Q11. Are perceptions of educability of the teacher related to children's achievement/ schools performance?

As has been explained in the commentary in section 6.2.3 the comparisons in this section are not between MGML versus 'textbook', but the MGML and conventional teaching, and related variations. Schools where no practice was observed and which have been classified as 'negligent' have been excluded.

6.4.1 Average scores of children programme/pedagogy wise

Table 6.9

			MGML-U	MGML-MA	C-E	C-PE
Grade 2	Language	N	46	32	37	31
		Avg	4.1	2.1	2.32	2.1
	Mathematics	N	48	32	39	32
		Avg	2.88	2.53	2.08	2.5
Grade 3	Language	N	85	130	113	49
		Avg	1.52	1.83	1.46	1.29
	Mathematics	N	85	139	348	48
		Avg	3.79	4	3.84	4.35

6.4.2 Grade2: Language (writing)

The performance of children in the MGML programme (practiced with understanding or with modifications) is significantly better than the performance of children learning with conventional pedagogy (where teacher make of partial effort).

The performance of children in the MGML programme practiced with understanding, (and only with understanding and not MGML per se) is significantly higher than that of other groups of children.

Table 6.10: Average schools for Grade 2 language.

	MGML-U	MGML-MA	C-E	C-PE	Total
N	46	32	37	31	**178**
Avg	4.1	2.1	2.32	2.1	
Average	3.31		2.22		

Tale 6.11

T test Hypothesis for Grade 2 language	P value	Significance
(1) The performance of the MGML group children will be better than the performance of the C group children.	0.02	Significant at the 5% level
(2) The performance of MGML-U group children will be better than the performance of the C-E group children	0.003	Significant at the 1% level
(3) The performance of MGML-MA group children will be better than the performance of the C-E group children	0.41	not significant at the 10% level
(4) The performance of the C-E group will be better than the performance of the C-PE group	0.38	not significant at the 10% level

6.4.3 Grade 2-mathematics

T-test suggests that MGML programme children perform better as compared to children studying in conventional pedagogies at the 10% level. Children studying in the MGML programme where the teacher practices with understanding perform better than children in conventional pedagogies where teachers are making an effort. However, in the case of MGML with modified practices, the performance of children is not significantly better.

Table 6.12: Average scores for Grade 2 Mathematics

	MGML	Adapted MGML	C+E	C+PE	Total
N	48	32	39	32	**188**
Average	2.88	2.53	2.08	2.5	
Average	2.73		2.27		

Table 6.13

T test Hypothesis for Grade 2 Mathematics	P value	
(1) The performance of the MGML group children will be better than the performance of the C group children.	.07	Significant at the 10% level
(2) The performance of MGML-U group children will be better than the performance of the C-E group children	0.033	Significant at the 5% level
(3) The performance of MGML-MA group children will be better than the performance of the C-E groupr children	0.16	not significant at the 10% level
(4) The performance of the C-E group will be better than the performance of the C-PE group	0.18	not significant at the 10% level

6.4.4 Grade3-Language

The differences in performances of children in the various programme types are not significant at the 10% level.

Table 6.14: Average Scores for Grade 3 Language

	MGML	adapted MGML	C+E	C+PE	Total
N	85	130	113	49	**377**
Average	1.52	1.83	1.46	1.29	
Average	1.7		1.43		

Table 6.15

T test Hypothesis Grade 3 language	P values	
(1) The performance of the MGML group children will be better than the performance of the C group children.	0.13	Not significant at the 10% level
(2) The performance of MGML-U group children will be better than the performance of the C-E group children.	0.43	Not significant at the 10% level
(3) The performance of MGML-MA group children will be better than the performance of the C-E group children.	0.12	Not significant at the 10% level

6.4.5 Grade 3 Mathematics

The differences in the performance of children in the various programme types are not significant at the 10% level.

Table 6.16: Average scores for Grade 3 Mathematics

	MGML	Adapted MGML	C+E	C+PE
N	85	139	348	48
Average	3.79	4	3.84	4.35
Average	3.9		3.92	

Table 6.17

T-test Hypothesis for Grade 3 mathematics	P value	significance
The performance of the MGML group (U&MA) children will be better than the performance of the C (E&PE)group children.	0.50	Not significant at the 10% level
(1) The performance of MGML-U group children will be better than the performance of the C+E group children	0.44	Not significant at the 10% level
(2) The performance of MGML-MA group children will be better than the performance of the C+E group children	0.26	Not significant at the 10% level

6.4.6 School Performance

Grade 3 results were analysed to understand characteristics of schools where children were achieving the minimum results expected in the tests.

A 'performing school' has been defined as a school where at least 50% or more children achieve the minimum acceptable score or more. The schools which were 'performing in both subjects', or performing in only one of the subjects (language or mathematics) were identified.

4 schools were performing in both subjects

13 schools were performing in only language

2 schools were performing in only mathematics

Thus 19 schools were 'performing' in both or either subject.

The characteristics of these schools were noted. A larger proportion of these schools were in areas which have medium or high literacy. The schools were all small or very small. More importantly these were all schools which reported small to very small extent of student irregularity. 12 of the 19 schools were identified has not having sufficient materials to carry out MGML. In the 4 schools which were performing in both subject areas, adapted or modified forms of MGML were found being practiced by the teachers in grade 1 and 2. The pedagogy in 4 of these 19 schools was 'negligent' with the teacher absent or missing or inattentive. In 3 schools there was conventional pedagogy.

Schools where none of the children scored above the minimum acceptable score for the subject area were identified as 'not performing'. 8 schools were not performing in both language and mathematics. They were all located in low to medium literacy areas. They were small or very small schools. 6 of these 8 schools did not have sufficient MGML materials. In only 2 schools was MGML being practiced with understanding. 3 schools had a mix of ST and OBC populations, 3 schools were ST and 2 had all caste groups. Additionally 2 schools were 'not performing' in language. These two schools shared the characteristics described earlier; here teachers were following modified MGML pedagogies. As many as 38 schools were not performing in mathematics. The average scores of the schools was between 0.71 to 3.90, indicating that there were children who were able to achieve some scores, still as not even 50% of children had the minimum score of '5', they were classified as 'not performing'. These 38 schools were large to small, with a range of absence levels and in communities with

various levels of literacy and caste group backgrounds. In 9 of these schools, MGML was being followed and in 19 schools, MGML was not being followed.

Table 6.18: Profile of performing schools

school code	PERFORMING SCHOOLS						Teacher perception of educability	type of pedagogy in grade 1/2	Language				Mathematics			
	year of establishment	community profile	literacy level	sch size	relative absence	MGML infrastructure in grade 1/2	Recommended School		N	School average	SD	% proportion of children in school >min acc. Score '3'	N	Average	SD	% proportion of children>minacc score '5'
	Performing schools in language and mathematics: 4 (more than 50% of children achieving more than minimum acceptable grade in both subjects)															
103	1996	obc sc st	high	v small	v small	insufficient	Y	NI	MGML+MA	6	5.50	2.88	83%	6	4.33	3.61	50%
104	1962	st obc	Medium	small	small	sufficient	Y	NI	MGML+MA	3	3.00	2.65	67%	3	4.67	4.04	67%
112	1971	all	Medium	small	small	sufficient	N	NI	MGML+MA	10	3.70	3.65	50%	10	5.80	3.26	80%
71	1932	ST	Medium	small	small	insufficient		Pos	MGML+MA	13	3.38	3.52	54%	13	4.23	2.45	50%
	Performing schools only in language :13 (more than 50% of children achieveming more than minimum acceptable grade in only language but not in mathematics)															
10	1973	st obc	high	small	small	insufficient	N	Pos	negligent	6	3.33	1.37	83%	6	5.67	1.75	0%
21	1981	obc sc st	Medium	v small	v small	insufficient	Y	Neg	negligent	4	2.75	3.77	50%	4	3.25	2.63	0%
22	1993	st obc	Medium	small	v small	insufficient	Y	Neu	C+PE	6	2.00	2.00	50%	6	7.00	3.22	0%
30	2005	st obc	Medium	small	small	insufficient	N	Neg	NI	12	3.00	3.07	50%	12	8.08	2.54	0%
37	1996	all	Medium	small	v small	insufficient	N	NI	negligent	1	7.00		100%	1	6.00		0%
41	1997	all	low	small	v small	insufficient	N	NI	negligent	10	3.10	3.00	60%	10	2.60	2.76	0%
54	1996	ST	low	v small	v small	sufficient	Y	NI	C+PE	6	6.33	1.03	100%	6	8.67	0.82	0%
63	1963	ST	high	v small	v small	sufficient	Y	N	C+E				67%	3	2.00	1.00	0%
82	2006	obc sc	Medium	v small	v small	sufficient	Y	NI	NI	2	1.50	2.12	50%	4	3.50	3.32	8%
83	1995	st obc	high	v small	v small	insufficient	Y	NI	MGML+U	6	2.17	2.79	50%	6	2.00	2.10	0%
87	1987	obc sc	Medium	small	small	insufficient	N	NI	NI	16	2.88	2.60	63%	16	6.00	2.88	0%
95	1956	obc sc	Medium	small	small	insufficient	Y	NI	NI	14	2.86	2.88	50%	14	7.14	3.51	0%
101	2007	obc sc st	low	v small	v small	sufficient	N	Neg	NI	2	6.00	0.00	100%	2	9.50	0.71	0%
	Performing schools only in mathematics :2 (more than 50% of children achieveming more than minimum acceptable grade in only mathematics but not in language)															
115	1964	obc sc	low	small	v small	sufficient	N	NI	MGML+MA	4	1.00	2.00	25%	4	6.00	1.83	75%
3	1975	SC	high	small	small	insufficient	N	NI	MGML+MA	12	0.25	0.87	8%	12	4.58	2.11	58%

Table 6.19: Grade 3 Mathematics

School Code	Based on CR and T int	Based on MGML artifacts	Numbers of (and %) of children with scores as indicated															
			did not attempt	0	Éffective '0	%=0	1	2	% <=2	%>2	3	4	5	6	7	8	% (5-8)	Grand Total
10	no MGML	Not sufficient				0%		1	17%	83%	4			1			17%	6
21	no MGML	Not sufficient	2		2	50%			50%	50%	1					1	25%	4
22	no MGML	Not sufficient		2	2	33%	1		50%	50%	2		1				17%	6
30	no MGML	Not sufficient	5		5	42%		1	50%	50%	1	1		1	3		33%	12
37	no MGML	Not sufficient				0%			0%	100%					1		100%	1
41	no MGML	Not sufficient	1	3	4	40%			40%	60%	2		1	1	2		40%	10
54	no MGML	Yes sufficient				0%			0%	100%			1	3	1	1	100%	6
63	no MGML	Yes sufficient	1		1	33%			33%	67%		1			1		33%	3
82	no MGML	Yes sufficient		1	1	50%			50%	50%	1						0%	2
87	no MGML	Not sufficient	1	5	6	38%			38%	63%	4	1	1	3	1		31%	16
83	yes MGML	Not sufficient		3	3	50%			50%	50%	2				1		17%	6
101	yes MGML	Yes sufficient				0%			0%	100%				2			100%	2
71	adapted MGML	Not sufficient		6	6	46%			46%	54%		2	1		1	3	38%	13
103	adapted MGML	Not sufficient				0%	1		17%	83%	1			1	1	2	67%	6
104	adapted MGML	Yes sufficient	1		1	33%			33%	67%		1	1				33%	3
112	adapted MGML	Yes sufficient	2	2	4	40%		1	50%	50%			1	1		3	50%	10
95	no information	Not sufficient	2	2	4	29%	3		50%	50%	1	3			2	1	21%	14

A detailed analysis of the performance in Mathematics was carried out. There were a total of 184 children in the entire sample who scored>2. Of these, 120 children i.e. about 65% were in the 17 schools identified as schools where at least half or more than half the children performed at a level >2. There were 17 schools in which 90-100% of the children scored less than '1' on the test., out of which in 13 schools children scored a '0'.

Of the 17 schools that seem to be 'performing', 11 did not practice MGML, 2 did practice MGML and in the case of 4 an adaptation of MGML was practiced. Again, 11 did not seem to be MGML based on artifactual evidence while 6 were MGML schools based on artifactual evidence.

6.4.7 Comparing School Effects

In each of the 59 schools in which Grade 3 assessments were carried out, the proportion of children who performed above the minimum acceptable level for mathematics (5) and for language (3) was computed. Schools were segregated on the basis of this proportion into performance bands.

High: above 61% children scoring above the minimum acceptable level.

Medium: between 31 and 60% children above the minimum acceptable level

Low: less than 30% children above the minimum acceptable level

In Mathematics, 'very low' band was included for schools where no child, ie 0%, scored above the minimum acceptable level for that grade.

Chi square test was used to examine if there was any relationship between programme type and school performance in mathematics and in language. No significant relationship was seen.

Table 6.20: Chi square test for comparisons of performance in language

Language							
	MGML Pedagogies		Conventional pedagogies		Negligent		Row totals
	value	expected value	value	expected value	value	expected value	
performing (>50% above min acc level)	7	7.81	3	4.56	4	1.63	14
not performing (<50% above min acc level)	11	10.60	8	6.19	0	2.21	19
No child above the min acc level	6	5.58	3	3.26	1	1.16	10
column totals	24		14		5		43
Chi test p value	0.55						

Table 6.21: Chi square test for comparisons of performance in Mathematics

Mathematics							
	MGML Pedagogies		Conventional pedagogies		Negligent		Row totals
	value	expected value	value	expected value	value	expected value	
performing (>50% above min acc level)	5	2.74	0	1.67	0	0.60	5
not performing (<50% above min acc level)	4	3.29	2	2.00	0	0.71	6
No child above the min acc level	14	16.98	12	10.33	5	3.69	31
column totals	23		14		5		42
Chi test p value:	0.62						

Table 6.22: Frequency of schools according to programme type and performance type base on class 3 Mathematics performance

School performance type		MGML	Expected value	mod MGML	Expected value	No MGML	Expected value	No Information	Expected value	Row totals
very low	Where 0% children achieved above the minimum acceptable level in mathematics	12	9.56		9.56	27	21.5	8	6.37	47
low	where between 1 and 30% children achieved above the minimum acceptable level in mathematics grade 3		0.41	2	0.41		0.92		0.27	2
medium	between 31 and 60% children achieved above the minimum acceptable level		1.42	7	1.42		3.2		0.95	7
high	where between 61 and 100% children achieved above the minimum acceptable level in mathematics grade 3		0.61	3	0.61		1.37		0.41	3
	Column totals	12		12		27		8		59

Table 6.23: Frequency of schools according to programme type and performance type base on class 3 language performance

Table 6.23.. Frequency of schools according to programme type and performance type based on Class 3 language peformance

School performance type		MGML	Expected value	mod MGML	Expected value	No MGML	Expected value	No Information	Expected value	Row totals
low	Between 0-30% children achieving above the minimum acceptable level in language in grade 3	6	5.9	6	5.9	12	14.3	5	3.9	29
medium	Between 31 to 60% children achieving above the minimum language in grade 3	4	4.3	4	4.3	10	10.3	3	2.8	21
high	More than 60% children achieving above the minimum acceptable level in language in grade 3	2	1.8	2	1.8	5	4.4	0	1.2	9
Column totals	Column Totals	12		12		27		8		59

6.4.8 Summary of comparisons

In conclusion, in grade 2 there seemed to be an MGML effect in the performance of children in mathematics and in language. In the case of language there was also an effect of modified and adapted MGML programme/pedagogies/curriculum. In language, the effect was significant at the 1% and 5% levels. In mathematics, the difference was significant at the 5% and 10% levels

In the case of grade III, there was no difference in performance of children in the MGML, modified MGML and conventional pedagogy classes.

There was also no relationship or association between the programme type and the performance of schools.

In general, it should be noted that irrespective of MGML or modified or conventional approach, performance of children on the whole was low. In mathematics, in a majority of schools there were no children who performed at the minimum level expected at their grade.

Chapter 7

Conclusions and Recommendations

Chapter 7: Conclusions and Recommendations

7.1 Main Findings

This evaluation study of MGML programme in Chhattisgarh leads us to the following findings and conclusions which we present along with some related recommendations:

1. Almost half of the schools (48%) were not practicing MGML. Only 21% of the schools were practicing the method as per the expected design and 17% of the schools had adapted the approach or had mixed it with other pedagogies. Key deficiencies contributing to this include: (a) inadequate or poor quality training for teachers (b) insufficient basic material being provided (c) weak or absent resource and monitoring support (d) ambiguous position of the State vis a vis the programme leading to a widespread perception among teachers that the Department is not serious about MGML programme and it is going to close down.

   Schools face several constraints – lack of adequate teachers, small schools, multigraded classroom situations, lack of basic teaching learning material (even the non-MGML type).

   The method is heavily dependent on adequate materials, qualified and trained teachers (with both pre-service teacher qualifications and trained in the method) and resource support and monitoring, both initially and in a sustained manner over a long period. It seems that the state undertook the expansion of the system without adequately preparing for these matters.

2. A majority of the teachers were Shiksha Karmis, young and with limited experience. They were very upset about their employment conditions, given their low pay and uncertainty of employment, with high expectations of work. Our study was conducted just prior to their going on strike, leading to schools be closed for about a month.

3. Our data also shows that number of schools did try using MGML at some point of time. While there was a government order that textbooks will be used in grades III and IV instead of the MGML, about a year ago, from the beginning of 2012, a majority of schools decided not to pursue MGML in classes I and II also, inspite of there being no clear order to this effect. On the other hand, there was a great deal of official attention being paid to implementing CCE, and many teachers took the view that the CCE was not compatible with MGML. It is essential that the state take a long term view on any matter of curriculum innovation and take decisions regarding expansion and implementation only after due deliberation on both the educational merits and feasibility of implementation. Once a decision is taken, there is need to remain committed to the approach over an adequately long period of at least four to

five years, and reviewing the same, before making changes with regards its design and of course also on the matter of continuity. The relationship to each other of various programmes being introduced is also essential to deliberate upon and to clarify.

3. Athough every school had at least one teacher trained in MGML, the quality of this training and its absorption by the teachers was patchy. We found that only 22% of the teachers interviewed had a sound understanding of the MGML method, its philosophy, its design and use. 20% of the teachers had an average understanding of MGML while 38% had poor understanding of the MGML method. We also found that teachers also looked at MGML in a rigid manner. They were of the view that it cannot be used along with notebooks, or there are no whole class activities or 'teaching' of even *avdharna* (concept) cards. On the other hand there were several teachers who used the materials as teaching aids along with textbooks.

4. In schools where MGML was practiced, the children were seen to be engaged and working on their own. They were also seen to be taking initiative and moving around the room and talking to each other. The rigid structure which is commonly associated with the conventional textbook based classroom where children are seated in rows and expected to remain silent and wait for instructions was not seen. This was a definite improvement in classroom culture.

   In 18% of the schools, we found conventional teaching being done by the teachers. By and large where textbooks were being used, teaching was not following the new textbooks and teaching was uninteresting, repetitive, and non-interactive. The contents and activities recommended by the textbooks were not being followed. A large number of teachers did not appear to be trained to use the new textbooks. We found that 38% of the teachers showed poor professional understanding about learning and pedagogies while only 12% had a good understanding. There was hardly was there any resource support and monitoring with regarding the textbooks usage. A majority of children were only seen doing chorus repetition and copying alphabet and numbers from the blackboard, especially in grades 1 and 2. It was only grade 3 onwards that there was a little more evidence of the 'lessons' of the book being covered.

   There were also schools where there was neither MGML nor textbook-teaching that was seen to be taking place and classes were unattended. This was found in 10% of the schools. We also found partial teacher engagement and partial class neglect in another 10% of the schools.

   In the MGML classes as compared to classrooms with conventional teaching, Children are moving freely, taking initiative and are busy and self directed. The classroom is not fearful, nor are children simply waiting for the teacher. However, these are

classrooms that have been engendered by the active work of the teacher. In a majority of the classrooms which have the materials, but where teachers are not involved, children are simply waiting for something to happen. In other words, the materials and organization without the teacher's investment does not engender the desirable classroom environment.

The classroom climate engendered by the MGML method is of value and needs to be retained as a general feature of any classroom, regardless of the 'method' that is adopted. However, not in all the cases were teachers found to be very engaged with what was taking place, and while children were busy and moving about there is a question regarding the quality and worthwhileness of what they were doing, as discussed in the point that follows.

5. With regards the actual nature of work being pursued by the children in MGML classrooms, it was also seen that by and large most children in a class were in the same milestone broadly and there was little actual evidence of a range of milestone/ card numbers, suggesting independent pacing as we may expect to be engendered through the method was not obtaining in practice. Children were found to be copying the card mechanically, not particularly engaging with the contents of the cards. The absence of grades 3 and 4 children very likely affected the functioning of the method itself as these peers were no longer available to act as supporting more capable peers/ monitors/'surrogate teachers' in various groups, in order to enable a more meaningful engagement with the cards for the younger children. Teachers also felt that the method was difficult to use with grade I children who needed a lot more continuous active regulation by the teacher. As mentioned above, some teachers were adapting both the MGML method and other whole class activities in order to focus on children's learning.

   Although the method promises remediation as well as conceptual learning, these require considerable effort from teachers and the method in its current design does not adequately address the effort required here. The MGML classrooms do not seem to be designed to bring the whole class together in common learning activities regardless of the grade that children are studying in. On the other hand the textbook based method rules out adaptation to situations where children are studying in different grade levels. The Approach does not adequately conceptualize pedagogic work of teachers.

   The method cannot work if it is restricted to grades 1 and 2 alone. It also cannot function on its own, without an adequately prepared and involved teacher. There is need to dwell on the role of teachers in this method if it is to be used towards meaningful learning. It would be inaccurate to believe that the method is teacher-proof and can function on 'auto-pilot' by children themselves in interaction with the materials, even if a teacher is irregular, disinterested or untrained.

6. Even in schools where the method was being practiced well or where the teachers were engaged and adapting the method and textbook to teach, teachers seemed to think that MGML was provided to them as a solution for 'rural children' who suffered from inherent educational deficiencies. Perceptions regarding problems that children faced in learning on account of poverty, lack of parental interest and 'educability' were widespread among teachers and one-third of the teachers had negative attitudes towards children's educability. Irregularity of children and small class size were seen as issues that came in the way of effective implementation of the MGML method. In general in both MGML and non MGML classes, the needs of children who were irregular and children were special needs were not addressed and teachers also did not seem to be of the view that they could be addressed through the MGML materials. Teachers also seemed to have little knowledge of or acknowledgement of the multi-lingual context and that children's home language would be different from both Chhattisgarhi and standard Hindi. The materials themselves had little acknowledgement of tribal contexts and multilingualism.

7. There is an enormous amount of record keeping involved in MGML. It is not clear if the extent of record keeping involved is actually productive or useful. The details required to be noted on a daily basis also lead to the real possibility of inadequate detail actually being noted. This time consuming and arduous task seems to act as a disincentive to the teachers from practicing MGML.

8. With regards the quality and pedagogical soundness of the materials, it was noted that the MGML materials suffered from several limitations. There seem to be an undue emphasis on facts and information recall in EVS material. Selection of concepts and activities are not aligned to retain the interest of the children. In mathematics there is over emphasis on practice of doing concepts than clarifying the concepts. There is no meaningful sequencing of concepts. Textbooks design seem to provide better conceptual clarity. With regards the language of the cards there was little evidence and reflection of local languages that children may be using, especially given the presence of tribal groups. Teachers seemed to have minimal awareness of this issue. The pedagogy adopted for early literacy is not in keeping with the approach recommended by the NCF 2005 to literacy and needs to be reviewed. The Hindi readers are of high quality and need to be provided to all schools.

   The content of MGML cards was also based on the pre-NCF 2005 curriculum framework. On the other hand the State has high quality and exemplary textbooks that are more or less aligned with the 2005 framework. The review and improvement of the materials is imperative. Use of the textbooks which exemplify good materials is also desirable.

9. The quality of training that was provided to teachers for MGML training was widely cited as being of poor quality. Absence of competent trainers and of trainers who had actually themselves used the method and who could speak with authentic conviction,

encouragement of teachers to engage and solve problems and regular followup and interaction were absent. Further the final word communicated to teachers by the trainers was largely that following MGML was an *aadesh* and hence it had to be implemented. The misconceptions with regards the method as well as the rigidities that were observed and the persistence of negative views regarding educability were disheartening. It was also a concern that teachers had very little understanding of the fact that children's home languages were also languages and that the pedagogies would need to reflect an active sensitivity towards home language of children. Most of the teachers are currently undergoing teacher education or have received professional qualifications after joining work. A majority of them were not able to explain how children learn.

Whether it is the textbook method or the MGML method or a combination of both, substantial inputs into teachers preparation and continued support is essential.

10. In grade 2, in Mathematics, about 66% children have knowledge of single-digit numbers and addition, however only about one-third children have knowledge of double-digit numbers. Only about 1/3 children can manage single digit subtraction and about 1/5 children can manage double digit subtraction. Even at grade 3 level, only about 40% children have knowledge of the double digit sequence. A larger percentage of children are successful in double digit addition, but the number is still only about 40% or about 2/5. Knowledge of subtraction computation without borrow is at 35% but with borrow is a mere 14%. Of concern is also that a very large proportion of children in both grades did not attempt items at all. In grade three, 26% did not attempt completing the number sequence. This increased to over 60% for some of the items. The proportion of boys and girls who were able to complete various items was more or less equal, however, proportionate to the size of the respective gender group, a larger proportion of boys than girls were able to answer correctly. From the analysis of the errors in Grade 2 and 3, it was also evident that children had partial and incomplete knowledge of the algorithm and were not able to borrow or carry over in two digit addition and subtraction problems. In the case of statement problems, many of them seemed to be merely seeing the numbers and adding them, without reading the statements.

    With regards to language, only 23% of Grade 2 children were reading fluently or at the word level of a text of Grade 1 difficulty. Only about 12-15% children were able to spell using *matras*, in both grades. Only about 15% children wrote full sentences—complex or simple. Other children who did answer wrote only phrases or words. As many as 64% of all the children did not attempt to write at all. More boys than girls performed above the minimum acceptable score in Language in both grades 2. In Grade 3, about 32% of the children had reasonably legible handwriting. 16% of the children had good spelling. About 10% only wrote full sentences while another 17% wrote phrases or partial sentences. About 20% or 1/5 of the children were able to

answer comprehension questions that were text-based correctly. 10% or less children could answer comprehension questions that were not direct text-based and involved inference, or critical thinking or were open ended. There was not much change in the proportion of children who were able to do well in language over the two grades and remained at approximately 25% of children.

11. In grade 2, there seemed to be an MGML effect in the performance of children in mathematics and in language. In the case of language there was also an effect of modified and adapted MGML programme/pedagogies/curriculum. In language, the effect was significant at the 1% and 5% levels. In mathematics, the difference was significant at the 5% and 10% levels. In the case of grade 3, there was no difference in performance of children in the MGML, modified MGML and conventional pedagogy classes. There was also no relationship or association between the programme type and the performance of schools. In general however it should be noted that whether MGML or modified or conventional, performance of children on the whole was low. In mathematics, in a majority of schools there were no children who performed at the minimum level we would expect at their grade.

7.2. Reflections and Recommendations

1) Has the MGML method engendered child friendly pedagogies in the state?
The MGML has provided an alternative to conventional pedagogies, and the MGML classroom is refreshing with children independently working alongside the teacher in place of the teacher as a figure of authority in the classroom, controlling all its aspects. However, the presence of the materials alone has not engendered such classrooms, unless there was a teacher oriented and with understanding of the method. The content of the new textbooks could also have, in principle engendered such a child friendly classroom, however, there seems to have be no effort to educate teachers or orient them to the pedagogies and approaches of the textbook. Instead teachers have used the textbook in conventional ways instead of using them in the manner intended. Given the absence of quality preparation of teachers, there is urgent need to invest in quality inservice orientation and support to enable teachers to teach as intended by textbooks or cards. Such an investment along with long term adequate resource support is essential.

2) Does the MGML inherently support active learning better than textbooks?
In its worst form MGML means mechanical copying in a relaxed or negligent classroom. In its worst form textbook means mechanical chorus repetition in a authoritarian classroom. In both scenarios we can have total neglect by the teacher. In its best form MGML means self directed learning in groups with pacing in total control of the child. In its best form the text-book method means whole class teaching, activities and discussions led by teacher or in groups.

In practice both the MGML and textbook were interpreted as requiring the teacher to 'follow' instructions and exhibit little autonomy and agency. However we have seen that classroom where there was evidence of meaningful activity were those where teachers were invested and had conceptions of what was to be achieved through their efforts. There were adapting materials and approaches to the requirements of the context and of the content to be taught, as well as the grade with which they were working. In no case was the textbook being taught as intended, teachers also had not received any support to use the textbooks as intended. The MGML however tendes to suggest that the materials rather than the teacher are central.

3) Is the method conceptually sound?
By and large the materials were designed on pedagogic and curricular frameworks that seem to be pre-NCF 2005 and were found to be of inadequate quality. The MGML method was also found to be unnecessarily complex with its range of logos etc., which were not deemed essential for the method itself, and reducing pedagogy to material management. Aspects of whole class and group pedagogic practices too were found to be inadequately conceptualized. Conceptual learning required to support active learning was also inadequately addressed. Pedagogies for early literacy and numeracy also need to be reviewed and replanned. It is questionable if the method as such is suitable for early literacy and numeracy acquisition. Aspects of the local contexts of children and multilingualism were also inadequately addressed. Further the materials were not supported with workbooks and as such provided very limited opportunities for children to write and review their school work. The materials require thorough review and revision, along with the pedagogies and approaches on which they are based. The method is akin to mastery learning. There seems to be an implicit suggestion that this is a teacher proof curriculum, with little mention of the need for pedagogic judgment, decision making and adaptive flexibilities that a teacher needs, or the nurturance of the ethos of the school.

The method was also found to be unnecessarily complicated in terms of logos and ladders. The separation of 'milestones' into separate sets for each class was also found to be inconsistent with the overall framework. Restricting it to grades 1 and 2 alone is also conceptually unsound. It is also unlikely to work as planned if it is restricted to grades 1 and 2 alone.

More importantly the method dose not adequately acknowledge, conceptualize the work of a teacher in initiating, or enabling and consolidating children's learning.

4) Should the state continue with the MGML method?
The state has a good resource in the form of its new textbooks which are overall found to be better than the MGML materials. However this valuable resource is being used not as intended but in conventional ways.

The MGML materials and the resources accompanying it do provide additional resources to classrooms that are traditionally resource starved. It has child-oriented pedagogies that have emerged with the overall approach of the MGML which has increased the child's agency in the classroom and shifted the pedagogic practice of the teacher away from didacticism and being the centre of authority, controlling the children. This pedagogic shift is an achievement and needs to be recognized and retained.

The MGML method is unsuitable for classes 1 and 2 alone and if it is to be continued, it needs to be continued for grades 1 to 4 as was originally planned, in order for it to work for children in the early grades. If MGML is to be continued there must be (a) improvement in its contents (b) decrease the complexity of the logos and group types (c) conceptualise whole class activities such as story telling and research and data work in addition to the small group work (d) provide workbooks created for and to all children (e) focus on understanding pedagogies for early literacy and numeracy, both of which seem to be neglected even by this system (f) more recognition to the tribal contexts and multilingual contexts. (g) greater conceptualisation of the role of the teacher in the learning process. In Grade 1 especially, MGML does not seem to be a good choice as it cannot work as per its design given that children are still in need of more rather than less of the teachers' attention. In this situation, the class in fact does function as a whole class, and teachers need to be trained with pedagogies and activities for this.

The State could consider transitioning back to the textbook based curriculum only if is able to provide strong inservice training to the teachers on using the textbook differently from conventional teaching and as is intended in the new textbooks. This will have to include pedagogies for individualizing attention and group work and shifting the teacher's tendency away from leading the classroom in whole class repetition work and with additional material resources including readers being provided to the children and to classrooms. Continuation of conventional pedagogy in the name of textbooks is unacceptable and would constitute losing out on the potential of the textbooks to support holistic learning of children and giving up hard earned gains of more child friendly classrooms that has been possible through the MGML.

Neither the textbook nor MGML adequately addresses remediation, children who are irregular or inclusive pedagogy. More teacher preparation rather than materials are required to address the needs of these children.

The State may consider having both methods available to the teacher and to encourage teachers to mix both methods, which would encourage teachers to think more about their pedagogies, etc. to be adopted to enable children to learn, rather than simply implementing a system. Some of the periods could be used for lessons based on

the textbook and the MGML activities commensurate with the ongoing lessons or to return to revise earlier ones, could be followed at other times.

In case of adoption of any one of the three scenarios, a strong resource support system is a pre-requisite at the cluster and block level which is competent and flexible to support the needs of the practicing teachers, enabling them to undertake the planning and preparation based on which they could teach. A second pre requisite is a professionally trained and competent teacher in the classroom.

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Annexure - 1

Logos and Activity types

Hindi Logos: To identify their distribution, we used the logo chart card to mark the total number for Grade 1 to 4. Final number of cards will be the highest number marked on Grade 4 under each logo. Certain logos are not continued in Grades 3 and 4 are marked as '---' . When there are no cards of a particular type was found missing in between classes it is marked "0"

S.No	Activity type	Logo	Number of such cards?				
			i	Ii	iii (start)	iv	total
Language : Hindi							
1	Poem / concept card	Cat	10(0)	12(11)	5(24)	5 (29)	34
2	Story / concept card	Horse	10(0)	11(11)	12(22)	11(35)	46
3	Picture card (dictionary)	Deer	10(0)	11(6)	18(22)	17(40)	57
4	Instruction / order / respect	Lion	13(0)	(14)	6(15)	---	21
5	Game of *pasa*	Squirrel	14(1)	0	4(15)	4(21)	24
6	Action / description	Monkey	10(1)	10(11)	16(22)	6(39)	45
7	Word / sentence line -basic grammar	Dog	20(1)	20(21)	15(43)	17(59)	76
8	Game of rail	Goat	5(1)	10(6)	13(16)	5(34)	42
9	Game inside classroom	Sheep	14(1)	8(15)	---	---	23
10	Window *matra* card	Tortoise	10(1)	---	---	---	11
11	Alphabet picture cards	Rat	9(1)	0	17(10)	17(28)	45
12	*Billas* game	Camel	(0)	9(10)	7(20)	4(28)	32
13	Writing exercise	Elephant	(0)	10(17)	17(27)	17(45)	62
14	Practice cads	Double ox	(1)	10(13)	17(23)	17(41)	58
15	Scrap book	Fox	(0)	10(11)	18(21)	17 (39)	56
16	Reader	Reading monkey	(1)	5(11)	17(22)	17(40)	57
17	Evaluation	Cow	(1)	10(12)	17(22)	17(40)	57
18	Remedial	Bear	(1)	10(11)	18(21)	17(40)	57
19	Midterm and end term exams	Bull / Hippo (*gaund*) (xSaMk[1]		2(4)	3(5)	3(10)	7

EVS logo: Reading the number total was done with the help of logo chart. Highest number in class 4 can not be considered as the maximum number of cards, as they are not sequential. Hence these were counted independently. Grade 1 and 2 uses the same card – 1 group does it orally and year 2 does the writing. But we are not counting the number twice when adding up the total number.

[1] The Srujan manual says *gaund* as the evaluation card but the image is that of Hippo. This could be because the manual that we have and the soft copy of the cards that we have of logo are from different years of printing.

S.No	Activity type	Logo	Number of such cards?			
			i & ii	iii	iv	Total
Fruit series: EVS						
1	Narrative / Poem /Story/concept card	Coconut	24	18	18	60
2	Drawing pictures colouring	Pineapple	17	18	17	52
3	Survey	Mango	21	18	16	55
4	Collection or classification	Pomegranate	7	13	12	32
5	Discussion card	Banana	28	18	17	63
6	Action	Custard apple	25	9	3	37
7	Exercise	Grapes	19	18	18	55
8	Games inside classroom	Apple	19	9	7	35
9	Games outside classroom	Guava	6	6	6	18
10	Activity and experiments	Papaya	4	12	13	29
11	Evaluation	Tamarind	28	18	18	64
12	3 monthly / 6 monthly and end term	Gooseberry	5 5			

Maths Logos: Ladder and cards were read together to recognise the birds and the way they are placed. Highest number on Grade 4 card is used to identify the total number of cards during the complete year. Total number of cards in each year is marked and beginning number is given in bracket.

S.No	Activity	Logo	Number of cards				
			i	ii	iii	iv	Total
1	Concept card	Hen	17(1)	15(18)	23(33)	23(57)	80
2	Games outside classroom	Crow	14(0)	9	7(23)	5(31)	35
3	Number cards	Pigeon	14(1)	15(15)	---	---	30
4	Subtraction exercises	Eagle	6 (1)	10(7)	10(16)	11(27)	37
5	Division	Weaver bird	---	---	(3?)	11(13)	25
6	Addition exercises	Parrot	12(1)	11(13)	14(24)	14(39)	59
7	Geometric shapes	Crane	3?[2]		6?	7(16)	23
8	Thick or thin / small or big / more or few / long or short / comparison	Stock	14	5	7(9?)	11(19)	29
9	Multiplication	Woodpecker	---	5	11(6)	15(18)	33
10	*Sam-visham*, place value	Indian Roller	---	(3[3])?	(8?)	8(20)	27
11	Time day week month year	Sparrow	---		4(8)	6(12)	17
12	Counting, recitation, tables	Kingfisher	20(1)	10(21)	6(31)	11(37)	48
13	Games inside classroom	Duck	18 (0)	6(19)	6(25)	7(32)	39
14	Counting back words and forwards / before or after / number in the middle	Bat	12 (0)	13(13)	7(17)	8(26)	34
15	Blank space	Partridge		16?	9(8)	3(17)	19
16	Writing exercise	Mynah	15 (0)	(16)	14(22)	10(36)	45
17	Measurement related exercise	Owl	4(1)	3	11(8)	11(19)	29
18	Currency	Flying bird	2(1)	3	5(7)	4(12)	16
19	Evaluation	Peacock	14(2)	15(15)	16(28)	18(46)	64
20	Midterm and end term	Vulture	2	2	2	3	10
21	Remedial cards	Swan	14(1)	13(15)	18(28)	18(46)	64

[2] There has been some confusion in the way these symbols are used – it appears stock disappears in later classes
[3] This symbol looks likes sparrow?

English logo: Cards are available only for Grades 1 and 2. Some cards start with odd numbers. So the total has been added up and is using the highest number below on Grade 2 ladder logo.

S.No	Activity type	Logo	Number of such cards?		
			i	ii (start)	Total
Language : English					
1	Poem/ Story	Radio	14(0)	12(14)	25
2	Creative	Fan	3(1)	---	3
3	Alphabets	Heater	7(1)	7(8)	14
4	Activity	Camera	14(0)	21(14)	35
5	Numbers	Computer	(3)	---	3
6	Word picture and dialogue	Television	12(1)	7(14)	20
7	*Pasa* game	Mixi	9(0)	---	9
8	Introduction	Bulb	8(1)	5(10)	14
9	Discussing based on images – action / description	Telephone	14(0)	15(14)	29
10	Sports news / local news	Mobile	---	19(2)	18
11	Words / arranging words	Fridge	6(1)	7(8)	13
12	Colouring, joining dots	Tube light	12(0)	---	13
13	Writing	Cooler	6(1)	11(8)	17
14	Alphabet card	Mike	6(7)	---	6
15	Evaluation	Table lamb	12(1)	12(14)	24
16	Remedial	Antenna	11(2)	12(14)	23
17	Mid term and end term evaluation	Iron box			

Annexure - 2

Tools

Annexure 2A

	COVER SHEET	TOOL - 1

Tool-1: Covering Sheet

(This is a covering note for each school-visit to note down the common elements for that school-visit, as names, date, district, school, etc - only once across the varied tools.)

1	Name of Researcher:	1
2	Date:	2
3	Start Time:	3
4	End Time:	4
5	Name of the School:	5
6	Name of the Village:	6
7	District:	7
8	Block:	8
9	Cluster:	9
10	Recommended Cluster?	Y / N 10
11	Record Check (every 3rd school):	Y / N 11
12	Milestone Check:	Grade 1 / 2 12
13	Children's Testing:	Grade 2 / 3 13

Checklist

Following is a checklist of the forms and guidelines related to each school-visit:

Note: Each of the Tools contains data-entry numbers in the cells requiring our data-entry. Please ensure that we don't write over these data-entry numbers.

1 **Tool-1: Covering Sheet**
This is a common, first sheet for any school visit. It contains the common elements related to all the tools for a single school-visit.

2 **Tool-2: School-Classroom (SC) Description**
[Check in every 3rd school Records maintained in the classroom: (kept, are they up-to-date, what are the various kinds of records maintained apart from those below)]

3 **Tool-3: Classroom Observation**
[to be finally documented in narrative form]

4 **Tool-4: Milestone-Range Check Grades1-2**
[Should be done in alternative grades, i.e. in school-1 do in grade1, in school-2 do in grade-2]

5 **Tool-5: Milestone Check Grades1-2**
[2 students randomly selected for this check. To alternate between grade1 and grade2. Take children from same grade as which done milestone-range. Can look at Regular/ Irr and Mother-Tongue data in M/S-range sheet. Can pick up 2 children who are Irregular and non-Chh speakers, for Milestone check. If grade2, then assess one of the two children on the manipulative-check in maths.]

6 **Tool-6: Maths Assessment Grade2**
[4 students, randomly taken from the class.]

7 **Tool-7: Language Reading Assessment Grade2**
[4 students, randomly taken from the class.]

8 **Tool-8: Language Writing Assessment Grade2**
[4 students, randomly taken from the class.]

9 **Tool-9: Maths Assessment Grade3**

10 **Tool-10: Language Reading-Writing Assessment Grade3**

11 **Tool-11: Teacher Interview**
(can document the interview in structure Format as in the guideline document, need to anyway write in narrative format.]

12 **Side-note:** When doing grade1 m/s range, we test grade3. When doing grade2 m/s range, we test grade2. On 3rd day, when doing grade1, we test grade3 and check for records of

Annexure 2B

Tool-2: School and Classroom Description | **TOOL-2**

26	Year of establishment of the School:		26
27	Grades doing MGML (circle the option) [official]:		1-2 / 1-4 / None 27
28-29	When was Mgml started:	Start Year:	28
		Start Grades:	29
30-31	Was Mgml discontinued:	When:	30
		Which Grades:	31
32-33	When was Mgml re-started:	Restart Year:	32
		Restart Grades:	33
34	What are the levels in the School:		Only Primary / U.Primary / Composite 34
35	Is there a Middle-school nearby (in 3 kms radius?):		Yes / No 35
36	Distance in kms to the District Headquarters:		36
37	Access to School by Public/Private Transport:		Yes / No 37
38	School in remote Forest area:		Yes / No 38
39	Type of School:		Village School /Urban /AshramShala /Other 39
40	Type of School Enrollment:		Co-Ed /Only-Girls /Only-Boys 40
41	Any other Observation:		41
42	Community around School (main castes / tribal groups - to ask teacher/crc):		42
43	Main Occupations:		43
44	Community around School (literacy level %age /Schooling):		44
45	Total Number of teachers in school:		45
46	No of Teachers absent on the day of visit:		46
47	Reason for absence:		47

48	Number of MGML Teachers in the School:	48
49	Total number of students in the School:	49
50	Total number of students present on the day of visit:	50
51	Reason for absence:	51
52	Total number of classrooms:	52
53	Classroom Description: (points as sufficient space, clean, feel as learning-environment, quality, display items,etc):	53

Classroom Infrastructure

No	Particulars	Availability				Condition			Access		
54-57	**Racks**	Y	/N	/Insufficient	54	Good	/Bad	55	Easy	/Difficult	56
	Comments (on organisation of racks, cards):										57

		Availability				Condition			Access		
58-61	**Cards**	Y	/N	/Insufficient	58	Good	/Bad	59	Easy	/Difficult	60
	Comments (on organisation of racks, cards):										61

62-82	**Maths Learning Material**	Availability	Condition	Access	How Stored? (in cupboard /trunk /other room /wall /else)
	Fasa / dice	Yes / No 62	Good /Bad 63	Easy /Difficult 64	65
	Gintara	Yes / No 66	Good /Bad 67	Easy /Difficult 68	69
	Straws	Yes / No 70	Good /Bad 71	Easy /Difficult 72	73
	Marbles / pebbles	Yes / No 74	Good /Bad 75	Easy /Difficult 76	77
	Adaptations (if any)	Yes / No 78	Good /Bad 79	Easy /Difficult 80	81
	Comment on Adaptation (describe):				82

83-85	**Ladder**	Availability: Most-All /None /Some-Few 83	Condition: Good /Bad 84	Note: There are 8 possible ladders, since two grades 1-2 and 4 subjects.
	Comments (on appropriate display of ladder):			85

86-88	**Group Charts**	Availability: Most-All /None /Some-Few 86	Condition: Good /Bad 87	Note: There are possible 6 groups per Mgml. The samuha (group) cards are typically hung on the walls.
	Comments [on appropriate display of group (samuh) charts]:			88

89-91	**Check Readers**	Availability: Most-All /None /Some-Few 89	Condition: Good /Bad 90	Note: This check is about the Readers related to reading-monkey cards.
	Comments (if any):			91

92-94	**Children blackboards**	Availability: Yes /No 92	Condition: Good /Bad 93	Note: This check is about the blackboards for children on the walls.
	Comments (how is access, usage, etc):			94

95-97	**Other Materials**	Yes /No 95	Good /Bad 96	Note: If any other materials as alphahets, number charts, photos, etc - on the walls,
	Comments (what, display-organisn, relevance, use, accessibility, etc): 97			

98-100	**Display of Children's work**	Yes /No 98	Good /Bad 99	Note: This is about whether children's paintings, drawings, etc are displayed on strings on wall/ceiling)
	Comments ((availability on string, on wall, on roof, etc): 100			

101-103	**Library**	Yes / No 101	Good /Bad 102	Note: Check of Library as a Learning resource. There is mention of need of Library with some books in Mgml.
	Comments (on usage, access, kind of books, grade 3-4 maa ki kahani available?, etc): 103			

		Availability	
104-105	**Chair for Teacher in the Class**	Yes / No 104	Note: To check on presence/usage of chair by teacher for teaching / administrative work. Does teacher sit with children on floor, etc.
	Comments: 105		

106-107	**Mats for Children in the Class**	Yes / No 106	Note: Check whether rectangular rolls or square mats, sitting by Mgml groups or by grades or else, etc.
	Comments: 107		

Classroom Records Maintenance (Check in every 3rd school)

No	Type of Record	Maintained	Up-to-date	
108-110	**Portfolios of every child**	Yes /No 108	Yes /No 109	Note: Comment on the quality and timeliness of the records and whether mechanical/reflective of class, etc)
	Comment: 110			

111-113	**Scrapbooks maintained for children**	Yes /No 111	Yes /No 112	Note: Comment whether scrapbooks used well, linkage to the ladder cards.
	Comment: 113			
114-116	**Progress record of the Children**	Yes /No 114	Yes /No 115	Note: Comment whether the progress-chart /milestone-tracker is updated timely and displayed on the wall. Timeliness and quality.
	Comment: 116			
117-119	**Daily diary (book)**	Yes /No 117	Yes /No 118	Note: There is a daily-diary register with 2-page spread for a month and space for child's M/S on daily basis. Timeliness, Quality, Reflective of reality in classroom.
	Comment: 119			
120-122	**CCE**	Yes /No 120	Yes /No 121	Note: Comment whether any CCE records, interlinkage with the Mgml records as be. Timeliness, Quality, Repetitiveness to Mgml records.
	Comment: 122			
123-125	**Any Other**	Yes /No 123	Yes /No 124	Note: Comment if notice any other kind of records being prepared for CRC/BRC needs, etc.
	Comment: 125			
126	**Did Gr.2 children use MGML last year?**	Yes /No 126		Note: Ask a few Grade 2 children whether they used MGML the previous year (or did they use the textbook)?
127	**Did Gr. 3 children use MGML last year?**	Yes /No 127		Note: Ask a few Grade 3 children whether they used MGML the previous year (or did they use the textbook)?

Annexure 2c

Tool 3 Classroom observation record

Start time:
End Time:

Observe the class for at least one hour and note the start and end times of your observation
Through this observation we are trying to make sense of and guage the nature of the classroom to

understand in what form the MGML is being practiced. In particular we want to understand the teachers role and the functioning of groups, and involvement of children in learning (especially those who are 'irregular'). We also want to understand the nature of pupil-teacher interaction (including language being used).

1. What is going on in the class?
2. Are textbooks being used? For what purpose and when?
3. Are notebooks used by the children? How are they used, describe, comment?
4. Are the wall blackboards being used by the children? For what?
5. Is any conventional teaching also done in the class? For what level and subjects?
6. Is a time table being followed? Is there a structure for the day/time? What is this?
7. How does the teacher interact with children? What is the language used? What type of pedagogical interactions and support is she providing? Does she sit in one place or does she move around?
8. Are there any whole class activities?
9. Does the teacher speak to the children in Chhattisgarhi or Hindi? Does the teacher use tribal languages in the interactions with children?
10. What does the teacher do in the class- listing various tasks that the teacher is observed undertaking?
11. Does teacher carry out administrative tasks during class hours?
12. Does the teacher leave the class to work on its own? For how long?
13. Are all children engaged in the class?
14. Do the children carry out the tasks independently? How?
15. How are the children sitting? Groups or Rows—describe the type of groups that have been formed.
16. How do the children interact with each other? Are they giving each other academic support?
17. How are group activities conducted? (cards which have group activities)
18. Do children approach the teacher? For what purposes?

19. Are there children with special needs in the class? How does the teacher work with them?
20. How does teacher provide remedial support to children?
21. What is the status and level of involvement of those children who the teacher has identified as irregular/less regular?

If Teacher is not teaching in MGML method (spend brief time check what is happening)

Annexure 2D

Tool-4: Milestone Range of Children in a Grade

TOOL - 4

136	Grade:	1 / 2	136

	No	Name	Age	Gender (M/ F)	Social Category (SC/ST/OBC/GEN)	Mother Tongue	Regular /Irregular	M/S in Hindi			M/S in Maths			M/S in EVS			M/S in English		
								M/S	Card	Logo (in Hindi)	M/S	Card	Logo (in Hindi)	M/S	Card	Logo (in Hindi)	M/S	Card	Logo (in Hindi)
137-154	1	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154
155-172	2	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172
173-190	3	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190
191-208	4	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208
209-226	5	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226
227-244	6	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244
245-262	7	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262
263-280	8	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281-298	9	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298
299-316	10	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316
217-334	11	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334
335-352	12	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352

	No	Name	Age	Gender (M/ F)	Social Category (SC/ST/OBC/GEN)	Mother Tongue	Regular /Irregular	M/S in Hindi			M/S in Maths			M/S in EVS			M/S in English		
								M/S	Card	Logo (in Hindi)	M/S	Card	Logo	M/S	Card	Logo	M/S	Card	Logo
353-370	13	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370
371-388	14	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388
389-406	15	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406
407-424	16	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424
425-442	17	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442
443-460	18	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461-478	19	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478
479-496	20	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496
497-514	21	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514
515-532	22	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532
533-550	23	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550
551-568	24	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568
569-586	25	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586

ANNEXURE 2E

Tool-5: Milestone Check in Grades 1-2

TOOL - 5

	Child-1	
601	Name:	601
602	Age:	5 / 6 / 7 / 8 602
603	Grade:	1 / 2 603
604	Gender:	M / F 604
605	Social Category:	SC / ST / OBC / GEN / MINORITY(Muslim) 605
606	Regularity:	Regular / Irregular 606
607	Mother Tongue:	607
608	Last Year Used?:	Textbook / MGML Cards / Other 608

609-615		CURRENT			TESTED			Completion Comments	Manipulatives Check - Knowledge & Familiarity (for Grade 2 only)
	SUBJECT	M/S	Card	Logo	M/S	Card	Logo	(Yes/No/PartiallyDone)	
	Hindi							609	-
	Maths							610	Applicable: Y / N 611 Available: Y / N 612 Child Used: Y / N 613
	EVS							614	-
	English							615	-

	Child-2	
616	Name:	
617	Age:	5 / 6 / 7 / 8 617
618	Grade:	1 / 2 618
619	Gender:	M / F 619
620	Social Category:	SC / ST / OBC / GEN / MINORITY (MUSLIM) 620
621	Regularity:	Regular / Irregular 621
622	Mother Tongue:	622
623	Last Year Used?:	Textbook / MGML Cards / Other 623

624-630		CURRENT			TESTED			Completion Comments	Manipulatives Check - Knowledge & Familiarity (for Grade 2 only)
	SUBJECT	M/S	Card	Logo	M/S	Card	Logo	(Yes/No/PartiallyDone)	
	Hindi							624	-
	Maths							625	Applicable: Y / N 626 Available: Y / N 627 Child Used: Y / N 628
	EVS							629	-
	English							630	-

631	How many of the tested children seemed to have gone through the method, i.e. how it is done or not done?	0 / 1 / 2 631

Notes:
1) Alternate between Grade 1 and Grade 2.
2) Randomly pick any 2 children.
3) In ALL schools test milestone in Language, Maths, EVS and English.
4) Only in Grade2, test 1 child for maths manipulatives. For this, can use the following cards:
(a) Milestone 16 card 19 hen: kankar /marbles/matchsticks. (b) Milestone 15 card 19 duck: using fasa. (c) Milestone 15 card 3 nil kanth: gintara and beads.

Annexure 2f

	TOOL - 6

TOOL-6: Maths - Grade2

651	Name of the Child:	651
652	Gender:	M / F 652
653	Social Category:	SC / ST / OBC / GEN / MINORITY (Muslim) 653
654-656	Current Milestone:	M/S: 654 Card: 655 Logo: 656
657	Start Time:	657
658	End Time:	658
659	Comments /Observations: (eg. use of manipulatives, etc).	659

660	Total in A (_ / 2):	660
661	Total in B (_ / 2):	661
662	Total in C (_ / 2):	662

A) रिक्त स्थानों में अंक लिखो

1) 3 और 8 के बीच के अंक लिखो

3, _____, _____, _____, _____, 8.

2) 28 और 34 के बीच के अंक लिखो

28, _____, _____, _____, _____, _____, 34.

B) जोडो

5	**25**
+ 3	**+ 13**

C) घटाओ

7	**34**
- 5	**- 32**

ANNEXURE 2G (I):

TOOL - 7

TOOL-7: Hindi Language Reading - Grade2

Instruction to Researcher: Reader 38 - Patang. Word Count = 52. Have the students read aloud as you record: Start the Stop watch to record WCPM (Word Count Per Minute) rate.

676	Name of the Child:	676

677	Gender:	M / F 677

678	Social Category:	SC / ST / OBC / GEN / MINORITY(MUSLIM) 678

679-681	Current Milestone:	M/S: 679 Card: 680 Logo: 681

682	Comments /Observations:	682

KAHANI KO PADHKAR SUNAO

683	Start Time:	683

E = Errors S-C = Self Correction

Word count	Sentences in the story	E	SC
9	वन के सभी जानवर पतंग लेकर नदी किनारे गये		
13	हिरण ने पतंग लहराई		
18	चींटा डोर पर चढ़ने लगा		
25	चींटे को ऊपर से हाथी छोटा दिखा		
29	वह बहुत खुश हुआ		
40	हिरण की पतंग कट गयी और चींटा पानी में गिर गया		
46	कछुए ने चींटा को बाहर निकाला		
52	सभी ने कछुए को शाबाशी दी		

684	End Time:	684

685-686	Total:	685	686
687	WCPM:		687

688 Accurracy Rate ((total words read - total errors) /total words read x 100) = _____ 688

689 Self Correction Rate (number of self corrections /(number of errors + number of self corrections) = _____ 689

690 Error Rate (total errors /total words) = _____ 690

Comprehension (5 questions)

1) (Text based) Chinta kyon khush hua? - *Chinta ko Haathi chhota dikha*

2) (Text based) Kaun patang par chada? - *Chinta patng par chada*

3) (Critical response) Kachhuye ne chinte ko kyon bachhaya? - *Chinta doob raha tha, aur kacchuah chinta ka dosth tha*

4) (Text based) Kaun patang udaa raha tha? -

5) (Inferential) Sabhi ne kachue ko shabaashi kyon dee? - *kyon ki usne chinte ko bacchaya*

Comprehension Analysis

691 a) Text based: _____ / 3 = _____ 691

692 b) Inferential: _____ / 1 = _____ 692

693 c) Critical Response: _____ / 1 = _____ 693

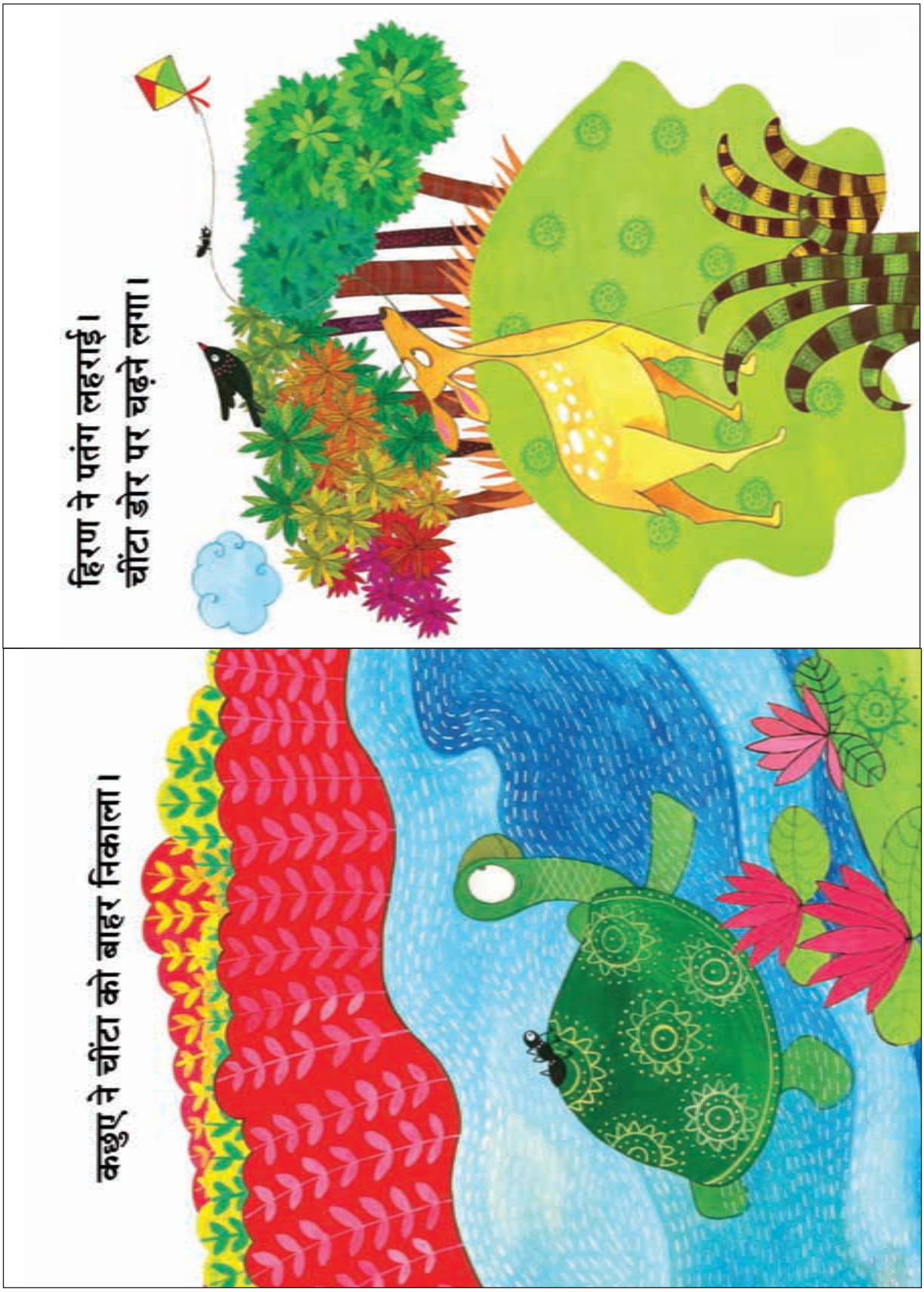
694 d) Total comprehension in percentage: (a + b + c) / 5 x 100 = _____% 694

Comprehension Level- Circle one
independent - 95% - 100%
instructional - 80% - 94%
frustrational - 79% and below

ANNEXURE 2H

38
पतंग
Design | TARA Education and Technology Services
पढ़ना
लड़ाई लड़ाई लड़ाई लड़ाई
लोटा लोटा लोटा लोटा
अभी अभी अभी अभी
सभी सभी सभी सभी
unicef

सभी ने कछुए को शाबाशी दी।
वन के सभी जानवर पतंग लेकर
नदी किनारे गये।


हिरण ने पतंग लहराई।
चींटा डोर पर चढ़ने लगा।
कछुए ने चींटा को बाहर निकाला।

हिरण की पतंग कट गई और
चींटा पानी में गिर गया।
चींटे को ऊपर से हाथी छोटा दिखा।
वह बहुत खुश हुआ।

ANNEXURE 2H (I)

	TOOL - 8

TOOL-8: Hindi Language Writing - Grade2

701	Name of the Child:	701
702	Gender:	M / F 702
703	Social Category:	SC / ST / OBC / GEN / MINORITY(MUSLIM) 703
704-706	Current Milestone:	M/S: 704 Card: 705 Logo: 706
707	Start Time:	707
708	End Time:	708
709	Comments /Observations:	709

Note for RA:
1) RA not to write for the child or dictate.
2) RA can ask some leading questions? As to what is happening, etc??
3) RA can ensure the child writes atleast 3 sentences.

Instructions:

चित्र को देखो। चित्र देखकर उसके बारे में अपने शब्दों मे लिखो । चित्र का वर्णन करो ।

1)

2)

3)

4)

5)

6)

Annexure 2h (ii)

ANNEXURE 2I

	TOOL - 9

TOOL-9: Maths - Grade3

726	Name of the Child:	726
727	Gender:	M / F 727
728	Social Category:	SC / ST / OBC / GEN / MINORITY(MUSLIM) 728
729-731	Current Milestone:	M/S: 729 Card: 730 Logo: 731
732	Start Time:	732
733	End Time:	733
734	Last Year Used?:	Textbook / MGML Cards / Other 734
735	Comments /Observations: (eg. use of manipulatives, etc).	735

736	Total in A (_ / 2):	736
737	Total in B.1. (_ / 1):	737
738	Total in B. 2. (_ / 2):	738
739	Total in C.1 (_ / 1):	739
740	Total in C.2. (_ / 2):	740
741	Total in D.1 (___/1):	741
742	Total in D.2 (___/1):	742
743	Total in D.3 (___/1):	743
744	Total in D.4 (___/1):	744

A) रिक्त स्थानों में अंक लिखो

1) 3 और 8 के बीच के अंक लिखो

3, _____, _____, _____, _____, 8.

2) 28 और 34 के बीच के अंक लिखो

28, _____, _____, _____, _____, _____, 34.

B.1.) जोडो

B.2)

25	15	26
+ 13	+ 17	+ 34

C. 1.) घटाओ

C. 2.)

34	27	60
- 32	-18	- 24

D) नीचे दिए गये प्रश्नों के उत्तर लिखिए

1. हरी के पास 17 खलौने थे। उसकी बुआ ने उसे 5 खलौने और दए। अब हरी के पास कुल कतने खलौने हुए?

2. मोहन ने 9 चॉकलेट खरीदे , 5 चॉकलेट वह खा गया, थो कितने चॉकलेट बचें ?

3. बगीचे की एक लाइन में 7 आम के पेड़ हैं, इस तरह बगीचे के 5 लाइनों में कुल कितने पेड़ होंगे?

4. यदि एक डिब्बे में 4 पेन्सिल रख सकते हैं, तो 32 पेन्सिल के लिए कितने डिब्बे चाहिए ?

ANNEXURE 2J (I)

	TOOL - 10

TOOL-8: Hindi Language Reading-Writing - Grade3

751	Name of the Child:	751
752	Gender:	M / F 752
753	Social Category:	SC / ST / OBC / GEN / MINORITY(MUSLIM) 753
754	Start Time:	754
755	End Time:	755
756	Comments /Observations:	756

Note for RA:

1) This will be conducted as a common assessment for the entire class (all children in grade3).
2) No leading questions or any support to the child to answer the questions based on the story.

कहानी पढ़ो और नीचे दिए हुए प्रश्नों के उत्तर लिखो।

प्रश्न 1- मिली क्या सिख रही थी?

प्रश्न 2- क्या तोसिया को साइकिल चलाना आता था?

प्रश्न 3- तोसिया ने मिली को क्या सिखाया?

प्रश्न 4- तोसिया न होती तो मिली क्या करती?

ANNEXURE 2J (II)

Grade 3 Language

मिली की साइकिल चली !

मिली को साइकल चलाना तो आ गया पर उतरते समय वह गिर जाती थी। एक दिन मिली ने अकेले ही साइकिल पर चढ़ने की कोशिश की पर वह चढ़ नहीं पाई। मम्मी जब उसे साइकिल पर बैठाती थी, तब भी मिली साइकिल से उतरते समय गिर जाती थी। उसे साइकिल ऊँची लगती थी। पर फिर भी वह खुश रहती थी। वह दिनभर साइकिल के बारे में सोचती और उसी के बारे में बाते भी करती।

उसने यह बात अपनी सहेली तोसिया को बताई। तोसिया ने उसे एक बड़ा पत्थर दिखाया। मिली पत्थर पर पैर रखकर साइकिल पर चढ़ गई।

अब तो मिली बहुत ही खुश हुई। दोनों स्कूल भी साइकिल से जाने लगीं।

नाम - दिनांक-

स्कूल तथा ब्लॉक -

प्रश्न 1- मिली क्या सिख रही थी?

प्रश्न 2- क्या तोसिया को साइकिल चलाना आता था?

प्रश्न 3- तोसिया ने मिली को क्या सिखाया?

प्रश्न 4- तोसिया न होती तो मिली क्या करती?

Annexure 2k
Tool 11 Interview Guide for teachers

Name of investigator: **Date:**

Brief note on interview:
Give a brief intro, our background, - purpose of the visit – what we intend to achieve through interview as gaining an overall picture of MGML scenario - Whom are we going to submit the report. you may also tell them right in the beginning there are 5/6 different areas that we want to talk about, and can begin with anything that they are comfortable It is likely that Teachers do not answer question in the order that we expect, do not try to break their flow of thoughts – follow up with 'leading' questions to next areas – It is unlikely that they want to spend more than 30 / 40 minutes, so even if any of the aspects are left out it does not matter - but keep track of the areas that we want to cover and try as many as possible

1. Background

1. Name _____
2. Age _____Gender _____
3. Education Qualification _____
4. Teaching qualification _____
5. Year of obtaining Teaching qualification _____
6. Permanent/Shiksha Karmi (contractual) _____
7. Year of joining the service _____
8. If undergoing training now _____
9. Year of training in MGML _____
10. Year joining the particular school _____
11. Distance of Residence from the School _____
12. Ability to speak local dialect (ask apart from Chhattisgarhi)_____
13. Were you involved in developing MGML cards_____
14. Have send your written feedback on MGML material to SCERT _____
15. During the last year - of the 220 official days in a school year, actual number of teaching days _____
16. Are there other programmes running: - in the school ? (Like SMC/ Pratham/ Room to Read etc) _____

2. About the approach –

1. What are the key features of the MGML approach? (Mgml approach ke bare me khaas baaten bataye?)

2. Why was this approach introduced? What problems does it try to address?
3. What is the role of the teacher in this approach?
4. What is the role of children in this approach? What is the role of peer group?
5. Is this appropriate for particular subjects or relevant to all subjects
6. Have you ever talked to the parents about these material (ask them if they have visited any house)
7. Do children have different styles of learning? What kind? How do the teachers recognise these different styles of learning
8. Grade 3/4 hatane ke baat kaksha me / method me kis tarah ka prabhav pada he

3. On teaching experiences

1. subah se shyam tak kya kya karte he: Describe your current classroom practice (it could be sit with teacher assisted group; read stories for whole class; check what children write and bring to me etc) Describe your current classroom schedule (time to write diary; check the milestone; correction of children's work at home work;)
2. Tell us about any good moments yaadgaar/ smaranieeya kshan/prasang in your teaching experience under MGML: (One aha moment that you experienced while using the current material that would not have happened in the other scenario)
3. Can you tell us the whole classroom activities you have done during the last week (one of the ciriticism about ABL, etc is that there are not whole class experiences which are important for the schools – and not to verify if they adopt textbook – but within the MGML are there are whole class stuff)
4. Is it possible to give individual attention to every child? (kya har bachche ko paryapt dhyan de pate ho)
5. What do you do when child is not able catch up? (because of absentism / irregularity / disinterest/)
6. What do you do when child is ahead of the class and able to do more?
7. Do you use the textbook? (do they follow the conventional method/ both. (Like multiplication tables)If not, What do you do with the textbook? Have you ever supplemented the MGML material?)
8. What are the things you do which is not part of MGML. What are the things you would like to do but method does not allow (are there any topics which you feel is better to be done in the whole classroom activities)
9. Describe your role and difference from the earlier practice? (aapse kya bhoomika / apeksha thi / kya badalav).
10. Remediation (upacharatmak gati vidhiyan kis tarah se kiya jaata hai: udaharan. Agar bacha assessment card nahi kar pata hai to aap kya karte hai?).
11. Have you had children with (physical /learning /other) difficulties in your classroom? How do you address same? Does the MGML material address such conditions?

4. Language and Grade-transition Points

1. Do you have to use local language (and not just chattisgarhi) to explain the concepts to the children?
2. Should the children be using their local language in the school? (Is the teacher sensitive to the child's home language/ does she value same).
3. Do children face challenges while shifting from MGML card/ method to textbook/ conventional grade-3? (as there is no grouping as a method in conventional teaching and teacher addresses the whole class etc.)

5. Teacher training

1. Can you describe your MGML training experience? Who trained you? For how long? Compare your MGML training with your other inservice training experiences? (content methodology, usefulness Issue of the child's home language)
2. How did teachers without training learn about the approach- through other teachers? Or through trial? (If the teacher has not undergone training)
3. Do you have a copy of teacher manual/ srujan?

6. On educability

1. Why do children find it difficult to learn in traditional schools?
2. Who are the children who find it difficult to learn even in this method? Why/why not?

7. On evaluation systems

1. How do you currently do CCE alongside MGML? (co-scholastic:awareness, practice)
2. Has CCE changed the way you do MGML? How?

8. On administration

1. Challenges in organising the cards / What if they get misplaced? What if they get damaged?
2. What kind of support did teachers receive from resource groups earlier (SRG/BRG/ DRG)and now (CAC)? Specify the academic support received and the administrative support received? Was it adequate? (kis tarah ki sahayata milta he – prashasanik aur shaikshanik)
3. Are there any monthly meetings? (amongst teachers / CAC / Saturday meetings etc)
4. How do senior/other teachers respond to the MGML approach?

9. Response, if the programme need to be continued

1. If you were given a choice by shaashan to teach using MGML or using textbooks or else, what would you choose?
2. Would you recommend this methodology to be adopted in higher classes – till what level?

10. Grade 3 or 5 (of classes using conventional methods)

1. Should MGML be used in your Grade and why?
2. How do the children transition from MGML to textbooks?
3. What kind of methods do you have to use to get them into a conventional system?
4. What is the response from the students?

Annexure 2l

Tool 12 Focus Group Discussions with the Resource Persons Guide

Starters

1. What is MGML approach about- the key features, contributions
2. What problems does it seek to address on the ground?

On pedagogic principles

1. The process of designing the material – what support system – what challenges -
2. What are the critical components of the MGML programme?
3. What were the theoretical bases of developing the material? Foundations?
4. What kind of experience did the resource group members have in terms of preparation of material? Were they trained? Had they developed similar material earlier?
5. What are the perspective differences between MGML and textbook based learning
6. What are the content similarities / differences between MGML and textbook based learning- ask specific examples?
7. What are the textbooks based on – have any of the members been part of textbook preparation?
8. How do they experience the differences as children move to different grades (needs to be clearer)
9. How has the CCE affected the transaction of this material? How does the CCE work alongside MGML?

On administrative systems

1. How were they selected/get appointed as resource group members?
2. What is their responsibility-what are they expected to do? Role? Is there any formal prescription of the role? Was there any such prescription ever?
3. What are links to the existing resource structures (thru SSA)?
4. The history of program implementation - gaps – how did the programme change and evolve over years.
5. If similar quality improvement initiatives have been tried earlier?
6. What has been the experience with regards to printing and distributing material to schools over the years?
7. How often have teachers requested for further help? What kind of help? Are you able to resolve all their doubts?
8. The ownership of the program and envisaged role of SCERT
9. How do multiple programmes related to school education (like SSA) operate at the school level, and well as at the cluster-block-district and state level? What opportunities and issues does this throw up?
10. What is the response of the teachers to the MGML programme? How do you explain

such a response?

11. How far has the state government supported the programme AND the resource persons? Is it adequate and what should be done/what could have been done?
12. Instances of help that they have extended to the teachers – Specific examples
13. If you have to design the programme once again, how would you do it – material, training, approach etc.

Any other remarks

Annexure - 3:

Details of Sampling

Sample of Districts, Blocks and Clusters

DISTRICT	BLOCK	CLUSTER	Number of Schools
Balodabazar	Simga	Bansankara	5
		Mohbhattha	5
Mahasamund	Bagbahar	Bakma	5
		Narra	5
Gariyaband	Chhura	Lohjar	5
		Chhura	1
	Fingeswar	Kaundkera	6
		Bijli	4
Ambikapur/ Sarguja	Ambikapur	Nandamali	5
		Ghasiwad	4
		Punduldhihari	1
	Batoli	Chiranga	5
		Bansajhal	5
Jashpur	Kansabel	Kansabel	4
		Chetba	1
		Nariyaar Dand	1
		Bataikela	2
		Semarkacchar	1
		Chongribahaar	1
	Duldula	Pataratoli	1
		Jamtoli	1
		Kastura	3
		Duldula	2
		Kardega	2
		Makaribandha	1
Bilaspur	Bilha	Bilha Cluster -2	2
		Khaparganj	2
		Beltara	4
Bemetara	Berla	Sondh	4
		Khisora	4
Durg	Dhamdha	Pendravan	3
		Devari	4
Kanker	Bhanupratappur	Bhanbheda/Dongarkatta	5
		Hatkarra	5
Kanker	Kanker	Janakpur	3
		Malgaon/Pidhapal/Kode-junga	4
		Dumali/Potgaon/Ichchhapur	4
TOTAL			**120**

Annexure - 4

Details of Interviews and FGDs

1. Focus Group Discussions with SRG, DRG and BRG members

Discussion -1, Saturday, October 13, 2012, Morning session, Members: 12

Name	District	Position
Mr. Seshant Lakhda	Jashpur	SRG/ DRG
Ms. Yogita	Durg, Ballod	SRG
Ms. Sandhya Zoni	Bilaspur	DRG
Mr. Pradip Pandey	Bilaspur	SRG
Mr. Himanshu Shekar	Bataudi	DRG
Mr. Beniram Sahu	Balaoud	SRG
Mr. Kamal Narayan	Mahasamand	BRG
Mr. Arun Bhagat	Jashpur	BRG
Mr. Rajat Bhagat	Jashpur	DRG
Mr. Lochan Singh Gautam	Kanker	SRG/ BRP (SSA)
Mr. Anil Kumar Shukla	Bialspur	BRG
Mr. Tarkeshwar	Bemintara	SRG

Discussion – 2 , Saturday, October 13, 2012, Afternoon session, Members: 9

Name	District	Position
Ms. Iswari	Balaud	SRG
Mr. Ganghadahar Sahu	Balaud	SRG
Mr. Chaitram Sahu	Balaud	SRG
Mr. Janardhan	Bemintaar	DRG
Ms. Neelam Chand		DRG
Mr. Shiv Kumar Devanand	Jashpur	
Mr. Jugal Kishore	Dhamtari	BRG
Mr. Ravi Narayan Tripati	Bemintar	SRG
Mr. Dron Sahu	Mahasamand	DRG

Interviews with Key Informants

Sr. No.	Name	Block/District/State	Position	Date of Interview
1	Mr Sahu	Berla	CAC	3.12.2012
2	Mr Bindeshwar Ambasht	Bataoli	BRP	30.11.2012
3	Mr Mahesh Sahu	Chhura	BRP	29.11.2012
4	Mr Radhelal Sahu	Chhura	CAC	29.11.2012
5	Mr Sahu	Duldula	BRC	6.12.2012
6	Mr. Nandkumar	Maharashtra	Former Education Secretary, SCERT Director	9.11.2012

Sr. No.	Name	Block/District/State	Position	Date of Interview
7	Mr Sudhir Agarwal	Chhattisgarh	Former SCERT Director and Special Secretary, Education and Managing Director, RMSA	26.2.2013
8	Mr Anil Rai	Chhattisgarh	SCERT	3.9.2012
9	Mr Sudhir Srivastava	Chhattisgarh	SCERT	26.2.2013
10	Mr Sunil Mishra	Chhattisgarh	SCERT-MGML Cell	3.9.2012 4.9.2012 11.10.2012, 12.10.2012
11	Ms Anupama Nalgundwar	Chhattisgarh	SCERT- MGML Cell	3.9.2012
12	Mr Ashish Dube	Chhattisgarh	SSA	4.9.2012
13	Mr Seshagiri	Chhattisgarh	UNICEF	3.9.2012