PCMC Shikshaantar 2.0 Project

End of Year Report 2019-20

May 2020 | Pune

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List of Abbreviations

Abbreviation	Expansion
CFU	Check for Understanding
COVID-19	CoronaVirus Disease 2019
CSR	Corporate Social Responsibility
DIET	District Institute of Teacher Education and Training
EoY	End Of Year
FGD	Focused Group Discussion
HM	Head master/mistress
LFE	Leadership For Equity
MoU	Memorandum of Understanding
NGO	Non-government Organisations
PCMC	Pimpri Chinchwad Municipal Corporation
TLM	Teaching Learning Material
TMF	Tech Mahindra Foundation

Executive Summary

PCMC Shikshaantar Project is a new project undertaken by Leadership For Equity in the academic year 2019-20. Tech Mahindra Foundation and LFE came together to initiate this project with an objective to provide a sustained solution for in-service support to teachers of Pimpri Chinchwad Municipal Corporation schools. The long term aim is to institualise the cadre of teacher mentors within the system and support in building a strong ecosystem of teacher capacity building.

This report captures the first phase of this project. A major focus of the year has been to deepen our understanding of the entire PCMC system while simultaneously working closely with a group of teachers to build their Maths content and pedagogy expertise. The report captures all the details of inputs and outputs in both these buckets of understanding the system and teacher capacity building. Getting the project launched in presence of all the crucial stakeholders and experiencing excitement from the teachers has been a motivation factor right in the beginning of the project. Being able to conduct teacher and student content baselines definitely helped the team plan the support in the right direction.

The teacher training and in-classroom support were the two most important structures planned and consistently implemented by the team. All the teachers not only appreciated the support provided but also ensured they are incorporating the learnings in their everyday teaching-learning. The impact of this has been very much visible and can be seen in the data points like 98% of grade 1 and 2 teachers rated all the trainings 4 on 4 and ~41% of the teachers showed improvement of one level in the classroom practices as per the TEACH[1] rubric.

The report also captures the successful implementation of first Shikshan Utsav, a platform for all teachers of PCMC to showcase their best practices. The important learnings from the year have also been captured in the report. With a more in-depth understanding of the system and keeping in mind the learnings from this year, the plan for next year is also being drafted and shared in the last section of this report.
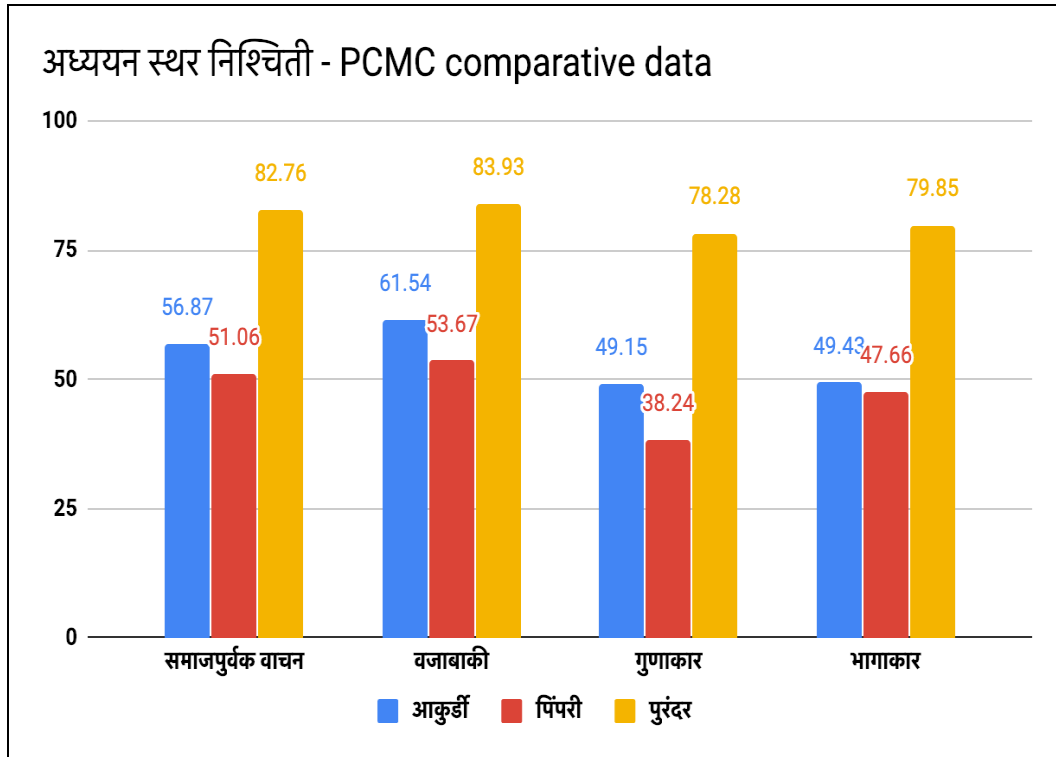
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[1] Teach rubric is a tool created by The World Bank Foundation for monitoring and evaluation of teaching-learning practices

Introduction

Background

Pimpri Chinchwad Municipal Corporation (PCMC) has a total of 125 schools out of which 87 are Marathi medium schools[2]. A densely populated urban area the majority of the students in these schools come from low income communities. Currently, the schools are struggling with low student learning outcomes in both Marathi and Maths. The problem is more critical in Maths as per the data from *Adhyan Sthar Nishpati (March 2019).* The graph below shows data on reading, subtraction, multiplication and division skills of students of two blocks in PCMC (Akurdi in blue and Pimpri in Red) as compared to Purandhar block (in yellow) in Pune district. Purandhar block scored highest in Pune district and all other blocks have been given a target to reach at a level closer to it. It can be observed that both the blocks in PCMC are struggling in the basic Maths skills. In order to address this issue Pimpri Chinchwad Municipal Corporation (PCMC), Tech Mahindra Foundation (TMF) and Leadership For Equity (LFE) together conceptualised Shikshaantar 2.0 project at the beginning of the 2019-20 academic year.

अध्ययन स्थर निश्चिंती - PCMC comparative data

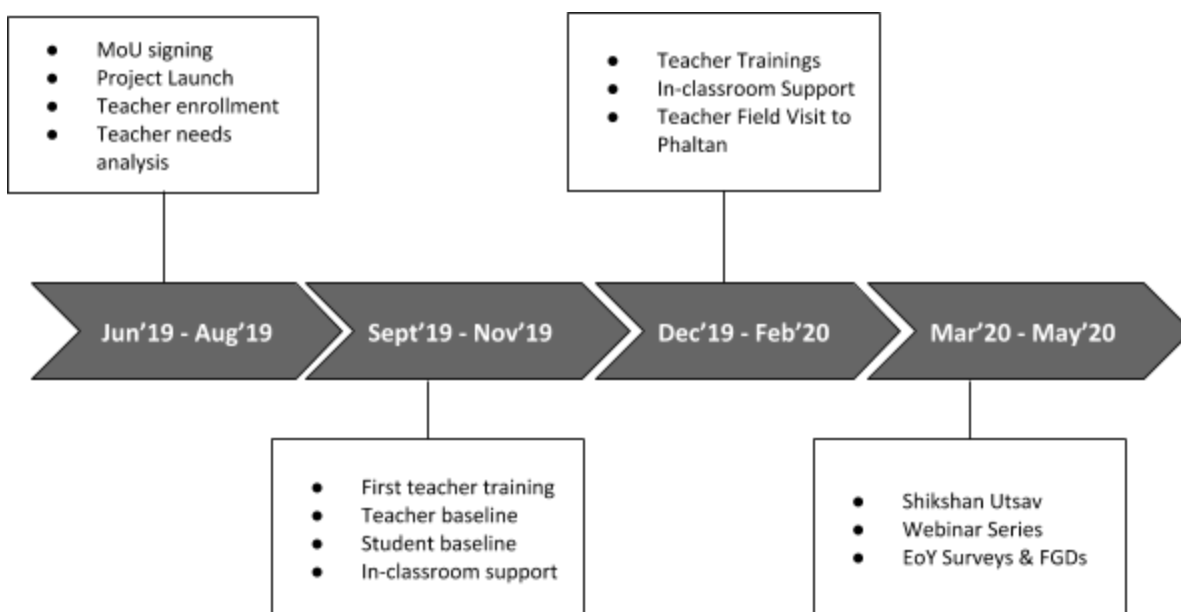|	समाजपुर्वक वाचन	वजाबाकी	गुणाकार	भागाकार
आकुर्डी	56.87	61.54	49.15	49.43
पिंपरी	51.06	53.67	38.24	47.66
पुरंदर	82.76	83.93	78.28	79.85

Adhyan Sthar Nishpati March 2019; % of students who achieved mastery in the given competency

Shikshaantar 2.0 project aims to provide a sustained solution for in-service support to teachers by creating an exclusive cadre of teacher mentors. In the long term, the project will be working on creating

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[2] Data as shared by PCMC education department in April 2019

and institutionalising the teacher mentors with the help of PCMC officers to ensure efficient and continuous support to all the teachers in PCMC.

In this first year of the project, the focus has been on understanding the system and building strong relationships with all the stakeholders of the system. Simultaneously, the focus also has been to start identifying teachers, building their content and pedagogical skills and begin the process of identifying teacher mentors.

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┌──────────────────────────┐                    ┌──────────────────────────┐
│ • MoU signing            │                    │ • Teacher Trainings      │
│ • Project Launch         │                    │ • In-classroom Support   │
│ • Teacher enrollment     │                    │ • Teacher Field Visit to │
│ • Teacher needs          │                    │   Phaltan                │
│   analysis               │                    │                          │
└──────────────────────────┘                    └──────────────────────────┘
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| Jun'19 - Aug'19 | Sept'19 - Nov'19 | Dec'19 - Feb'20 | Mar'20 - May'20 |

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        ┌──────────────────────────┐          ┌──────────────────────────┐
        │ • First teacher training │          │ • Shikshan Utsav         │
        │ • Teacher baseline       │          │ • Webinar Series         │
        │ • Student baseline       │          │ • EoY Surveys & FGDs     │
        │ • In-classroom support   │          │                          │
        └──────────────────────────┘          └──────────────────────────┘
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Project Workstreams

For the academic year 2019-20 the team's efforts in this project were twofold:
a) Develop our understanding of the school education System in PCMC and
b) Improve Teacher Professional Development.

Firstly, to support the system and the stakeholders according to their needs it was important to understand the ground realities, challenges of the teachers and current student learning levels. Secondly , the focus was on capacity building of the enrolled teachers with respect to content and pedagogy.

1. Understanding of the school education system in PCMC

Building system capacity is the center for all the work undertaken by LFE. Similarly, in this project also LFE wanted to co-work with the PCMC education department and co-design the project priorities and activities. The team began with a focus on building relationships with the different stakeholders in the system. The idea has always been to work along with the PCMC education department and get its equal involvement in all the project activities. Be it launching the project, conducting the system needs analysis or shikshan utsav all the activities had increasing involvement of the PCMC officers and teachers. These activities are explained in detail below.

Shikshantar 2.0 Takes Off with Project Launch event

A formal MoU was finalised and signed between PCMC, TMF and LFE in mid-July 2019. Post that, the LFE team worked closely with the PCMC officers to plan the project scope and progression. After the initial visits to PCMC schools and conversations with a few teachers, an HM orientation was planned where the project was launched, explained and opened up to all teachers for enrollment.

The project launch and HM orientation took place on 19th August 2019. A total of 92 HMs were present in the event. The project was launched in the presence of Dr Kamaladevi Awate, Principal, DIET Pune; Manisha Pawar, Chairperson, PCMC Education Committee; Jyotsna Shinde, Education Officer, PCMC; Rajesh Bankar, Senior Lecturer, DIECPD Pune; Aneeta Joshi, Supervisor, PCMC; Vijay Wavre, CSR Cell, PCMC; Manoj Sakte, Regional Head, Tech Mahindra Foundation and Priya Kulkarni, Assistant Manager, Tech Mahindra Foundation and Sandeep Pandit, Tech Mahindra Foundation.

Shikshaantar project launch and HM orientation event

मनपा शिक्षक होणार 'गणितमित्र'

पिंपरी : प्रतिनिधी

मनपा प्राथमिक शाळेतील शिक्षकांसाठी शिक्षण विभागातर्फे 'गणितमित्र' ही संकल्पना राबवण्यात येत आहे. या उपक्रमाचे उद्घाटन शिक्षण समितीच्या सभापती मनीषा पवार यांच्या हस्ते झाले.

या प्रसंगी जिल्हा शैक्षणिक सातत्यपूर्ण व्यावसायिक मार्गदर्शन संस्थेच्या प्राचार्य कमला आवटे, पुणे जिल्हा वरिष्ठ अधिव्याख्याता राजेश बनकर, सल्लागार विजय वावरे, प्रशासकीय अधिकारी ज्योस्ना शिंदे, माध्यमिक शिक्षणाधिकारी पराग मुंढे, मुख्य

तंत्रज्ञान अधिकारी नीलकंठ पोमण आदी उपस्थित होते.

मनपा शाळेतील प्राथमिक शाळेतील विद्यार्थ्यांच्या गणित संबोध संकल्पना स्पष्ट व्हाव्यात, गणिती क्रियामध्ये विद्यार्थ्यांची प्रगती लक्षणीय असावी आणि त्याद्वारे गुणवत्ता दर्जेदार असावी यासाठी हा उपक्रम घेण्यात येत आहे.

गणित विषय तसा विद्यार्थ्यांसाठी कठीणच जातो; परंतु शिक्षकांनाही विद्यार्थ्यांपर्यंत तो पोचवण्यामध्ये अनेक अडचणी येतात. तरी या अडचणीवर मात करण्यासाठी गणित मित्र या

उपक्रमाची सुरुवात होत आहे. या उपक्रमाची वैशिष्ट्ये म्हणजे शिक्षकांमधूनच प्रशिक्षण पूर्ण केलेले शिक्षक गणितमित्र म्हणून त्यांच्याच स्वतःच्या शाळेतील इतर शिक्षकांना मार्गदर्शन करतील. त्यामुळे कालांतराने बाहेरील संस्थांवर अवलंबून राहावे लागणार नाही.

सध्या या उपक्रमामध्ये नोंदणीसाठी लिंक देण्यात आली असून पिंपरी चिंचवड मनपा संचालित शाळेतील प्राथमिक शाळेतील (इयत्ता पहिली ते पाचवीचे) शिक्षक नावनोंदणी करू शकतात.

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The project launch news published in Pudhari newspaper

The project launch was followed by an informal dinner conversation with Shri Nand Kumar, IAS, Principal Secretary, Government of Maharashtra. The officers in the Education Department of PMC, PCMC & Pune District DIET were present for this event. Nandkumar Sir facilitated the discussion around officer and teacher best practices across Maharashtra. Mr Santosh Patil, Additional Municipal Commissioner of PCMC was also present at the event.

Glimpse of project launch in presence of Nandkumar Sir

Astounding Response to Teacher Enrollment

The LFE team visited PCMC schools to understand the distribution of schools with respect to clusters, medium, grades, supervisors in-charge, etc. The aim of the visits was also to gauge the needs and challenges faced by teachers inside the classroom with respect to Maths, their current pedagogical practices and students' learning habits. On one hand, it was great to see teachers welcome us in their classrooms for observation but on the other hand, their struggles with articulating the challenges were noticeable. Thereafter, instead of selecting schools or teachers we opened up participation for everyone. This was to ensure that we get maximum enrollment from teachers who are self-motivated and are eager to learn. The application link was sent to all HMs to be then passed on to the teachers. The team made sure the supervisors and officers are well aware of the benefits of the training and the long term issues it strives to solve.

The google form received a great response with close to 90 applications. To ensure quality content and in-classroom support the scope of the intervention was limited to only Grades 1-4. The team had to let go of Grade 5 applications. To ensure not all teachers from the same school become a part of the program, the team had to shortlist teachers on the basis of first-come-first-serve.

The current composition of teachers participating in the program is shown below.

Grades	Enrolled teachers
1 & 2	25 [8 Semi-English + 17 Marathi]
3 & 4	21 [5 Semi-English + 16 Marathi]
Total	**46**

Teacher and Student Baseline providing some much-needed insights

To understand the current teaching-learning practices, content knowledge and student learning levels of the teachers, LFE team conducted teacher interviews, teacher content and pedagogy assessment and student assessments in grade 2,3 and 4.


Teacher baseline being conducted in first teacher training

Foundational concepts seem to contribute the most to student underperformance as per teacher interviews

The LFE team conducted teacher interviews with a sample size of 23 teachers across all grades. The objective of these interviews was to understand the mindset of teachers around Math teaching-learning and their willingness to learn. Most teachers said that they struggle a bit with Math pedagogy and were open about sharing different challenges that students face in the subject. One of the common concerns raised by most of the teachers was that the gaps in understanding of fundamental concepts of the subject has been a major reason why students are not able to score well or are scared of Maths.

Teachers fared poorly in pedagogy than content in the teacher baseline

The focus area of the teacher baseline was to get to know their current content and pedagogy knowledge of the teachers. It was focused on grade 1 to 4 competencies. This baseline was conducted on the first day of training. The graph below shows the findings from the baseline. Overall the teachers have scored 59% in the content knowledge and 39% in pedagogy knowledge[3]. Based on the analysis the team aimed to focus more on pedagogy in the training and also during the classroom observation during the academic year 2019 - 2020.
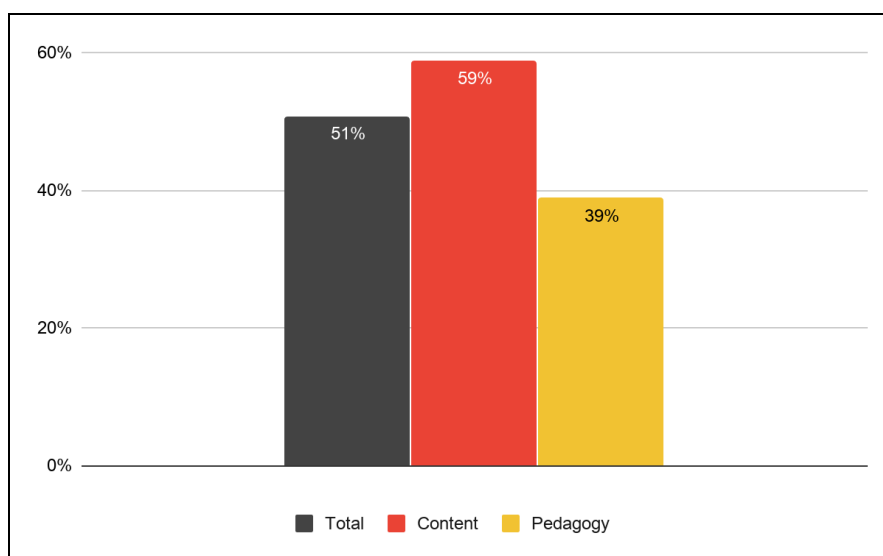
*Percentage of marks scored in the baseline that was conducted with 43 enrolled teachers*

Student baseline shows more number of students scoring less than 50% marks for all grades

The LFE team planned to conduct a student baseline for grade 2 to 4 to understand the current learning levels of the students. The baseline test was a paper-based assessment of the basic competencies of maths. The LFE team randomly selected 15 classrooms among the selected teachers, five each from grade 2, 3 and 4 for the baseline. The assessment paper covered all the competencies of Maths of the previous grade of the student. The assessment was designed and conducted by the LFE team. The graph below shows the percentage score of students by grades. Overall the number of students below 50% is much higher than the ones scoring more than 50%. This is much higher in grade 4 as we can see a decline in the number of students scoring more marks.

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[3] Refer to the teacher baseline questionnaire attached in the annexure.

Grade	2	3	4	Total
No of students	177	244	258	**679**

Division of participating students across grades
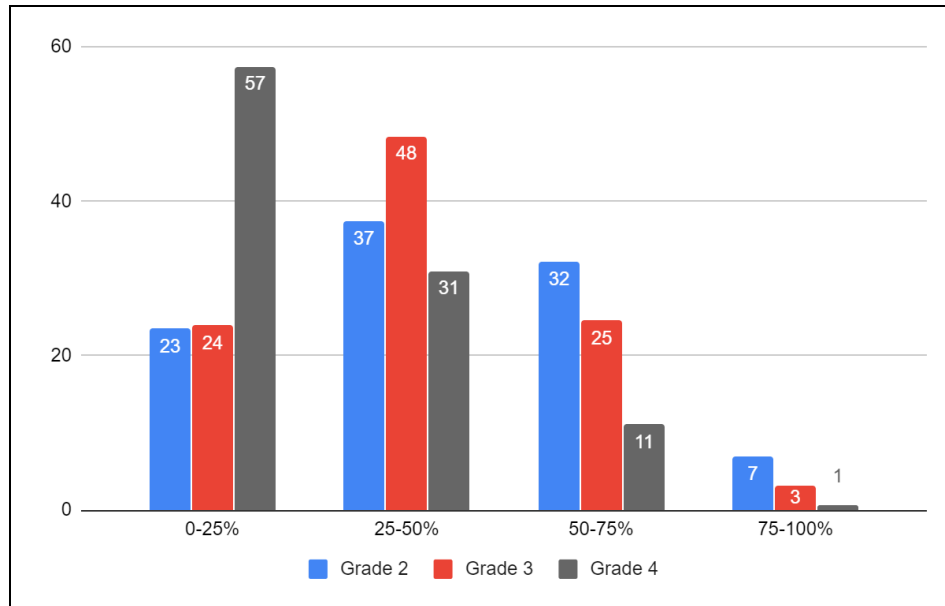
Grade wise classification of number of students by scores

Outputs

Focus area	Inputs	Output/ outcome
Understanding the system	HM orientation	**92** HMs present at the event
	Teacher Enrolment Form Distribution	**72** applications [Grades 1-4] **20** applications [Grade 5]
	Teacher Baseline	**43** teachers participated *(More data in the graphs above)*
	Student Baseline	**15** classrooms **679** students [Grades 2-4] *(Results shown in the graph above)*

Teacher Professional Development

## Teacher training to build Maths content & pedagogy expertise

One of the most important inputs by the LFE team was the in-person teacher training. Keeping in mind the overall Maths competencies for Grades 1-4 the LFE team planned a progression of the teacher training. The teacher training has been a space where teachers get a chance to go deeper into the Maths content and learn more about pedagogical practices. This space was also very crucial to push the teachers' mindset of collaboration, continuous learning and reflection. Throughout the last academic year, LFE conducted 12 days of teachers training for grade 1 to 4 teachers. The concepts covered in the training are given below:

Focus area	Details
Maths Content (grade 1-4)	● Aspects of effective mathematics education ● Basic Numeracy ● Place value ● Measurement ● Addition and Subtraction ● Multiplication and division
Pedagogy	● Lesson Planning ● Classroom management strategies ● Demo lessons ● Use of TLM ● Best practice sharing
Mindset	● Personal Reflection session ● Problem-solving ● Collaboration activities ● Importance of continuous learning

Teachers working in groups during the teacher training

On being asked about the quality and relevance of the content taught in the training majority of the teachers gave a high rating as shown in the graph below:

How effective is the content taught in the training? (scale of 1-4, total 35 responses)

22.9%

77.1%

● 3   ● 4
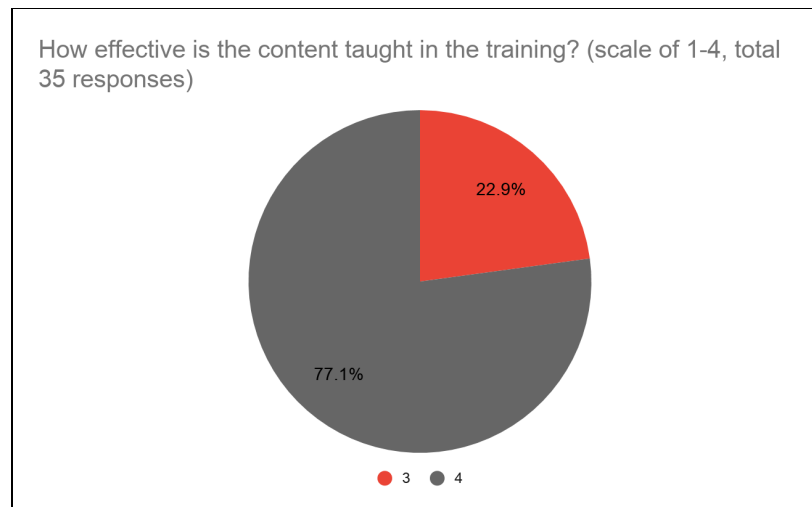
Teacher ratings about effectiveness of training content as per the EoY survey

The teacher training also saw high participation from the PCMC officers. The PCMC project head Mrs Anita Joshi ma'am, PCMC supervisors, PCMC CSR consultant Mr Vijay Wavare sir and Additional commissioner Mr Santosh Patil sir also visited, observed and interacted with the teachers during the training. The PCMC's official social media cell also shared about the training through their official Facebook and Twitter page.

Tweet by PCMC about the teacher training

Stakeholder testimonial:

"प्रशिक्षण खरोखर खुप छान असते.. या प्रशक्षणामुळे गणित शिकविण्याच्या विविध ट्रिक्स समजल्या.. मुलांना विविध शाब्दिक उदाहरणे तयार करण्यास शिकवले.. गुणाकार भागाकार यांचे विविध अर्थ समजले.. त्यांच्यातील फरक समजण्यास मदत झाली.. थॅक्यू"

- *Madhuri Barkul (Teacher, Sonawane Wasti School, PCMC)*

(Training is really very nice...because of this training I got to know different tricks of teaching Math...Taught students to create various word problems...understood the different meanings of multiplication & division...it helped in understanding the difference between them...Thank you)

In-classroom support to strengthen the pedagogical practices

In-classroom support is the second most important input by the LFE team to all the teachers. As per the teacher baseline and interviews, teachers mostly need support in pedagogy. The best way to provide pedagogical support is by observing the classrooms, giving demos and having the debrief of the same. The LFE team conducted classroom observations and debriefs with all the teachers constantly throughout the year. To ensure consistency each teacher was observed once a month at the least. Classroom observations were planned and monitored using the TEACH rubric created by The Word Bank Foundation. In this academic year out of the four areas in the TEACH rubric, time on task, classroom culture and instructions were the three areas focused by the team. The overall focus areas and the structure of the classroom observation is explained below.
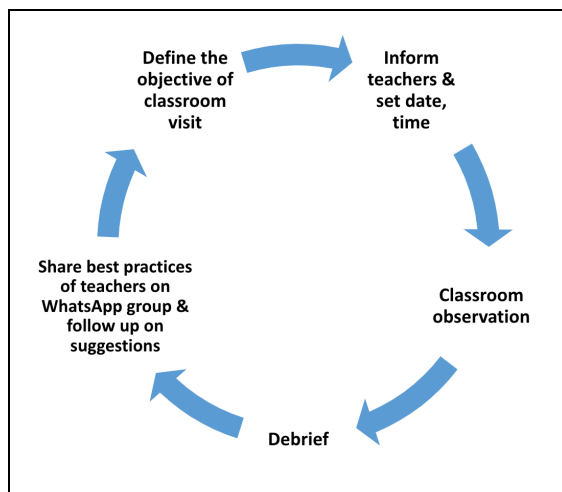
The focus area of these classroom visits

- Support in implementation of training content
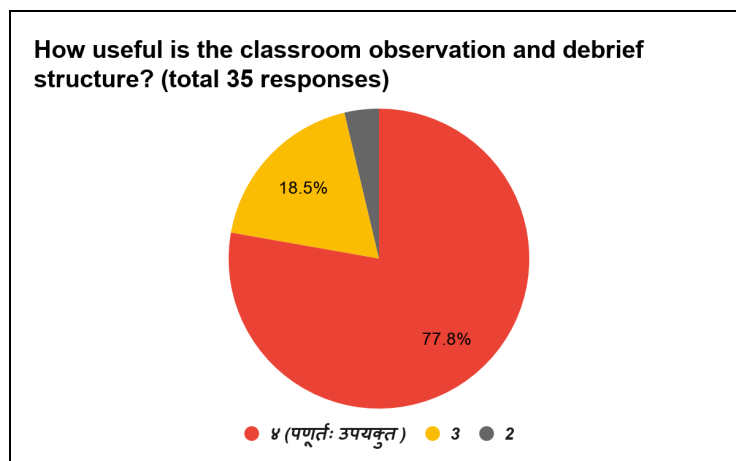- Understand teachers' classroom practises

- Provide individual coaching
- Need base demo lessons

The Structure of in-classroom support is given below


Classroom observation and debrief cycle

On being asked about the effectiveness of the in-classroom support majority of the teachers gave it a high rating as shown in the graph below:

Teacher rating for the classroom observation structure as per the EoY survey

The team has been capturing their observations in a post-observation google form. Based on the evidence from their observation and debrief the team rated the teacher pedagogy practices as per the TEACH rubric. Considering the first observation of each teacher as a baseline and the third or fourth observation as an endline for this academic year, some positive shifts in the practices were observed. In all of these three strands combined around 41% teachers moved one level up as per the TEACH rubric. The actual baseline and endline data is shown in the graphs below and some of the learning from this are captured in the learnings section of this report.
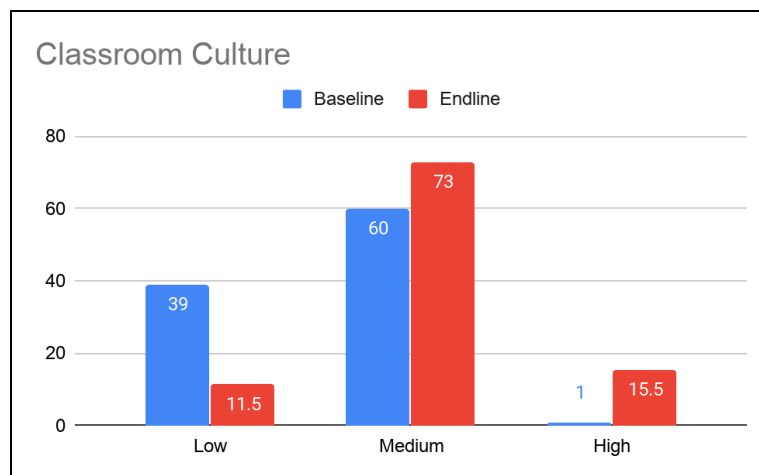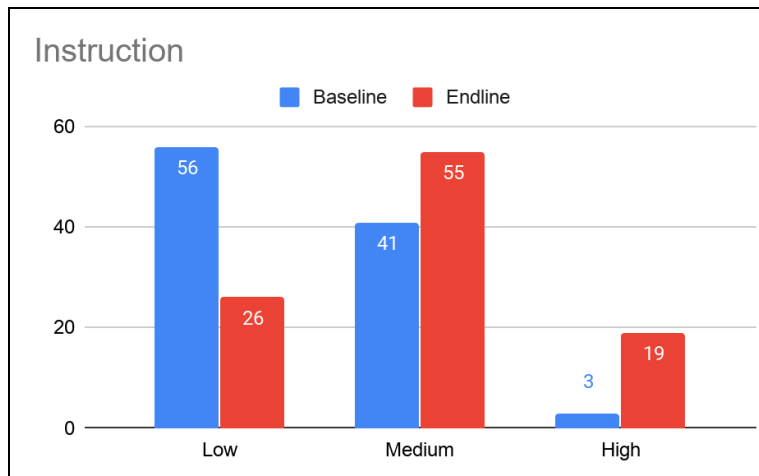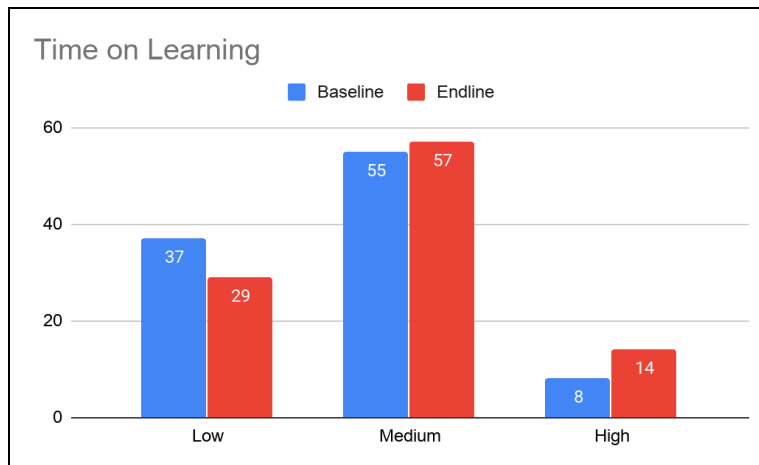
Percentage of teachers at each level in baseline and endline as per TEACH Rubric

Stakeholder testimonial:

LFE सदस्य वर्गात येतात, पाठ पाहतात व नोंदी करतात, नोंदी करून झाले की प्रथम आमचे कौतुक करत असतात. 'तुम्ही लेसन खुप छान घेतला, मुले पटपट उत्तरे देतात, गाणी छान घेतली, शाब्दिक उदाहरण मुलांना छान करता येते, वगैरे.' नंतर सुधारणा करायच्या गोष्टी सांगतात.'तुम्ही ही गोष्ट अॅड केली असती तर, ही स्टेप मध्ये राहीली, मुलांना काही प्रश्न विचारत असे.' वर्ग पाहणी मुळे आम्हाला आमच्या चुका, त्रुटी वेळीच नीट समजून घ्यायला मदत झाली. व कौतुकाची थाप पाठीवर पडली की आणखी हुरूपही येते.

-Nilima Khot (Teacher, Nagu Bhau Barane primary School, PCMC)

(LFE members come to the class, observe the lesson & take notes after which they first appreciate us. 'You took the lesson well, students are giving quick answers, songs were nice, students can solve word problems properly etc'. Then they share things to improve. 'If you had added this .. you missed this step..you could ask questions to students etc'. Classroom observation helped us in understanding our mistakes & development areas on time. And when we get an appreciative pat on our back we feel motivated)

An exposure to best practices outside of PCMC

LFE team arranged an exposure visit for PCMC teachers on 24 February 2020 at Kamala Nimbkar Balbhavan, Phaltan. 34 teachers and one supervisor actively participated in this exposure visit. The main idea behind organising the visit was to expose the teachers to best practices from the other geographies.

The objective of this exposure visit
1. Provide teachers the opportunity to go beyond their classrooms and talk to other teachers and observe their teaching-learning practices.
2. Observe the methodology used by the different teachers for multilingual and multilevel classrooms

During the exposure visit teachers got an opportunity to actually observe the classroom and understand the classroom practices of teachers. Teachers got an opportunity to ask questions to dig deep into the thought process behind the work at Kamala Nimbkar Balbhavan. The teachers also got an opportunity to interact with the school founders and academic head, in this interaction discussion around the challenges from PCMC classrooms took place. Important learnings about being more planned, being patient, managing multilingual students, et.c were some of the major takeaways as shared by the teachers. Also, the teacher got a chance to look at various types of TLM and some of them even purchased or took photos so that they replicate the same in their classrooms. This exposure visit also helped the LFE team and the teachers to bond together and feel as one team.

LFE team, PCMC supervisor and teachers at the Kamala Nimbkar Balbhavan, Phaltan

Stakeholder testimonial:

२४ फेब्रुवारी रोजी कमला निबंकर बालभवन येथे शैक्षणिक दौरा आयोजित केला होता या संस्थेमध्ये जाणीवपूर्वक केलेल्या गोष्टी(१) प्रत्यक्ष साहित्याव्दारे व कृतीयुक्त शिक्षणावर भर साहित्याचा भरपुर वापर विद्यार्थ्यांचे स्वतः स्वयंअध्ययन गटात काम करणे नियोजन शिस्तबद्ध होते (२) बालगटापासुन चित्रकला व वाचनालय सेपरेट शिक्षक असल्यामुळे स्वतंत्र विचार करुन विद्यार्थी लेखन करतात गोष्टींची सुंदर चित्र काढतात भाषा विकास व भावना विकास झाल्याचे जानवले (३) स्वच्छता वेळापत्रकानुसार प्रत्येक विद्यार्थी वर्गाची व शाळेची स्वच्छता करतात (४) Granny शिक्षका नवीन माहिती मिळाली

<p style="text-align: right">-Jayshree Saltogi (Teacher, Primary School Nigadi, PCMC)</p>

(on 24 February an exposure visit to Kamala Nimbkar Balbhavan was organised. The conscious steps taken by this organisation were 1)focus on activity based learning and use of TLM by students, self learning by students in groups following a proper plan 2)Right from nursery there is a separate teacher for arts and library because of which students can independently think and write stories with beautiful pictures. Noticed development in language and emotions. 3)each student cleans the classroom and school according to the Cleanliness duties in their timetable 4) Got new information about 'Granny teacher')

Outputs

The no of training days, average teacher attendance and average feedback of all the trainings are given below:

Grade	Total days of training	Attendance	Feedback (Rating on overall effectiveness of training)
1st & 2nd	6	80%	98% rated 4/4
3rd & 4th	6	86%	94% rated 4/4

Month wise classroom visits, observations with focus areas:

Month	No of school visits	No of classroom observation & debrief	Focus Area (Pedagogy)
SEPTEMBER	17	2	
OCTOBER	20	8	1. Usage of grade-specific learning aides 2. Assessment 3. Relationship building
NOVEMBER	42	26	1. Positive behaviour reinforcement/narration 2. Lesson facilitation 3. Content as per training
DECEMBER	50	39	1. Lesson Facilitation 2. Instruction/CFU 3. Feedback
JANUARY	39	37	1. Time on Learning 2. Positive behaviour narration 3. Classroom setup
FEBRUARY	50	34	1. Check for Understanding 2. Need-based carry forwarded from previous month
TOTAL	218	146	

Responding to COVID-19: Ganit Mitra Webinar Series

Due to the closure of schools in the lockdown phase to prevent the spread of COVID-19, in-person training could not be executed for the teachers. Also, Student assessment, teacher assessment, EoY conference could not be conducted. However, the LFE team continued to stay in touch with the teachers and decided to implement a webinar series to support as well as keep them motivated. The webinar series saw quick adoption of technology by the teachers and as a result, the team was able to continue the momentum of the work in PCMC. A total of 7 webinars each lasting between 1 - 1.5 hours were conducted for the PCMC teachers.

| Webinar No.	Topic covered
1	Introduction to Zoom app
2	Response to the educational needs of other countries v/s Our context
3	Storytelling
4	Summer camp with Abhyas Mala
5	How to create Google forms
6	Google Forms: Quiz edition
7	Google Forms: Analysing forms

Topics covered under webinar series
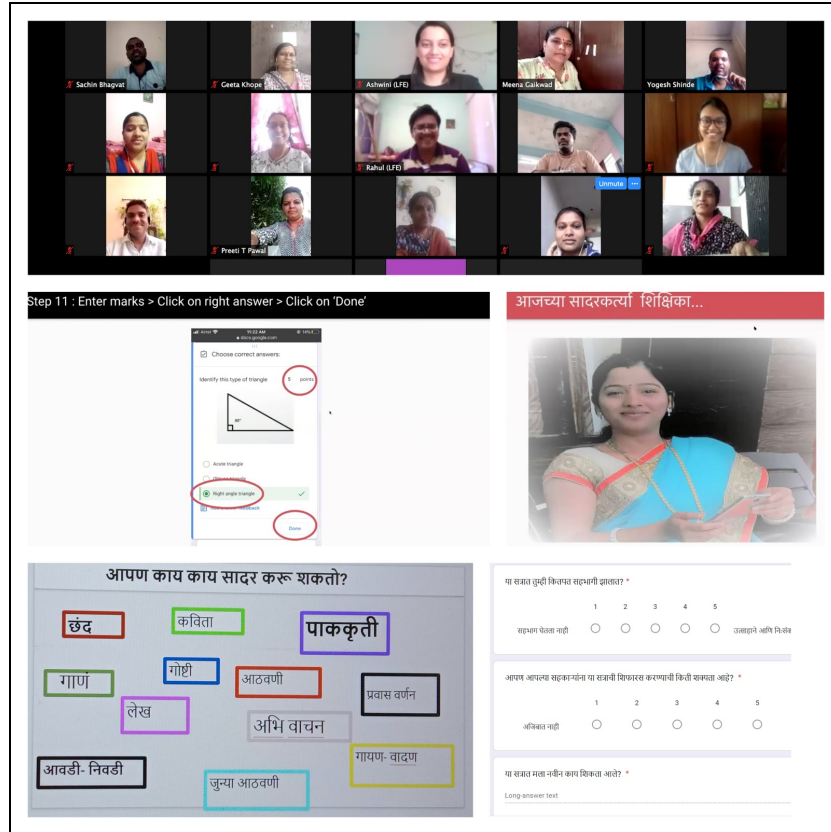
Screenshots from the webinar series

Outputs:

The webinar series which started as a response to the COVID 19 was very much appreciated by the teachers. This was evident from the fact that the webinar continued consistently for seven weeks. Even though the webinar software and the topics covered were new to the teachers, they made sure they were attending the webinar and were learning from it. The webinar also saw high ownership from the teachers as in four of these webinars some parts were completely facilitated by teachers themselves. The graph below gives an understanding of the teachers' feedback of the webinar series.
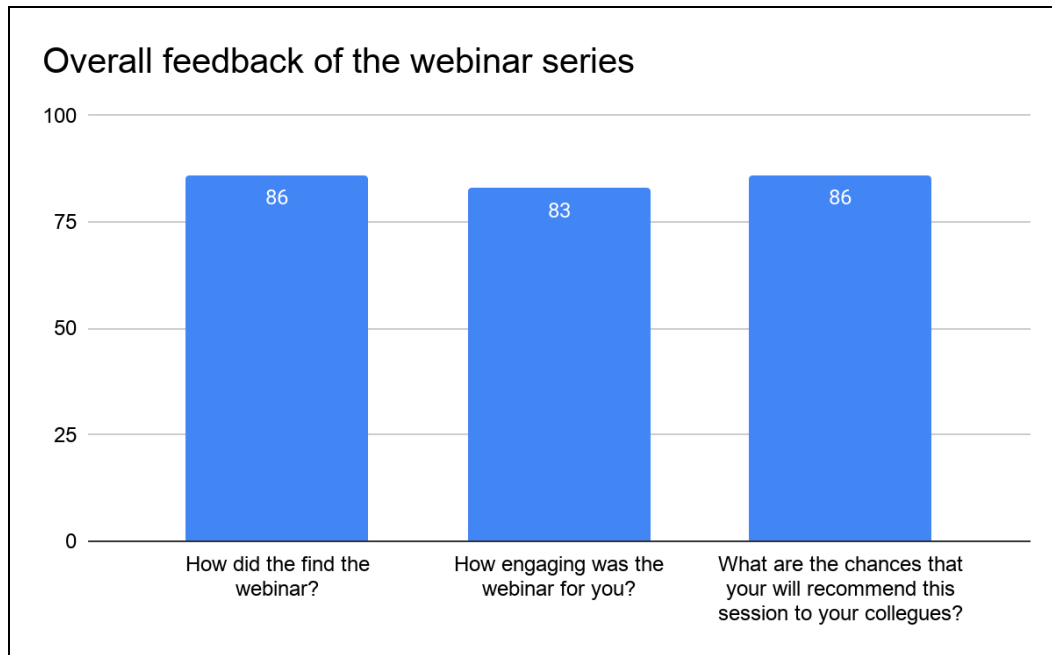
Percentage Average score given by teacher to all webinars combined

Highlights

Building a co-working culture during Shikshan Utsav

In order to celebrate the efforts of all the teachers and schools in PCMC, the LFE team identified the need of organising a teacher showcase event for all PCMC schools. A teacher showcase event serves as a platform to encourage teachers, headmasters and NGOs to showcase their best practices to their peers. To build on this idea the team proposed the concept of Shikshan Utsav for the academic year 2019-2020. This platform presented an opportunity to network while sharing best practices of peers and learning from them. The other objectives behind helping PCMC organise the Shikshan Utsav was to build healthy co-working relationships, establish strong bonds between the PCMC schools and exhibit quality learning practices that will drive enrolment.

The LFE team was constantly co-working with the PCMC officers along every step of the way to ensure the Shikshan Utsav was a success. The idea was to advise them on the entire process and implementation. The team helped the officers in planning the application process, organise the screening and orientation of all participating teachers and eventually put together the logistics of the main showcase event. A total of 65 applications from teachers were received post which 32 teachers were shortlisted to display their best practices. Shikshan Utsav was inaugurated in the presence of PCMC mayor Mrs Ushatai Dhore. In total there were 31 stalls put up by teachers of all mediums and grades across PCMC. The main event was followed by shortlisting top 5 stalls/best practices displayed by the teachers. The display of best practices were varied in nature and very informative. Shikshan Utsav garnered visitors ranging from all PCMC education department officers, PCMC education committee, Pune DIET officers, all teachers, students and parents and few NGOs. The event observed a total footfall of around 450 teachers and officers.

PCMC Mayor Mrs Ushatai Dhore inaugurating Shikshan Utsav 2020

Mrs. Manisha Bhise from the Shikshaantar project presenting her Maths teaching-learning practices in one of the shikshan utsav stalls

Progressively positive response from teachers

The overall engagement behaviour of the teachers throughout the duration of the program in the academic year 2019-20 improved drastically. Over a period of time the training saw more teachers participate actively in presentations and activities. According to the feedback given by the teachers each training had new information about the Math concepts and new student practice ideas they can implement in the classrooms. The in-classroom support structure, which included an LFE team member observing a class and providing support and feedback thereafter, was a new one for the teachers. Although a little hesitant in the beginning the teachers found merit in the feedback given and noticed instances of improvement in their classrooms. This led to them actively seeking out suggestions by themselves from the LFE team members. An indicator of training & feedback acceptance among teachers being high was the implementation of pedagogical practices in their own classrooms.

Nitin Ghode sir implementing the pedagogical practices shown during trainings for Grades 1&2

It was a conscious effort from the team to have an active & engaging WhatsApp group where teachers would celebrate their successes, share their best practices and learn from their peers. Initially the team members were active and driving the conversations in these groups. Continued efforts proved beneficial over time as teachers slowly started interacting on the platform.
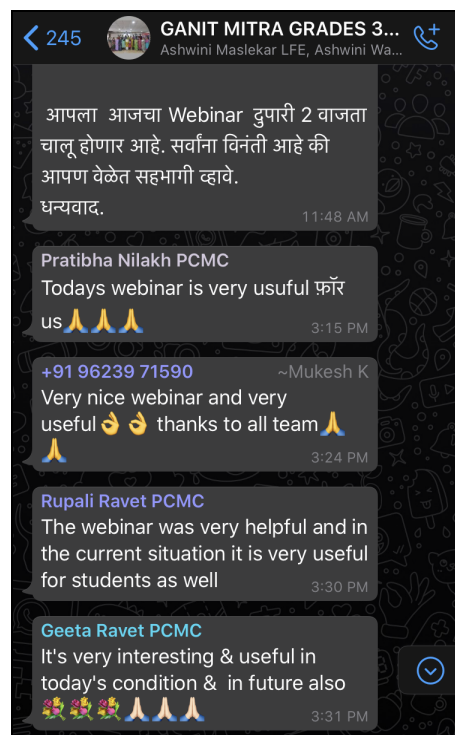
The WhatApp group of Ganit Mitra teachers

Building trust and collaboration between LFE and PCMC

Mrs Jyotsna Shinde, Education Officer (Primary), PCMC

"विद्यार्थ्यांच्या गुणवत्तावाढीसाठी शिक्षक आणि अधिकारी नेहमीच प्रयत्नशील असतात आणि त्याचा सकारात्मक परिणामही नियमित दिसत असतो. परंतु या प्रयत्नांना एक संरचनात्मक स्वरूपात अधिकचे सहकार्य मिळाले तर त्यातून अपेक्षित असलेला परिणाम हा लवकर मिळण्याची शक्यता असते. आणि हीच गोष्ट गणित मित्र उपक्रमामुळे पिंपरी चिंचवड मनपा संचालित शाळांमध्ये होऊ घातलेली आहे. गणित विषयामध्ये शिक्षकांना प्रशिक्षणातून मार्गदर्शन, प्रशिक्षणात सांगितलेले वर्गपातळीवर राबविताना अडचण येऊ नये त्याकरिता वर्गभेटी ह्या या उपक्रमाच्या जमेच्या बाजू आहेत. आणि त्यामुळेच शिक्षकांच्या संकल्पना अधिक स्पष्ट होण्यास, त्या वर्ग अध्यापनामध्ये राबविण्यास आणि त्याद्वारे विद्यार्थ्यांची गणित विषयांमधील गुणवत्ता वाढ या सर्व गोष्टी अगदी सहज साध्य होतील असे वाटते. यासोबतच LFE टीमने शिक्षणोत्सव आयोजित करण्यासाठी केलेले सहकार्य, लॉकडाउनच्या काळात सुद्धा ऑनलाईन पद्धतीने शिक्षकांशी नियमित साधलेला संवाद हे उत्साहवर्धक आणि कौतुकास्पद होते. तरी शिक्षण विभागाच्या वतीने LFE संस्थेचे मनपूर्वक अभिनंदन आणि आभार. LFE संस्थेचे सहकार्य असेच पुढील शैक्षणिक वर्षात चालू राहील हीच अपेक्षा आणि खात्री."

"Teachers and officers are always working towards improvement in student learning and we can consistently observe the positive impact of their efforts. But if these efforts get more support in a structured way, the expected results are likely to be achieved sooner. This is exactly what has begun in the PCMC schools associated with the Ganit Mitra program. Guidance to the teachers in Mathematics through training and classroom visits to resolve issues faced by them in implementing the content from training are the strengths of this project. Which is why it feels like this is definitely going to lead to clarity of the concepts for the teachers, implementation in teaching and resulting in improvement in the students' Math learning outcomes. Along with this the support provided by the LFE team in organising the Shikshan Utsav, continuation of conversation with teachers even during the lockdown through online meetings is motivating and admirable. Thus, I congratulate and thank LFE on behalf of the department of education. I am sure that LFE's support will continue this way into the next academic year."

Program Learnings

Widespread & growing NGO intervention across PCMC

The LFE team in the beginning of the academic year had conducted frequent visits to schools and the PCMC Bhavan to understand the education landscape and existing processes. PCMC is predominantly an industrial area with many IT, locomotives and automation companies having a huge presence. As part of their CSR initiatives many such companies invest in operating developmental programs to support PCMC in various levels and capacities. The companies either have their own CSR programs or partner NGOs running interventions. To avoid any overlap of the Ganit Mitra program implementation, the aim of the LFE team was to develop an understanding of other NGO interventions working in the system. Some of the organisations like Bajaj, Tech Mahindra Foundation, Save the Children, Akanksha Foundation, etc. were operating programs with focus areas on balwadi, tech infrastructure, teaching learning materials, remedial teaching, sports, and content such as Science, English, etc. The efforts of the CSR department of PCMC was concentrated on aligning the offerings of the organisations and companies to the on-ground needs of the different sectors like health, education, etc. There were concentrated efforts for all NGOs to share respective learnings and align on their interventions in the geography. During the team's initial visits the teachers were quick to point out the diminishing classroom time due to the high number of training sessions. The team kept in mind these circumstances while scheduling training dates and school visits. The project also observed a reduction in enrollment targets considering a teacher's classroom time may be affected. The team plans to continue its efforts in aligning most NGO interventions in the future to best support the stakeholders in the system.
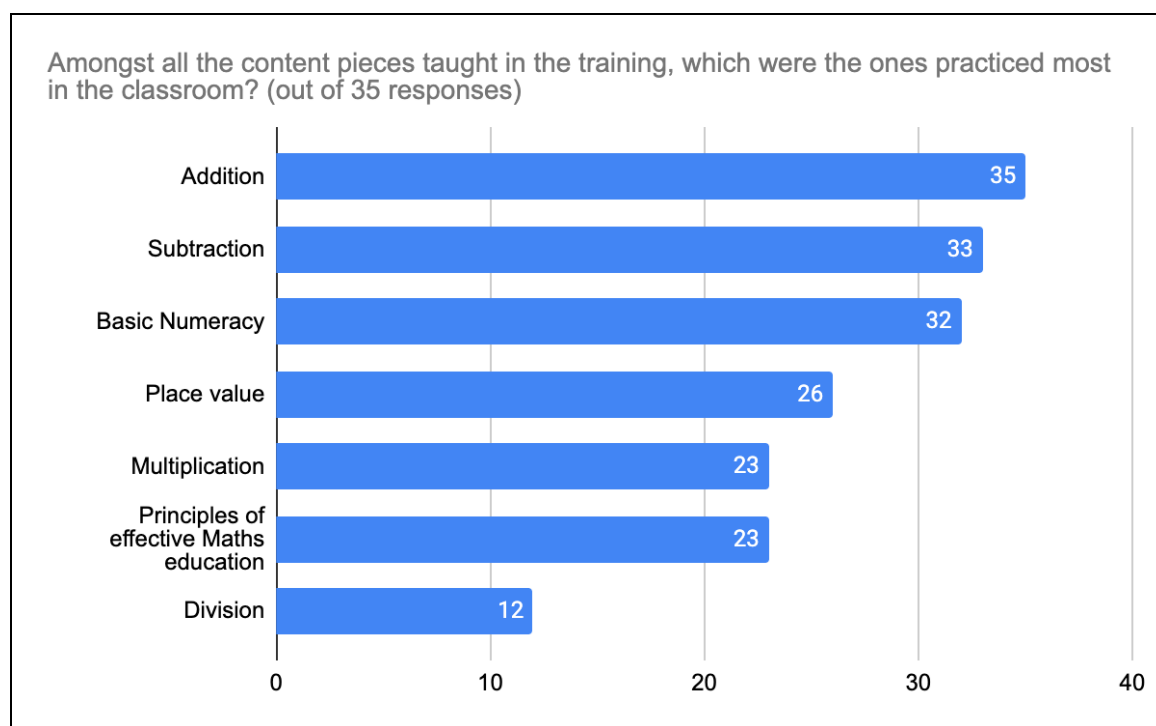
Learnings from the classrooms

Teachers revisited foundational concepts the most

As part of an effort to understand the challenges faced by teachers in the classroom, the team had conducted surveys and interviews in the beginning of the project. As per the graph below most teachers reported that they find subtraction, addition & operation on numbers difficult to teach.
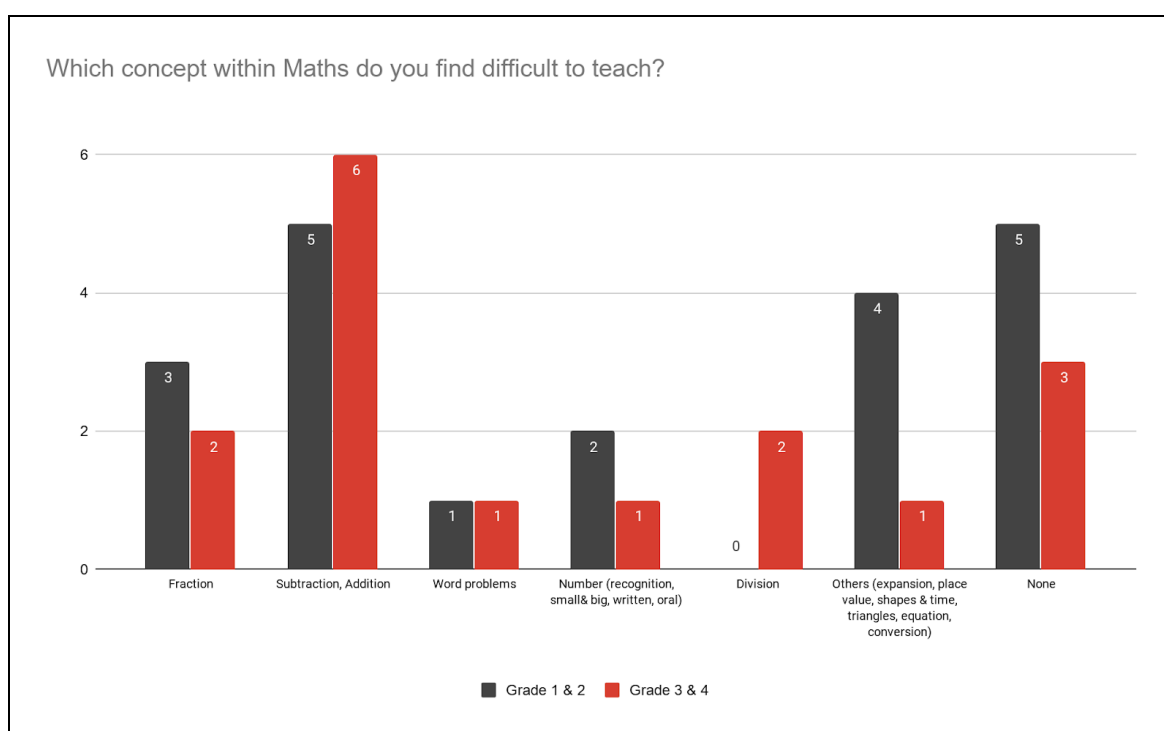
Responses shared by teachers about difficult concepts in Maths during the teacher interviews

The findings were validated when the team started visiting classrooms. It was observed that students had difficulty in recognising numbers and writing it in words correspondingly. Additionally, they had confusion in subtraction and addition steps. The content trainings were planned keeping in mind the challenges faced by the teachers and students in foundational concepts. Even though the training was lagging far behind the academic schedule, the teachers implemented their learnings almost immediately in the classrooms. The team during their school visits found teachers practising number system, subtraction and addition the most. They re-taught the concepts and reported that students had a far better understanding this time around. The graph below shows that an average of 95% teachers mentioned during the EoY survey that they made students practice addition, subtraction and number system the most.

Amongst all the content pieces taught in the training, which were the ones practiced most in the classroom? (out of 35 responses)

Concept	Value
Addition	35
Subtraction	33
Basic Numeracy	32
Place value	26
Multiplication	23
Principles of effective Maths education	23
Division	12

Response shared by teachers when asked which concept was most used in classroom

Concentrated Support on Pedagogical Practices

In the beginning of the year, while conducting needs analysis it was reported that teachers themselves had identified that they struggled most with classroom management, delivery of the concepts in classrooms, usage of appropriate teaching aids and facilitating differentiated learning. The graph below shows that most teachers had identified pedagogy as their area of difficulty during teaching in a classroom.
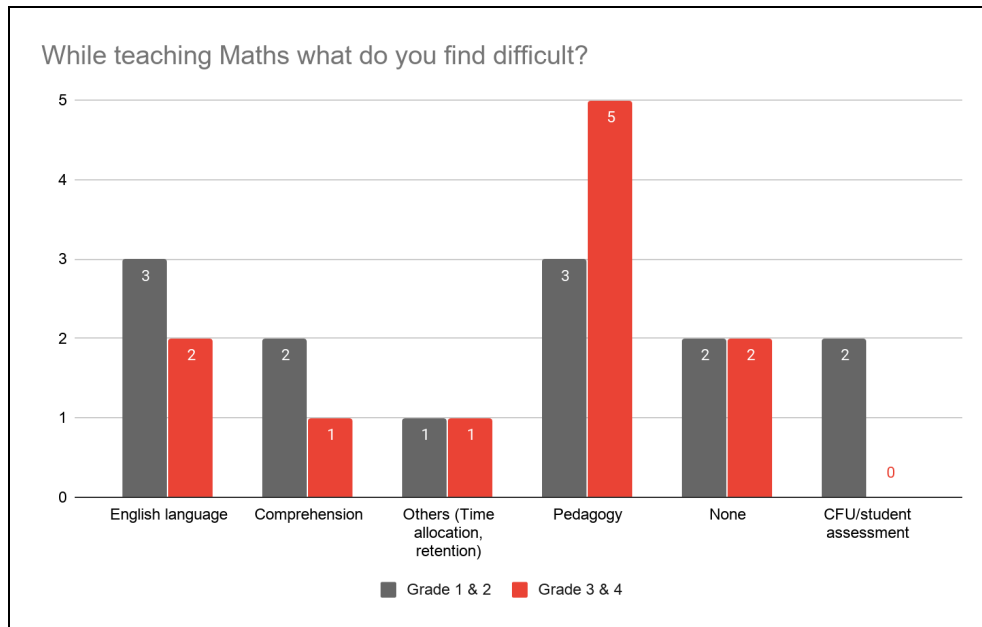
Responses shared by teachers when asked what part of teaching Math was most difficult

The observations during the also classroom visits indicated that pedagogy was indeed a struggling point. Classroom management, explicit instructions, setting classroom culture, differentiation techniques were some of the focus areas for in-classroom support. Pedagogical practices of the teachers were gauged as per the TEACH rubric. After consistent feedback and teachers incorporating them while teaching, the team observed a slight shift in these parameters. According to the graphs shown in the in-classroom support section of this report, it can be seen that most (44%) teachers who scored 'Low' during baseline shifted to 'Medium' during endline. Overall, it was observed that ~41% teachers moved one level up in the TEACH rubric. This reinstated the team's belief that with consistent support, classroom pedagogical practices continue to improve.

Trends from Focus Group Discussions

An EoY FGD was conducted with the PCMC teachers to obtain in-depth feedback about the impact of the project that was implemented throughout the academic year 2019-20. A total of 24 teachers of Grades 1-4 participated in groups of four. The feedback given was mainly around training sessions, in-classroom support and overall project goals. Below are some of the trends that surfaced from the process.

Teacher Training	
Most appreciated	**Suggestions given by teachers**
- The content of the trainings was high on relevance - Clarity in conceptual understanding - New information about fundamental concepts and activity ideas - Effective use of TLMs - Increased participation and confidence in students - More practice of word problems	- Trainings should begin sooner in the academic year - Include trainings on other subjects such as English, Marathi & e-learning - Provide with more TLMs - Training duration can be reduced to 4-5 hours

In-classroom Support	
Most appreciated	**Suggestions given by teachers**
- Deep sense of appreciation felt by the teachers through WhatsApp group & HM updates - Teachers learnt to be patient with students' growth - Learned to check teacher voice and tone - Started practicing positive thinking - Observed an increase in confidence - Developed high will power - Experienced high comfort level to share challenges	- Teachers suggested that the team can conduct demo lessons - More guidance on how to make learning aides - Support with online teaching skills - More techniques on differentiation teaching

Apart from these two areas, the teachers had some interesting suggestions regarding the overall project. The teachers expressed apprehension regarding the teacher mentor model. Their opinion was that peer support may not work amongst them and they themselves may not be able to hone the specific expertise & skills to support other teachers. Their suggestion was to continue the training with an external expert and open it to all PCMC teachers. However, they also feel with proper

communication and support from other teachers the mentor teacher model can be used to reach all the teachers in PCMC.

Partnerships

| Name	Nature of Partnership	Partner Since	Work Done
Atul Gaikwad (Chief Operation Officer, Better Education Lifestyle and Environment Foundation)	- Content & Training partner - Mathematics	2019	● Teacher training - Maths - 7 days ● Teacher content and pedagogy baseline creation ● Support in student baseline creation

Looking Ahead

Plans for Next Year

In the first year, LFE team worked closely with the PCMC education department to understand the current reality of the system. Simultaneously, the team also worked with ~50 PCMC teachers from grade 1 to 4 to improve pedagogy and content in Maths. So far the project has achieved a high amount of investment from PCMC officers and teachers. Our direct stakeholders i.e. teachers appreciated both the training as well as in-classroom support by the LFE team. Building on this year full of learnings and accomplishments the LFE team has created a detailed and ambitious plan for next three years. The board objectives are as follows.
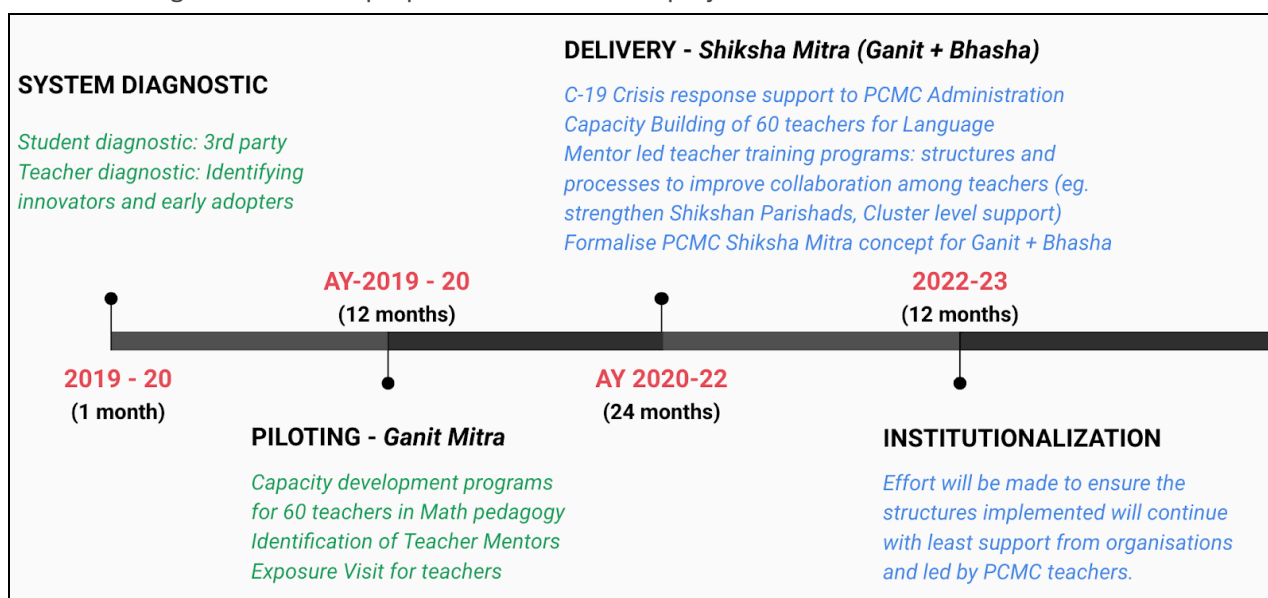
By 2023, the project aims to:

- Improve student learning outcomes in **Mathematics, Language (Marathi)** and **Life-Skills** as measured against third-party assessment and/or government-led assessments
- Institutionalise **peer-led teacher communities** by developing teacher capacities in Math, Marathi pedagogy and life-skills approach
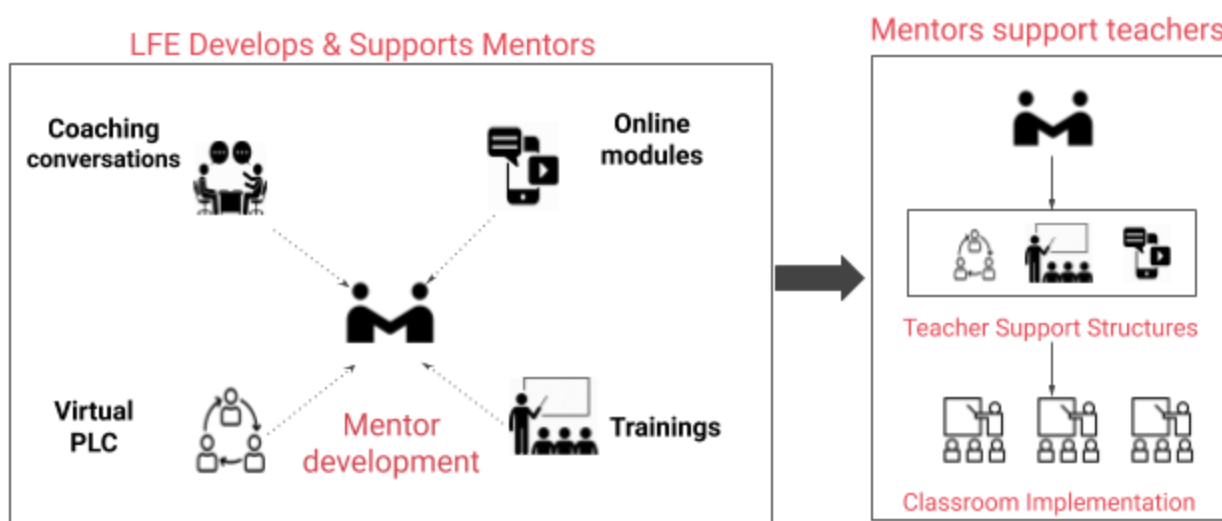
(The teacher mentor model as currently envisioned)

The below diagram shows the proposed timeline of the project:

DELIVERY - *Shiksha Mitra (Ganit + Bhasha)*

C-19 Crisis response support to PCMC Administration
Capacity Building of 60 teachers for Language
Mentor led teacher training programs: structures and
processes to improve collaboration among teachers (eg.
strengthen Shikshan Parishads, Cluster level support)
Formalise PCMC Shiksha Mitra concept for Ganit + Bhasha

SYSTEM DIAGNOSTIC

Student diagnostic: 3rd party
Teacher diagnostic: Identifying
innovators and early adopters

AY-2019 - 20
(12 months)

2022-23
(12 months)

2019 - 20
(1 month)

AY 2020-22
(24 months)

PILOTING - *Ganit Mitra*

Capacity development programs
for 60 teachers in Math pedagogy
Identification of Teacher Mentors
Exposure Visit for teachers

INSTITUTIONALIZATION

Effort will be made to ensure the
structures implemented will continue
with least support from organisations
and led by PCMC teachers.

APPENDIX

Project Theory of Change & LFA:

https://drive.google.com/file/d/14V8Xmq3YFOMuoqaPx93fSART5sioHxXs/view?usp=sharing

Teacher Knowledge test:

https://drive.google.com/open?id=1vV9zYUgjpD-rJD_HgRLEaLmnhWm-1Pf6

Teacher Mindset Interview processes document:

https://drive.google.com/open?id=17KefdEtgvvd4ZS__pxa1d7cVybQSVETB

TEACH Manual:

https://drive.google.com/open?id=1ASKndMRJsvdybFWjoQ0-WEPRq1LaROwX

Student Baseline Grade 2 Math:

https://drive.google.com/open?id=1KkUqVYzDxoMKRIB9cwMALoa4PZPzFy11

Student Baseline Grade 3 Math:

https://drive.google.com/open?id=1dHqPoy4bTg2HoTgH3M5B4Gyhv84mABcA

Student Baseline Grade 4 Math:

https://drive.google.com/open?id=1iNANtqTsdj2YmeASlPSgfANdrp68GfRp

TLM provided (Swadhya Card as created by QUEST):

https://drive.google.com/open?id=1_vFYfzg4DuWKHDZRsPPkOeVPPRG890w9