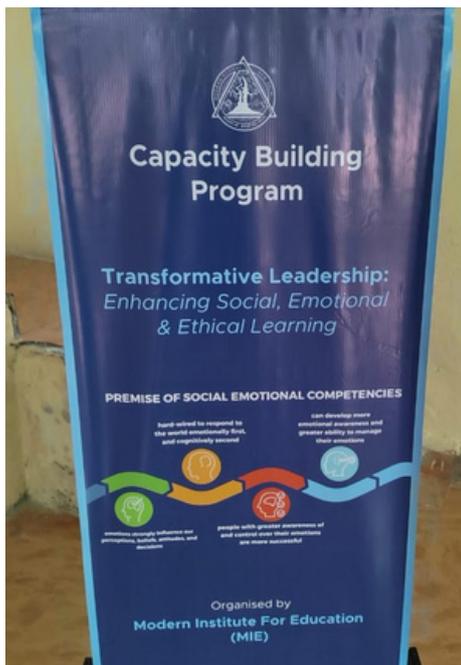


# MIE COMPASS



Vol 1, No. 2 Jan - March

# EDITOR'S NOTE

## Contents

Report, &  
Blogs

## Editor

Feroz Khan

## Editorial Committee

Ambika Pant  
Abha Sadana  
Anviti Singh  
Feroz Khan

## Admin

Ashok Kumar Yadav

## Design and Production:

Feroz Khan (MIE)

## Dear Readers,

Greetings and a Happy New Year!

As we step into 2025, we look forward to a year filled with learning, and innovation. The first edition of the year brings together the ideas, and reflections from the Modern Institute for Education (MIE).

This edition makes an attempt to provide you the highlights of MIE recent workshops on Social, Emotional, and Ethical Learning (SEEL), Transformative Leadership, and Language & Literacy Skills.

This edition also features a special focus on mathematics education. The blogs by the teachers argues gap between 'school math' and 'street math.' Their investigation focuses on how real-world problem-solving can enrich classroom learning. In addition, the incites from the teachers offers the to make mathematics easy, joyful and engaging.

We invite feedback and suggestions from you for shaping our educational landscape. Your feedback and suggestions will be valuable contribution to our work.

Happy Reading!

**Feroz Khan**

Email: [admin@mieglobal.in](mailto:admin@mieglobal.in)

# WORKSHOP ON A JOURNEY INTO SOCIAL, EMOTIONAL, AND ETHICAL LEARNING

Report prepared by The School Team



Venue: The Modern School, Sector-85, Greater Faridabad

Dates: 8th & 9th January 2025

No. of Participants: 52

In a world where grades often overshadow growth, The Modern School, Sector-85, Greater Faridabad, dared to ask: What about the heart and mind? Over two transformative days, educators immersed themselves in a capacity-building program on Social, Emotional, and Ethical Learning (SEEL).

Guided by the dynamic MIE Team—Ms. Pratima Mittal, Ms. Abha Sadana, and Dr. Anviti Singh—this workshop redefined education as more than academic excellence.

## Day 1

### Day 1: Building Bridges Between Hearts and Minds

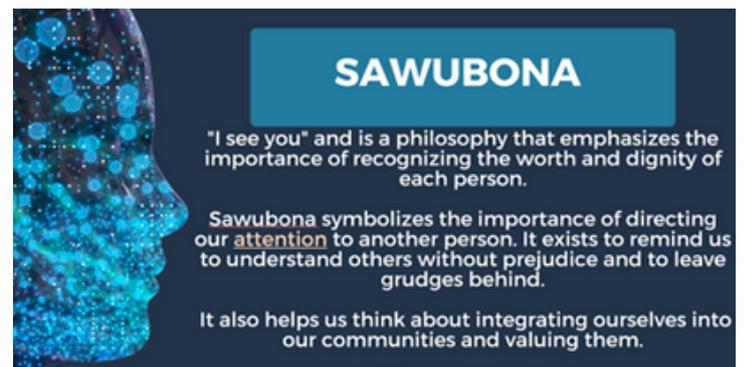
#### A Fresh Perspective

The day began with a thought-provoking session on the **social and emotional challenges students face today**. Educators explored how ancient wisdom from Mahakavyas emphasized emotional intelligence as a foundation for personal success.

Two powerful African philosophies, Sawubona ("I see you") and Ubuntu ("I am because we are"), set the tone for the day, reminding participants of the beauty of interconnectedness.

### Curiosity vs. Conformity

Sir Ken Robinson's striking observation—"School kills curiosity"—sparked a lively debate. Are we teaching students to learn or simply to memorize? The discussion inspired a shift towards fostering curiosity and emotional growth in the classroom.



### The Science of SEEL

Educators delved into:

- Howard Gardner's Theory of Multiple Intelligences: Recognizing that every child is uniquely gifted.
- Emotional Mind vs. Rational Mind: Understanding emotional hijacking and the brain's incredible ability to rewire itself (neuroplasticity).

### E=MC<sup>2</sup>: The Formula for Empathy

- E = Empathy
- M = Mindfulness
- C<sup>2</sup> = Critical Inquiry + Compassion

Through interactive activities, educators practiced teaching empathy, distinguishing it from sympathy, and building emotional intelligence. A soulful rendition of Humko Man Ki Shakti Dena reason



### Day 2: Cultivating Compassion and Mindfulness

#### Compassion in Action

The second day focused on compassion—not as a concept, but as a way of life. Activities included:

- Meditation: A calming session to center the mind.
- Storytelling: Sharing tales of kindness and resilience.
- Acts of Kindness: Simple, heartfelt gestures to inspire empathy.



### Mindfulness for the Modern Classroom

Participants explored the profound benefits of mindfulness, from enhanced focus to improved emotional regulation. Strategies were shared to create classrooms that are not just productive but also peaceful.





### Navigating Ethical Dilemmas

Through real-world scenarios, educators tackled ethical challenges, learning how to guide students toward thoughtful, compassionate decision-making.

### Why SEEL Matters

The benefits of SEEL go beyond the classroom:

- **Academic Excellence:** Students perform better when their emotional needs are met.
- **Mental Well-being:** A supportive environment fosters resilience and confidence.
- **A Better Tomorrow:** Empathy, mindfulness, and ethical behaviour are the cornerstones of a harmonious society.

**Feedback:** The feedback received from the two-day CBP was quite overwhelming as 70% of the teachers were very satisfied with the content and delivery of it. Some of the main takeaways from the workshop for the staff members were to have Positive thinking, Effective communication with all stakeholders, team, be a role model for students, to be self aware, being mindful. 60% of the participants expressed that there should be a follow up session of the workshop. The same percentage felt that they are confident to implement SEE learning principles in their life. They came up with very creative ideas to to enhance the culture of Social and Emotional Learning (SEL) in the classroom.

### Conclusion: A New Vision for Education

This workshop was more than training—it was a call to action. The Modern School has taken a bold step toward redefining education, ensuring that students are not just achievers but also compassionate, mindful individuals.



# TRANSFORMATIVE LEADERSHIP: ENHANCING SOCIAL, EMOTIONAL, AND ETHICAL LEARNING



## 1. What really makes an efficient school leader?

An efficient school leader doesn't mean a person with good admin skill or an strategist. It entails emotions, ethics, and emotional intelligence. And it's the ability to lead with empathy. That's exactly was the core of the two day workshop on Transformative Leadership through SEEL (Social, Emotional, and Ethical Learning) set out to explore- and reimagine.

Held on March 6-7, 2025, at the Atal Adarsh Primary School, Lodhi Road, this workshop brought together 41 school leaders from NDMC schools. Designed for principals, head teachers, and educational administrators, it focused on one core ides; leadership isn't just about running schools-it's about shaping people to work in tandem to achieve a common goal.



## 2. The Approach

Organised by Modern Institute for Education in collaboration with New Delhi Municipal Council, the workshop combined expert facilitation by Ms. Pratima Mittal. Full of theory, practice, and reflections with a bit of hands on learning the forum provided plenty of opportunities for real discussion.

## 3. Day 1

The workshop started with core values: empathy, equity, emotional intelligence, vision, and integrity. Leaders journaled about their own journeys and shared personal leadership stories-raw, honest, inspiring.

The five pillars of SEL (self awareness, self management, social awareness, relationship skills, and responsible decision making) were unpacked through case studies. The leaders didn't just talk theory-they applied it to real school challenges.

One of the most powerful moments was that the leaders explored their personal and institutional values-and examined how they shape or clash with daily decisions.

## 4. Day 2

Addressing uncertainties

Ethical dilemmas in leadership are messy. Through real case studies, leaders practiced addressing them with both courage and compassion.

Action planning for SEEL

In small groups, participants discussed, reflected, and provided suggestions to embed SEEL in school culture. The suggestions were not vague-they were focused, doable, and grounded in each school's reality.

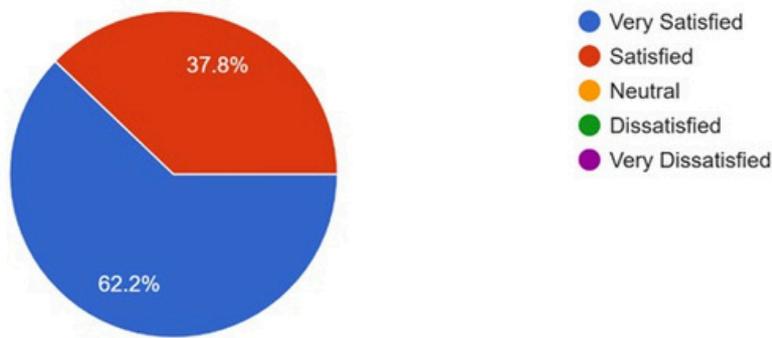
Principals, and SEEL practitioners along with school administrators shared hard earned lessons. The takeaway? Mindful leadership is not optional. It is the future. The energy in the room was raw and reflective. School leadership opened up about staff burnout, student behaviour issues, and the emotional weight of leadership. There was laughter as well as harsh truths.

#### 4. The feedback

Participants left more aware and confident about leading with empathy and ethics. From reflective journaling to conflict resolution, tools were practiced not just preached. This workshop proved something simple yet powerful. When school leaders pause to reflect, connect, and lead from inside out, real transformation begins.

What was your level of satisfaction with the workshop?

37 responses



# LANGUAGE AND LITERACY SKILLS

Date: 18-19 March

Venue: Modern School, Vasant Vihar

Participants: 45

Resource Person: Ms. Neha Bisht, Mrs. Radhika Verma, Mrs. Geetanjali Devasar, Mrs. Meeta Narayan, Mrs. Ruchi Chawla

**Introduction:** MIE (Modern Institute for Education) organized a two-day workshop on Language and literacy skills at Modern School, Vasant Vihar. The aim of the workshop was to conduct and model interactive and engaging sessions on classroom practices that emphasizes the importance of developing phonic skills and reading comprehension skills with specific reference to English language and literacy among students.

**Highlights of the workshop:** The workshop focused on enhancing teachers' capacity to implement the learning of English in a joyful environment focusing on right pronunciation, fluent reading with comprehension, and enabling students to differentiate between letter names and letter sounds. It emphasised that these basic understanding are critical for reading with comprehension. Differentiating between phoneme and phonics is an important aspect of teaching as well as understanding reading or rather language and literacy skills.

The session aimed to encapsulate the zeal in the teachers to make English learn in an interactive and interesting manner, not with fear but with curiosity and excitement. Hence all the drills and activities that were done during the session was to engage them in manner showcasing that learning language should not be a boring and tiresome practice rather it can be way more engaging and cohesive. The session was done with the aim that the teachers might be able to take these activities back into the classroom to make the learning experience more immersive and wholesome.

**Activity-based learning:** The entire workshop was designed around hands-on activity-based learning giving the participants an active formula where it offers a welcome respite from the rote repetition of "book learning" or lecturing. Hands-on learning also uproots this overstepped, traditional classroom instruction, allowing students to move, discuss, interact with each other, and truly engage with in the lesson.

Participants were presented with engaging activities that were not only informative but also somewhat joyful, which gave them ample of space to practice what they have learned. These activities also helped them to get ideas about learning English not in a monotonous and redundant manner, but in a way where children can be engaged actively in the process. Through these activities, it was also aimed to make teachers more confident on their own pronunciation of letters, identify action words, phrases, and related words.



## DAY-1

Syllables were taught as the building blocks that decode into letters and sounds—transitioning students from word-level to sentence-level reading.

### Syllable Patterns & Segmentation

- Teachers learned open vs. closed syllables, silent-e rules, r-controlled vowels, and syllable types (CVC, VCCV, VV as in lion).

- This included detailed training on segmenting and blending, using typical patterns like VCCV and CVC to enable decoding through syllable structure.

Through detailed discussion of blending, the participants were able to identify that reading can be ensured through the knowledge letters and phonic sounds and also correct understanding of syllable blending.

The facilitator then introduces the third sound concept while blending two vowels, including long and short sounds (ai, ee, ie, oa, ue, oo, oo, ow, aw, oy). During this the facilitator also gives an example of magic "E", to show how by adding 'e' a short vowel sound can transform into long vowel sound by giving examples like hid transforms into hide and rip into ripe and so on. The "magic E" rule was presented not only conceptually but also through examples and drill, highlighting its power in decoding and spelling.

### B. Consonant Digraphs & Blends

- Digraphs such as ch, sh, th, ng, plus the schwa sound, were taught—pairs or trios of letters representing single sounds.
- Consonant blends (bl, cl, fl, tr, sp, and others) were differentiated from digraphs, which is when two or more consonants are blended together, but you can still hear the sound of each consonant separately, emphasizing that in blends each sound retains its identity (e.g., black, mist). Consonants blends- Bl, cl, pl, fl, gl, sl, tr, br, pr, cr, fr, dr, gr, sc, sp, sm, st, sk, sn. Through this the participants will be able to know about the 44 sounds.
- Soft c and g sounds were illustrated through examples like pencil, juice, giraffe, and ginger.



### C. Syllable Patterns & Segmentation

- Teachers learned open vs. closed syllables, silent-e rules, r-controlled vowels, and syllable types (CVC, VCCV, VV as in lion).
- This included detailed training on segmenting and blending, using typical patterns like VCCV and CVC to enable decoding through syllable structure.



### 2. Components of Comprehension

Teachers learned that reading comprehension hinges on two main components:

1. Word recognition – fluency and decoding.
2. Language comprehension – understanding meaning, context, and intent.
3. Both must work together to achieve meaningful reading.

#### Day 2

##### 1. Understanding Reading & Its Impact

The session began with a rich discussion on what reading truly does for learners. It underscored that reading:

- Builds knowledge: It's the cornerstone for all other learning activities ([savvylearning.com](http://savvylearning.com)).
- Enhances communication and vocabulary: Exposure to richer language structures improves clarity and expression ([tutormychild.com](http://tutormychild.com)).
- Stimulates critical thinking: Readers learn to infer, predict, analyze, and form opinions effectively ([savvylearning.com](http://savvylearning.com)).
- Boosts imagination and empathy: Immersion in stories develops creativity and emotional understanding ([booktrust.org.uk](http://booktrust.org.uk)).



### 3. Expressive Reading: Gestures & Intonation

A story was read aloud with varied intonation, facial expressions, and body language to illustrate how non-verbal cues enhance listener engagement. Emotional storytelling was emphasized because:

- It engages emotions and helps children relate to text.

It augments comprehension by making stories more immersive.

### 4. Activity: Creating Personal Stories

- Picture card storytelling: Teachers received cards and crafted their own narratives.
- This activity highlighted how visual prompts: Boost creativity and narrative skills ([thetimes.co.uk](http://thetimes.co.uk), [savvylearning.com](http://savvylearning.com)) and also engage students by offering a hook to begin speaking and writing.
- It showed how to turn passive readers into active creators in the classroom.

### 5. Discussing Reading Speed & Expression

The workshop delved into reading pace:

- Slow, deliberate reading with good expression is more effective than rushed reading.
- Participants practiced with short stories, focusing on rhythm, phrasing, and comprehension.

### 6. Contextual Reading: Reading from the Environment

A brief activity involved designing classroom advertisements:

- Teachers role-played and created ad copy to foster reading interest.
- Emphasized that reading contextual and functional text—like posters, signs, and ads—is more relevant and engaging for students.

### 7. Innovative Glossary Strategies

To reinforce vocabulary and understanding:

- Teachers played Glossary Bingo, linking new words to definitions and usage.
- This multisensory game helps students retain new terms and fosters friendly competition.



# IMPORTANCE OF MATHEMATICS

By Priyanka Vasudeva\*

## Why Math is the most hated subject

Mathematics is the language of the nature. It helps us solve problems, think critically and make informed decisions. Solving math problems and improving our math skills gives our brain a good workout. And it improves our cognitive skills over time. Many studies have shown that routinely practicing math keeps our brain healthy and functioning well. Word problems teach students how to pull out important information and then manipulate it to find a solution.

Later on, complex life problems take the place of workbooks, but problem-solving still happens the same way. When students understand algorithms and problems more deeply, they can decode the facts and more easily solve the issue. Real-life solutions are found with math and logic. A strong understanding of math concepts means more than just number sense. It helps us see the pathways to a solution. Equations and word problems need to be examined before determining the best method for solving them. And in many cases, there's more than one way to get to the right answer.

It's no surprise that logical reasoning and analytical thinking improve alongside math skills. Logic skills are necessary at all levels of mathematical education.

## Market-kids excel in practical calculations

In India, many children who work in retail markets have good math skills: They can quickly perform a range of calculations to complete transactions. They develop impressive mental math skills because of constant exposure to calculations in their work. But these students often perform much worse on the same kinds of problems as they are taught in the classroom. This happens even though many of these students still attend school or attended school through 7th or 8th grade.

Conversely, the study also finds, Indian students who are still enrolled in school and don't have jobs do better on school-type math problems, but they often fare poorly at the kinds of problems that occur in marketplaces.

Overall, both the "market kids" and the "school students" struggle with the approach the other group is proficient in, raising questions about how to help both groups learn math more comprehensively.

This happens due to lack of understanding of concepts, pressure to perform well, a fear of making mistakes, Poor teaching methods and even anxieties passed down from parents who may have had their own math difficulties.

The real reason for people to hate math is that they consider it to be a subject to score marks in exams. So, they just try their best to cope up with it to get good marks, but the reality is that Math requires patience and hard work. In students' lives there is a shortage of time, and they cannot put their hard work on just one subject.

At primary level, too many mathematical operations are taught in a small-time frame without analyzing the performance after one operation. For example If we are teaching addition of numbers and more than half of the class as understood it, we move on to the next topic ( say subtraction of numbers) and so on according to the syllabus plan without realizing that students who have not mastered the addition will not understand subtraction and then multiplication etc. which makes the learning gap wider and wider and eventually the student feels that he cannot understand the subject.

## Strategies to make math interesting:

1. At primary level objects like blocks, playdough can be used to utilize and manipulate mathematical concepts.
2. Games like "Math Bingo" to practice skills in a playful way.
3. Use pictures, charts and stories to explain concepts.
4. Facilitate group work and open discussion where students can explain their reasoning and strategies to each other.
5. Focusing on praising students for their attempts and understanding, not just correct answers.
6. Practice addition and subtraction with real- word scenarios like putting up a stall to sell something in school and calculating profit or loss.
7. Measure objects in the classroom using rulers and tape measures, calculating perimeter and area in nature.
8. Teachers should start by laying down the agenda of the class and must keep an open platform wherein each and every student must be encouraged to raise questions. Teachers should understand that students will take time in understanding the concepts of mathematics. Therefore, provide them with due feedback, practice assignments, doubt clearing sessions, and revision papers.
9. Explain to them the purpose behind learning a particular topic.
10. Not every student will grasp and understand the same method of coming to a solution. Therefore, it must be an open platform wherein the students are given an option to understand the most relevant approach towards coming to a solution. In order to determine that every student has actually learned the objective of a class, it is necessary that every student communicate both orally and in writing with the proper reason.

\*have been teaching mathematics at Modern School Vasant Vihar for over two decades. I have done my graduation and post-graduation in mathematics from Delhi University. Over the years, I have taught students across various age groups and academic backgrounds, helping them not just understand concepts but fall in love with problem-solving



Reasoning gives a proper idea about the understanding of the student about the concept. This will promote their engagement and learning.

11. Before starting to teach any particular topic in mathematics, it is very important to segregate the problem sets based on that level of difficulty. Start with a few easier problems. Teachers must keep raising the bar for all the students slowly and steadily.

12. In Mathematics a number of interesting projects can be given which helps the students to do proper research and understand a particular topic in a much more detailed manner.

Provide them with the guidance to do a particular project but let them do the research on their own.

13. Build a proper growth mindset among the students. This keeps them motivated and boosted. Provide them with certificates, stickers, badges, or trophies as they progress. Teachers can have weekly announcements of the best students of the week. Such recognition will help them repeat the good work.

14. At last, we should be patient. We all know how difficult mathematics can be. We all have been there. Therefore, it becomes very important to be patient with the child and to teach them in a step-by-step sequential manner. This will prevent them from getting afraid of mathematics.

# STUDY IN INDIA SHOWS CHILDREN USE DIFFERENT MATH SKILLS AT WORK VS. SCHOOL - INSIGHTS , OBSERVATIONS, EXPERIENCES

By Aakshi Bajaj \*

## Insights

The findings raise a significant point about children skills and academic progress. While it is a good thing that the children with market jobs are proficient at generating rapid answers, it would likely be better for the long-term futures if they also did well in school and wound up with a high school degree or better.

## Observations

Finding a way to cross the divide between informal and formal ways of tackling math problems, then, could notably help some Indian children.

Basically, there's a gap between school skills and street skills when it comes to math in India. We need educational approaches that bridge the gap between practical and academic math skills.

The study shows how important it is to integrate practical problem-solving into the academic curriculum. This can help children better apply mathematical concepts in real-world scenarios, which can boost the overall understanding and utilisation of the math skills being taught at school.

There is a big gap in how math is taught versus how it is used in daily life. Market-working children develop impressive mental math skills because of constant exposure to calculations in their work. But these skills don't align with formal education methods, which require a structured approach.

Meanwhile, school-going children excel in exams but may struggle with spontaneous number crunching in real-life situations.

Thus, schools could benefit from incorporating real-world problem-solving into math lessons. Bridging the gap between practical and academic math could help children develop well- rounded numerical skills regardless of their background.

## Experiences

Maths curricula taught in primary school ought to provide children with the concepts and skills that they need both for their daily lives and as a foundation for learning the higher maths required to succeed in school at more advanced levels. Too often, however, formal schooling fails to achieve either of these goals. In India, in 2023, only half of the children enrolled in grades 11 and 12 (16–18 years of age) could divide a three-digit number by a single-digit number. Globally, learning outcomes remain poor despite large increases in school enrolment in many low-to-middle-income countries.

Moreover, children seem even less likely to be able to use basic arithmetic skills in everyday life. A recent study in India, for example, found that only half of the children enrolled in

grades 11 and 12 could calculate how many purifying tablets to use in a large pot after they were given the number they needed for a smaller pot. Notably, 35% of the children who were able to solve an abstract division problem failed this verbal exercise.

However, many children in low-to-middle-income countries, for instance, those who work in markets, seem to routinely perform more involved calculations as part of their daily jobs. For example, a study in the 1980s of five children who worked as street vendors (mean age of 11 years) in Brazil found that these children ably and flexibly used maths in their work. These findings are in line with ethnographic studies of adults with minimal formal education who also exhibit these abilities.

Moreover, decades of research, mostly in Western countries, have shown that children can adeptly combine small sets to create exact larger numbers well before schooling begins and that their facility of learning maths in primary school is associated with their sensitivity to approximate number in later years of schooling. A prominent theory in cognitive psychology suggests that learning maths in meaningful real-world contexts can complement maths learnt in the classroom and provide children with more generalizable and flexible arithmetic skills. By learning and practising maths through relevant contexts, children may be better equipped to acquire the flexible cognitive skills they need to transfer maths knowledge across domains.

Under this hypothesis, children who work in markets might be expected to more easily learn the abstract maths taught in school. However, just as children who master abstract maths skills in school may fail to apply them to concrete problems, schools may fail to help children who adeptly use maths concepts in concrete situations in their daily lives to develop more abstract, generalizable skills. In the absence of such help, such skills may not automatically transfer across domains in either direction.

The marked gap between the strong performance of the working children on real and hypothetical market transactions and their weak performance on the written exercises presented in school is unlikely to be explained by the difficulty of the underlying arithmetic calculations. If anything, the operations required by the market transactions were more difficult than those of the written arithmetic problems on the ASER, as the market transactions involved several operations.

\*TGT Mathematics, Modern School Vasant Vihar New Delhi 110057. Akshi has been working in the above mentioned esteemed school since 2011. Passionate in teaching of Mathematics. Studied B.A(Hons) Mathematics from Jesus and Mary College, Delhi University, then M.A in Pure Mathematics from St. Stephen's College, Delhi University, B.Ed from KIIT College of Education, MDU.

Working children do less well on abstract maths questions because they resort to poorly mastered algorithms taught in school. Conversely, school children do poorly in applied problems because they do not know any strategies other than those taught in school and they have not mastered those strategies sufficiently well to solve these more involved problems. It is possible, however, that the children's performance was impaired by stress, stereotype threat or weak incentives to perform accurately.

The low performance of working children and school children in primary school maths problems also calls for changes in how maths is introduced to children, in particular to better synergize intuitive knowledge and training in symbolic maths.

These findings call for a maths pedagogy that explicitly addresses these translational challenges through curricula that connect abstract maths symbols and concepts to intuitively meaningful contexts and problems. Consistent with that call, a RCT found that introducing financial education to public high school children in Brazil was effective not only in improving financial literacy but also in reducing school failure rates, with qualitative interviews suggesting that children felt more engaged with maths presented in familiar contexts.

### Math in the Marketplace

Children working in Indian markets demonstrated impressive mental arithmetic abilities. They could rapidly calculate costs, provide correct change, and solve multi-step problems efficiently. When tested in hypothetical market-based scenarios, they continued to perform well, indicating their skills were not merely rote memorization. These findings highlight the importance of educational curricula that bridge the gap between intuitive and formal mathematics

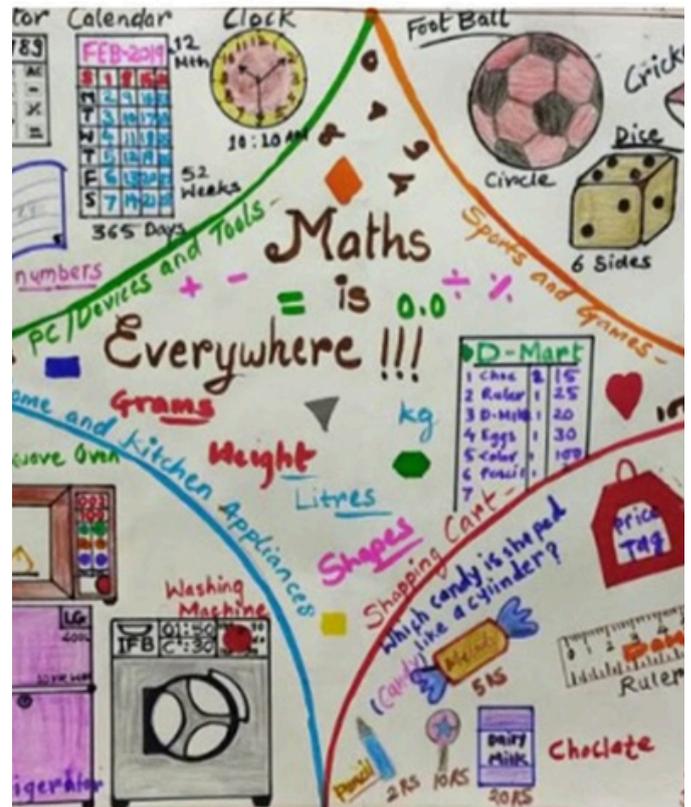
Child vendors can mentally calculate complex market transactions in seconds but struggle with simpler abstract maths taught in schools, while their school-going peers excel at academic maths but fail at basic real-world calculations.

### Conclusion

- Market working children in India excel practical math but struggle academically.
- School going children excel academically but struggle practical mathematical skills.
- Study suggests integrating practical problem solving into academic curricula.

### Plan of Action

- Practical life examples should be discussed and applied in the classrooms to teach a concept.
- More Mental Math Application-Many children helping in family businesses develop quick calculation skills
- Flexible problem solving- Instead of rigid school methods, children should be taught to use shortcuts, approximation, and intuition.



Sonal Mohata, <https://in.pinterest.com/pin/194991858859776372/>

- Money handling and accounting- Understanding profit margins, discounts, and interest rates and their applications should be focussed upon.
- Applied Mathematics and Pure Mathematics should be taught in an integrated manner.
- Projects and surveys related to real life Mathematical Problem Solving Skills should be given to children.

# MATH SKILLS

By Anjana Arora\*

The MIT study highlights a significant gap between the math skills of children working in markets and those attending school. Market-working children excel at practical, real-world math problems but struggle with formal academic mathematics, as they are spending most of their time in real life and practical situations. Conversely, school-going children perform well on academic problems but falter with practical calculations, as they have very less or no time for real life situations. I suggest recognizing and integrating the practical math skills children acquire outside of school into the formal curriculum. This could involve using collaborative games and self-checking mechanisms to bridge the gap between theoretical knowledge and practical application.

Addressing the challenges highlighted in the article requires a multifaceted approach that integrates practical math skills into formal education, encourages collaborative learning, implements self-checking mechanisms, provides professional development for teachers, and involves the community. By adopting these strategies, we can create a more holistic and effective math education system that benefits all school-going children.

## I. Integrating Practical Math into Formal Education

One effective approach to bridge the gap between market-working children and school-going children is to integrate practical math skills into the formal curriculum by focusing on

- **Real-world Problems:** Introducing math problems that mimic real-life scenarios, such as calculating change, measuring quantities, or planning budgets.
- **Project-based Learning:** Engaging students in projects that require them to apply math skills in practical contexts, such as running a mock business or designing a community garden.
- **Field Trips:** Organizing field trips to markets, shops, or other places where math is used daily, allowing students to see the relevance of math in the real world.

## 2. Collaborative Learning

Encouraging collaborative learning can help students develop both practical and academic math skills. This can be done by:

- **Peer Tutoring:** Pairing students who excel in different areas of math so they can learn from each other.
- **Group Activities:** Designing group activities that require students to work together to

solve problems, fostering teamwork and a deeper understanding of math concepts.

**Math Club:** Establishing a Math Club, where students can come together to explore math in a fun and interactive way, participating in math games, puzzles, and competitions.

## 3. Self-checking Mechanisms

Implementing self-checking mechanisms can empower students to take ownership of their learning and improve their math skills. This can include:

- **Interactive Software:** Utilizing educational software that provides instant feedback on math problems, allowing students to correct their mistakes and learn from them.
- **Practice Sheets:** Providing practice sheets with answer keys, so students can check their work and understand where they went wrong.
- **Math Journals:** Encouraging students to keep math journals where they record their problem-solving process, reflect on their learning, and identify areas for improvement.

## 4. Workshops and Training

Organizing workshops and training sessions that focus on practical math applications, collaborative learning techniques, and self-checking mechanisms.

\*A dedicated maths teacher with over 20 years of rich teaching experience, inspiring young minds with clarity and confidence. Driven by a deep passion for maths, I believe in making complex concepts simple and enjoyable. My teaching style integrates creativity through art, craft, and 3D model making to enhance conceptual understanding. I bring a unique blend of academic strength and hands-on learning to the classroom, fostering both logic and imagination. With a lifelong commitment to student success, I aim to make mathematics a subject of curiosity and joy.

## 5. Community Involvement

Engaging the community can also play a significant role in addressing these challenges. This can be done by:

- **Parent Involvement:** Encouraging parents to participate in their children's math education by providing resources and activities they can do at home.
- **Partnerships with Local Businesses:** Establishing partnerships with local businesses to create opportunities for students to apply their math skills in real-world settings, such as internships or job shadowing.
- **Community Events:** Organizing community events that promote math education, such as math fairs, competitions, and workshops.

### **Plan of Action** to address the challenges highlighted in the article:

1. Inclusion of Mental Math Activities / Exercise books in school and conducting a test for the same from grades 5 to 12 every year.

2. Organizing activities/ festivals/ fairs related to business investment/expenditure, profit/loss in school.

3. To cover geometry, we can have activities involving construction of 3 D models, starting from planning, designing, fund raising, actual construction, all to be organized by the students.

4. Every day, student volunteers of each class can be given duty in reception area, school office, library, canteen area, stationery and uniform shops to gain experience in this field.

5. Gardening club for growing /selling fruits, vegetables, flowers in school by students can be started. Small areas can be allocated for gardening activities in the field and students can take care and maintain records.

6. Organizing events for sale of paintings, soaps, handmade paper, candles and other products (all made by students in school) . Each grade can be given one product and after completion of the project a Fair can be organized .

7. Middle school students can be asked to plan meal planning activities for the entire class and students can contribute ( ingredients, plates, spoons etc.) and make simple dishes in the activity periods.

8. Simple banking and finance related activities can be conducted for middle and secondary school students.

9. Craft work, knitting, basket weaving , cross stitch, needle work, macramé activities also involve math skills and will definitely help the students. These activities can be started for grades 6 to 9.

10. Certain sports and games involving simple Math skills can be planned for classes in the field in games and PE periods.

# MATHEMATICAL SKILLS INSIGHTS

By Geeta Rani\*

I completely agree with the news article. Students can excel at Mental Math in marketplace jobs, but struggle with Formal Math in the classroom, and vice versa. Both the market kids and the school going kids struggle with the approach the other group is proficient in, raising questions about how to help both groups learn math more comprehensively.

A very interesting point about how early exposure to practical tasks, like helping parents in markets, fields, or small businesses, can enhance children's mental mathematical skills. The daily practice of calculation, whether it's counting money, measuring ingredients, or figuring out quantities, helps kids develop strong, quick mental mathematical abilities. This real-world application of commercial/ behavioural mathematics can sometimes be more intuitive and enjoyable than the structured, textbook-based approach used in formal schooling.

It's true that as formal education becomes more standardized, and often conducted in English, kids may lose that hands-on, engaging connection to the material. When math is seen as a set of abstract concepts rather than something used in everyday life, it can feel boring or disconnected from reality. The emphasis on memorization and rote learning can make it harder for children to see the fun in mathematics.

For example, if a banana costs Rs. 6 and we have to find the cost of 99 bananas then a market kid will calculate it in entirely a different way than the school going kid will do. The market kid calculations are as follows:

100 multiplied by 6 - 6 = 594

Whereas a school kid will do calculations as taught in classroom scenario such as using table of 6 and then taking the carry over, etc.

School kids are process oriented whereas market kids are solution oriented as they use different tricks to calculate.

## Observations and Experiences on How to Address the Challenges

To reinstate the joy of learning mathematics, it's crucial for schools to incorporate more interactive and creative approaches. Using play, games, puzzles, quizzes, art (like painting or designing), measurement tasks, and even activities like clay modelling can encourage problem-solving, teamwork, and critical thinking in a more engaging way. These activities tie back to the practical skills that kids might be developing at home and make the learning process more enjoyable and relatable.

Teachers can also integrate real-life scenarios into lessons –such as calculating the cost of shopping or estimating distances—so that students can see how mathematics applies directly to their daily lives. This connection might reignite excitement about learning and help students develop a deeper, more intuitive understanding of mathematical concepts.

To effectively teach mathematics to a 7 to 15 year old kid, one needs to focus on making it fun and relatable by using hands on activities, visual aids every day, situation and games while ensuring they understand basic concepts like counting, addition, subtraction, and simple geometry through practical examples and consistent practice. We need to always encourage them to explain their reasoning and thinking process.

We need to integrate math into our daily routine by asking questions which connects them to life skills, values and subject integration. We need to explain them the relation between fractions, decimals and percentage.

Educational trips like the trip to Amrit Udyan to make them understand the concept of HCF and LCM should be organized. students do not understand the application of HCF and LCM which can be easily understood by giving them plenty of real life problems. students emphasize on learning math like other subjects. They don't know the language of mathematics and so we can ask one student of the same class who is good at that concept to teach it to the rest of the class, and that will benefit the whole class in two ways. One, the child who is explaining will be able to recall and revise for himself and also will be able to know how to explain a concept to others, and the rest of the class will be able to understand it better as a child is explaining them in their language or at their level.

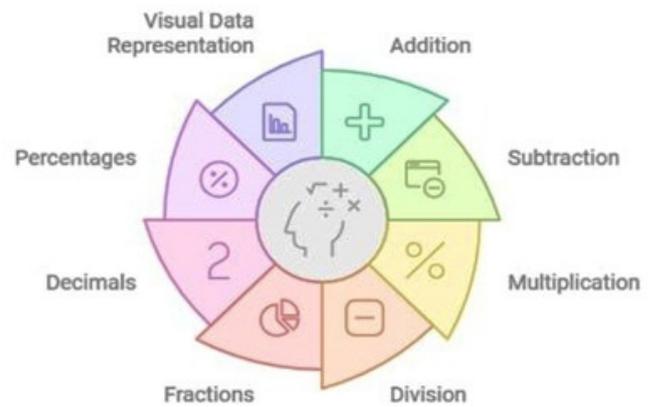
According to Mr. Banerjee, students learned an algorithm but did not understand it very well. If you take an example of dividing 70848 by 23, then the quotient comes out to be 3080, and the remainder comes out to be 8. When students are taught this concept, many of them are confused. To overcome this situation, we need to give them a lot of practice. School going children cannot do it without pen and paper. Also we need to tell the students the relation between the three main topics which they do in junior classes: fraction decimal, and percentage. They do each chapter separately, but they do not know how to convert fraction into decimal, decimal into fraction, decimal into percentage, percentage into decimal and fraction into percentages. There are different tricks to convert them from one form to the other, which students need to understand logically.

Always break down a problem into simple parts. There is always an easier way to solve a problem. Try to make terms simpler by breaking them down to the most basic form. Read the question in phrases.

Decimals are a component of a whole number, while fractions are the numerical representation of the decimal when fractions are introduced. It's important to start with lower numbers like one fourth as well as to follow a good way to improve one's capability to learn how to add, subtract, multiply and divide fractions. Percentage represents a portion of a whole or a specific amount out of hundred. It's commonly used in task such as calculating discounts, determining nutritional values, computing sales tax, and figuring out interest rates on saving accounts among other applications.

Becoming better at math involves establishing a routine for solving problems and mastering concepts. Once you have learnt how to solve a problem, it becomes easier to tackle the same equation in the future. This approach saves time and effort in the long run, especially when faced with larger problems, Always try to write down each math step.

Understanding Basic Math Skills

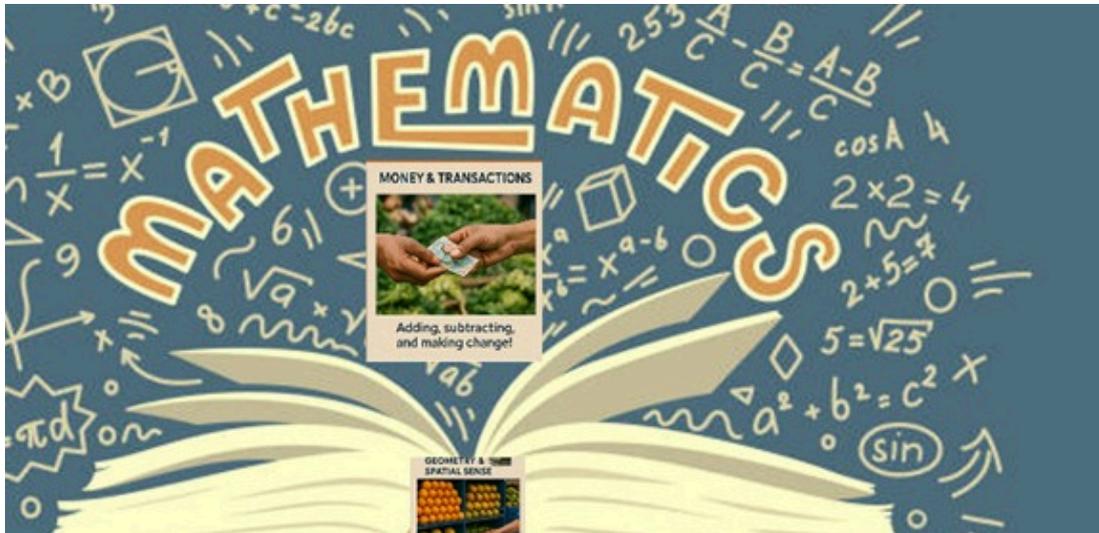


Mathematics is a skill that anyone can improve with consistent practice and dedication, mastering the basics such as addition, subtraction, multiplication and division forms the foundation for advancing in more complex, math topics, breaking down complex problems, practicing mental math and using real word applications of math concepts can also significantly enhance skills Establishing a routine seeking help when necessary can provide the guidance and feedback needed to succeed. Regular practice and focusing on understanding each concept deeply are essential steps in becoming proficient and confident in math. Many people believe one is born with the talent to be good at math while others are just not. However, many studies have proved that there is no inherent mathematical ability. Everyone can become proficient in math if they put in the effort and time. At the end of the day, practice is the key to success and be an expert in Mathematics.



# SCHOOL MATH VS STREET MATH

By Preeti Chandan\*



The discussion between school mathematics and street mathematics is not new. It has been cropping up time and again, not just in India but all around the world. I first read about this during my B.El.Ed days in the book, “Street Mathematics and School Mathematics (Learning in Doing: Social, Cognitive and Computational Perspectives)” by Terezinha Nunes, David William Carraher and Analucia Dias Schliemann published in 1993. Since then, I have read many studies on similar themes and by now we all know, there is a lot of difference between math used by children and adults at work and math taught in school.

## Bridging the gap

With similar concern, the main goal of Mathematics education in schools according to National Curriculum Framework (NCF) 2005, is the 'mathematisation' of a child's thinking. Child should be able to interpret and express real life, context-based problems mathematically. It is the context that turns the abstract subject into concrete, relatable subject. Since then, there is a shift in textbooks from just numerical problems to stories, context-based problems so that there is a need for the reader to think and work accordingly.

But such problems are still limited and teachers need to go beyond the textbook and create the situations for children to think and solve, sadly at the end of it, we all expect children to use standard algorithm and solve the problems and not devise their own strategies to solve which they might devise in a real life setup. The situation forces teachers to go back and teach just the standard algorithm first and then instruct students to solve word problems using the set procedures.

## Role of Teachers

I am thankful to the author for acknowledging that it is not teachers' fault. So, in a school set up, we are back to square one and are focusing on procedural mathematics a lot more than on conceptual mathematics.

What we need to focus on is to bridge the gap between the two. We need amalgamation of conceptual math and procedural math. We know, teaching standard algorithms is important for big numbers but at what stage and how should we introduce, it should be researched and debated further. Accordingly, the curriculum should be reformed, and the teachers should be trained. It might take a lot of time as it involves unlearning our focus on standard procedures and set answers and then learning how to nurture mathematical minds. Meanwhile, as teachers and grown-ups who deal with numbers on everyday basis, we know that in real world we will be using our own mental math strategies than using pen and paper to calculate and so we must try and make our students think and find solutions mentally. Expose them to a variety of open-ended problems and let them devise their own strategies, their own logical thinking and their own solutions. Let us give them wings to fly.

\*Math Teacher, RSJMS, I am a passionate learner at heart, with 23 years of experience dedicated to nurturing mathematical skills in young children. Over the years, I have served both as a teacher and a teacher trainer, but the joy and satisfaction I derive from working directly with children far surpass any other role. I strongly believe in staying abreast of the latest developments in education, and I enjoy experimenting with new strategies and evolving pedagogies to make learning more effective and engaging

# FROM ABSTRACT TO APPLICATION: RETHINKING MATHEMATICS EDUCATION IN INDIA

By Shashi Dahiya\*

## Observations and Experiences on How to Address the Challenges

A study published in Nature by several prominent authors including Nobel laureates Abhijit Banerjee and Esther Duflo, titled 'Children's arithmetic skills do not transfer between applied and academic math', highlighted that Indian kids working in markets are proficient in arithmetic skills and mental maths but are unable to solve simple problems in abstract form as taught in school. School children are either unable to solve market related arithmetic problems or take too much time even with pen and paper. According to the researchers the study pointed towards the "failure of the pedagogical practices" in the way mathematics is taught in primary classes.

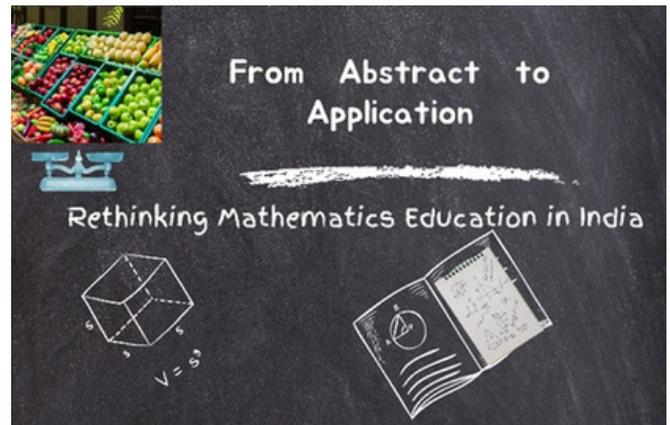
The issue as stated by MIT economist Esther Duflo (co-author of study), is: "For the school kids, they do worse when you go from an abstract problem to a concrete problem," "For the market kids, it's the opposite."

According to me, this gap arises out of the fact that mathematics is taught with a stress on conceptual and procedural knowledge with abstract problems to solve while the real-world problems and their solutions remain beyond the classrooms. These problems require not just knowledge but also application of concepts and procedures.

## Observations and Experiences on How to Address the Challenges

The solution lies in an education system that can prepare the students for the future in real world. The real-life situations need to move to the classrooms and the classrooms need to find their place somewhere in the real world outside. This requires integrating real-life scenarios into classrooms, making classroom learning relevant to the outside world.

This has been acknowledged by NCF 2023 which now has put competency based education in forefront of Indian education system. The focus of the curriculum has already shifted from being abstract to concrete and contextualised, rooted in real life problems. It has highlighted that teaching of mathematics in classroom and using mathematics to solve real life problems cannot be done in isolation. That is why NCF has already brought the two together by focusing upon Maths-Literacy which brings in competencies that require translating the real world to the mathematics world, develop the most appropriate mathematical solution using mathematical



concepts, facts, procedures, and reasoning and transmitting the solutions to the real world with the use of appropriate language and terminology.

Experiential learning is the key to bridge the gap. It involves tackling real-world problems, which helps develop critical thinking and problem-solving skills. Students learn to analyse situations, make decisions, and reflect on the outcomes, fostering a deeper understanding of the subject matter. However, curriculum alone is not enough; effective classroom implementation and assessment are equally crucial.

## Role of a teacher

Teachers play a key role in fostering these competencies through appropriate pedagogies. For example, the curriculum may provide a story from a market to teach mathematical operations like addition and subtraction. While students learn the concept and procedures, teachers can enhance learning by creating a simulated marketplace where students experience transactions and apply as well as practise their mathematical skills in a realistic context.

Similarly, a shift in how assessment is understood and conducted is also important for bridging the gap highlighted in this report. While summative assessments are ideal to test the understanding and application of mathematical knowledge on paper, formative assessments are the ideal tools for creating situations where kids can apply their knowledge and skills to the real life and teacher could evaluate their competencies and proficiencies beyond written tests.

\*Math Teacher, RSJMS. Ms. Shashi Dahiya - With 27 years of experience as a dedicated Mathematics educator, I have continuously evolved in my teaching journey, refining my methods to make learning both engaging and impactful. My passion lies in transforming Mathematics into an enjoyable and accessible subject, ensuring that every student gains confidence and clarity in their understanding. Through innovative strategies and a student-centric approach, I strive to make Math not just a subject but an exciting adventure in logical thinking and problem-solving.

## **Role of a teacher**

While, I can't emphasise more on the importance of a teacher in finding a solution here, I would also like to acknowledge the challenges a teacher faces to effectively follow the ideal transaction and assessment strategies and achieve the desired outcomes in the classroom. The shortage of trained teachers in tier II and III cities, limited professional development opportunities, inadequate infrastructure, and overcrowded classrooms are major obstacles. Effective implementation of curriculum, pedagogy, and assessment strategies requires policy changes and administrative support to ensure meaningful learning outcomes.

## **Conclusion**

Bridging the gap between abstract mathematical learning and real-world application is crucial for preparing students for practical challenges. While competency-based education and experiential learning offer promising solutions, their success depends on effective classroom implementation, teacher training, and systemic support. By integrating real-life contexts into teaching and assessment, we can ensure that mathematics is not just a subject to be memorized but a skill to be applied, empowering students to navigate the complexities of the real world with confidence.