Teaching of Foundational Numeracy

Ankit Shukla

The National Curriculum Framework - Foundational Stage 2022 (NCF-FS) was created with the reforms suggested in the National Educational Policy 2020 (NEP). Following this, the changed teaching techniques used in the classroom for early numeracy are described in this article along with suggested classroom procedures.

Overall, for the teaching of maths, NCF-FS document states, 'Children bring various mathematical skills from their surroundings and culture into the classroom, which must be the basis of learning mathematics.' While keeping this as the basis, how a teacher should proceed with the classroom instruction is illustrated in this article.

> To become mathematically proficient, children need to build conceptual understanding, procedural understanding, strategies competence/application, communication and reasoning, and a positive attitude towards mathematics.
>
> All these strands of mathematical proficiency can be designed in the following four blocks for the daily classroom process. A mathematical approach/process must be the basis of and based on the nature of the task.

Source: National Curriculum Framework for Foundational Stage. p. 121

Blocks of teaching for classroom instruction

The teacher can begin a maths class with a brief conversation with the students that can include mental calculations, poems relating to maths (examples are given at the end), or something connected to their everyday lives, because before getting into formal teaching, these discussions work as a warm-up.

Following this, students can be engaged in activities tailored to the maths concept the teacher is about to teach. The teacher must make sure that the activities are aligned to the various learning outcomes associated with the concept. The objective of these activities could be to gain proficiency in the skills of numeracy. Proficiency is the stage where a student can understand the problem, can solve the problem, develop different strategies to solve the same problem and has a positive attitude towards numeracy.

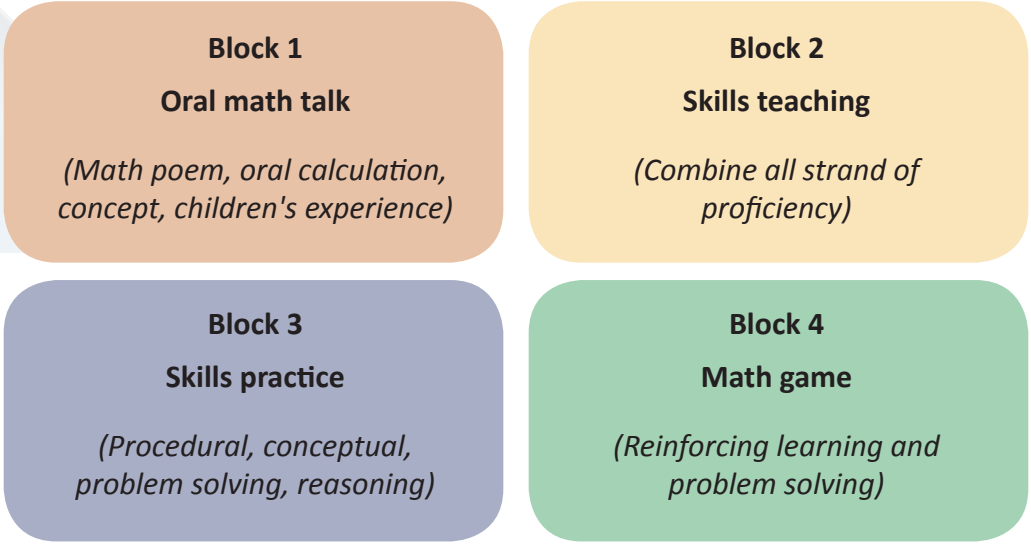

Figure 1. Four Blocks Model – Mathematics.

Source: National Curriculum Framework for Foundational Stage. 4.5.2.3 Blocks of Teaching for Mathematics Instruction. p. 121

Giving students an opportunity to practise the concept is the intended goal of the third block. Students can practise these conceptual skills with the help of a workbook or exercises given in the textbook. With this practice, they would be able to develop procedural and conceptual understanding of the concept dealt with in the classroom. With adequate practice of the concept, they develop reasoning for their answers.

As children love anything to do with play, in the final segment, children can be made to play a game that relates to the skill they have just acquired. It would reinforce the learning of numerical skills and would be targeted to develop problem-solving skills of the students.

My experience with this process

I describe below my first-hand experience of observing this process being implemented at the Khapri Primary School in the Anjora cluster of the Durg District. In class I, there were 34 students present.

Block 1 Oral maths talk

The teacher was teaching numbers from 10-50. She began her lesson and the following conversation ensued:

Teacher: Okay, tell me how many eyes do we have?

All the children showed two fingers and said: Two!

Taking the name of a child, the teacher asked: Okay Neelam, tell me how many noses you have?

Neelam: Only one, madam.

Teacher: Okay Malti, now you tell me how many teeth do you have?

Malti: 24, madam.

Teacher: You counted so quickly? Wow. Tikesh, how many hairs do you have on your head?

Tikesh: Many, madam. It would take a lot of time to count.

Teacher: Yes. You are right. Now, let us do an activity.

Block 2 Skills teaching: Place value

The teacher was going to teach the concept of place value. She had already explained the concepts and meanings of open and bundled units of numbers.

The teacher handed each student some matchsticks. Then, she asked them to count and tell how many matchsticks each one had. The students counted the matchsticks they were given. One student had seventeen, and another had twenty-two. The teacher asked, 'How many matchsticks do you have in open and in bundled form?' All students began to make bundles of ten matchsticks with the sticks they had. The student who had seventeen matchsticks, was now holding seven loose matchsticks in addition to one bundle. Another student who had twenty-two matchsticks had made two bundles and was left with two more matchsticks. The students started calling out the number of open and bundled sticks while showing them to the teacher.

Block 3 Skills practice

Next, it was time to practise the concept by doing the exercises given at the end of the chapter in the textbook. The teacher explained all the questions one by one, and all the children began solving the questions as per the instructions. The teacher kept track of how they were progressing and helped students who were facing problems.

Figure 2. A student practising in the workbook.

Figure 3. The teacher and students playing the maths game.

Block 4 Maths game

After the students completed the exercise, the teacher asked them if they would like to play a game and the students unanimously answered with a *yes*. The teacher brought some cards and scattered them in front of the class. There were two types of cards – some with numbers (digits) written on them and some with only dots for various numbers. The teacher asked each student to pick one card.

When the teacher called out a number, the student who had the card with that digit and the one who had the card with the same number of dots had to come forward and form a pair. The teacher called out all numbers from one to ten and the students matched the digits with the dots on their cards and formed pairs.

Assessment

I also had the opportunity to observe a weekly assessment activity by a class II teacher. I took a seat with the students at the rear of the classroom. After the teacher gave directions, the students opened a workbook page. The teacher then read out each problem and explained what they should do. As the students began working on the problems, the teacher went around checking their work, answering their questions and clearing their doubts.

Next, the teacher wrote questions on the blackboard for some more practice. Students started solving those questions. While this was going on, the teacher went around and checked the students' exercise books and gave them marks. If the teacher forgot to give marks to some children, the children reminded him. In the end, the teacher formed a group of those who had scored less and worked with them separately.

Conclusion

If we examine the four-block model, it is clear that the teacher had positive outcomes from implementing it. The teacher mentioned that this approach is helping students learn better and that some of the students who used to miss school a lot have started coming on a regular basis. Throughout this four-block process, students pick up a lot of knowledge on their own. Those who fall behind, or need more time or help to understand, are grouped together and work is completed individually with them. As a result, all the students feel included in the process.

From these teachers' experiences, it seems that if we follow this model in our regular teaching process and teachers have adequate material, then children's learning is assured.

एक-एक-एक,
नाक हमारी एक।
दो-दो-दो,
हाथ हमारे दो।
तीन-तीन-तीन,
रिक्शा के पहिये तीन।
चार-चार-चार,
कार के पहिये चार।
पाँच-पाँच-पाँच,
हर हाथ में अँगुली पाँच।
छह-छह-छह
चींटी की टाँगें छः।
सात-सात-सात,
हफ्ते में दिन सात।
आठ-आठ-आठ,
मकड़ी की टाँगें आठ।
नौ-नौ-नौ,
मेरे पास रुपये नौ।
दस-दस-दस,
हो गई गिनती बस।

एक राजा की बेटी,
दो दिन से बिस्तर पर लेटी।
तीन डॉक्टर देखने आए,
चार दवा की पुड़िया लाए।
पाँच घंटे में घोली दवाई,
छः घंटे के बाद पिलाई।
सात बजे जब आँखें खोली,
आठ बजे वह माँ से बोली।
नौ बजे पी दूध-मलाई,
दस बजे ही दौड़ लगाई।

Ankit Shukla did his B Tech and MBA from Uttar Pradesh Technical University, Lucknow. He works in the field of maths pedagogy. A major part of his engagement includes the capacity enhancement of government school maths teachers with respect to content, perspectives, and pedagogy of maths. He can be contacted at ankitshkl67@gmail.com