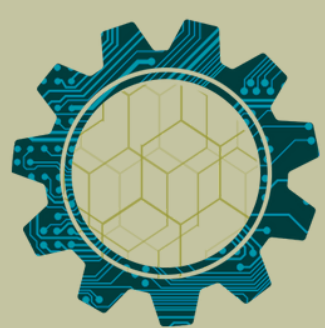


Manchadi

Maths for Kerala



K-DISC

Kerala Development and Innovation
Strategic Council

Kerala Development and Innovation Strategic Council (K-DISC)

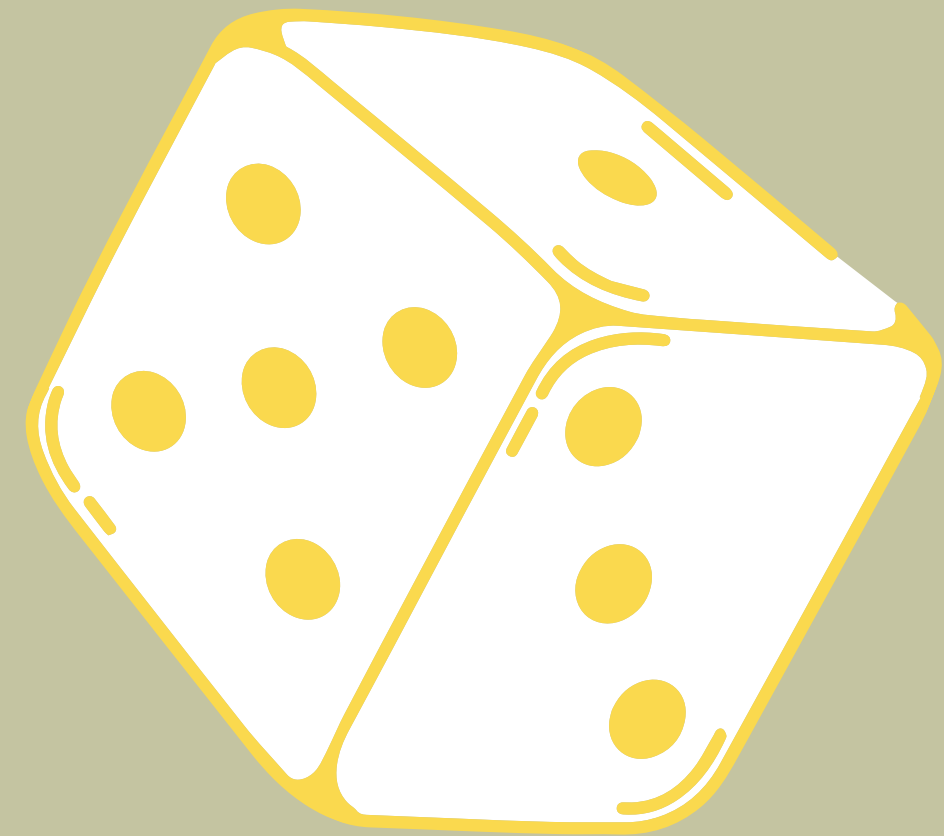
Thiruvananthapuram

Introduction

Education is the heart of any societal transformation, the need for which we feel today more than ever before. Despite the tremendous technological power achieved, we realise the urgency to look for innovative solutions to deal with the challenges we face.

The solutions for these challenges have to emerge with the involvement of the people. People need empowerment to analyse and understand the needs at a societal level and participate effectively in designing solutions. It also requires that the people at large are comfortable with mathematics, especially if expert solutions need to be democratically assessed. Mathematics is also a gatekeeper in society today, not only for entry into the professions but also for the smooth functioning of our everyday lives.

Kerala has been historically at the forefront of educational innovations, and the crossroads we are in today, there is again a need to look for new solutions.



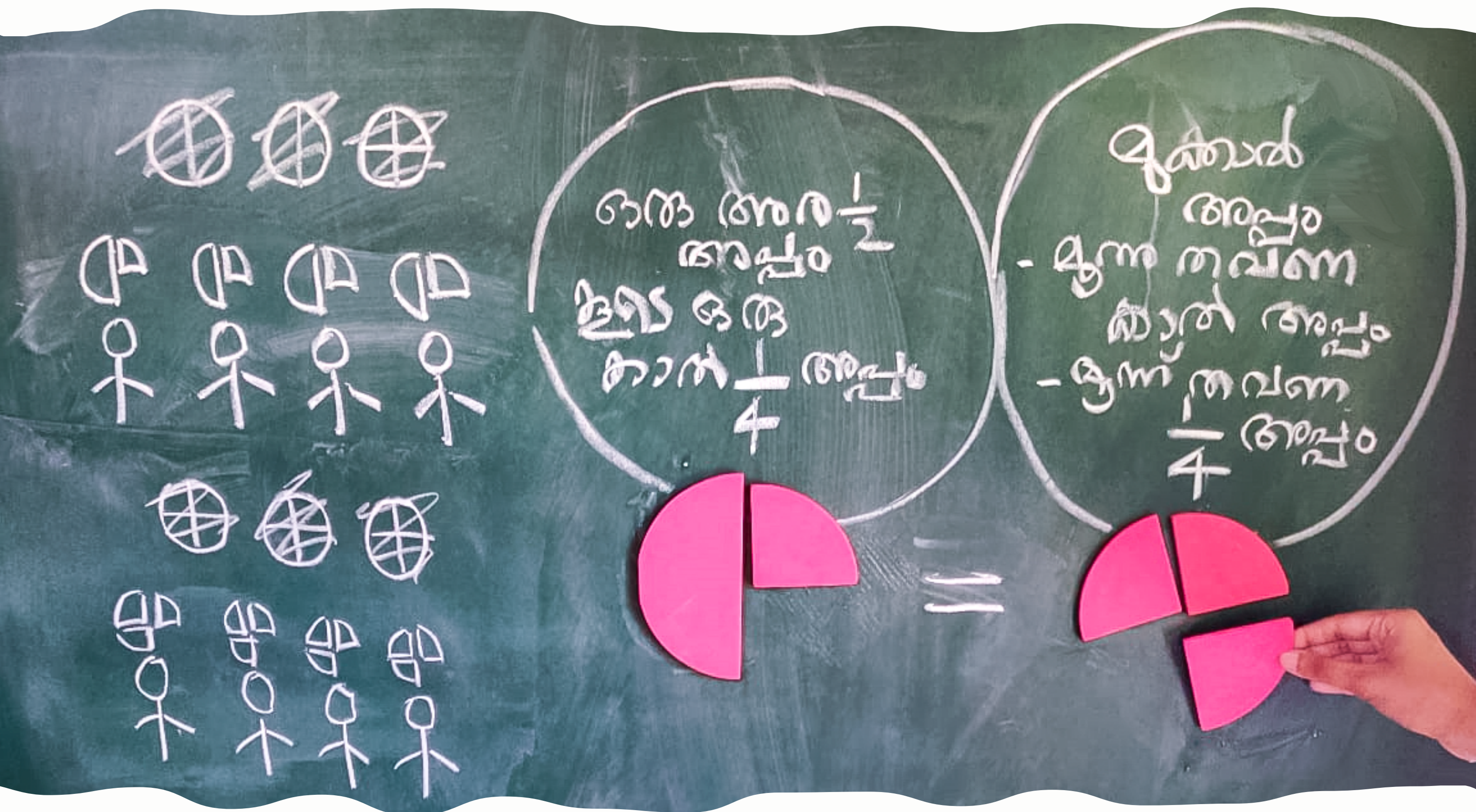
Starting the Experiment

K-DISC took the initiative to start Manchadi, as a space where grounded experiments could be done to develop learning communities for mathematics. As a first stage, these community spaces focused on young children and were started in 5 centres and later extended to all the 14 districts. These Manchadi koodarams were set up in partnership with the local self-governing institutions such as panchayats.

Despite the intervening pandemic, the experience of Manchadi has been very encouraging. Even during the pandemic, many innovative solutions were made to have interactive classes even when online.

Strengthening Mathematization

Rather than explaining ready-made mathematics, efforts were made to help children to come to mathematical ideas through a process. This process involved structuring the situation within a meaningful context. It helped children make more sense of mathematical symbols, such as fractions, and go through various stages of abstraction.



Problem-solving by beginning with informal situations or familiar contexts also helped children to visualize situations and solve problems by modelling the situations. Rather than asking, "Should I add or subtract?" children started to choose a method that made sense to them.

Capacity Development & Linkages through Joint-Activity

Manchadi koodarams are deeply embedded within the local community. Amma teachers from the local panchayath conduct classes and participate along with the animator in planning. The animator as well as the members of the resource groups participate in these processes including in conducting classes. These joint activities have played a very important role in the capacity development of the participants.



The volunteers do detailed observations of the learning processes and participate along with others in the assessment of children. Through these processes as well as through the participation of the coordinator of the koodaram and the members of the local panchayath as well as parents, a basis is getting laid for connecting mathematics with the issues being faced in the local community.



How to do Context Problems?

Question: Sheeja learned to make biscuits. When the biscuits made were counted, there were 74 biscuits. She decided to put six biscuits in each packet and give that to her friends. How many of her friends can she give that to?

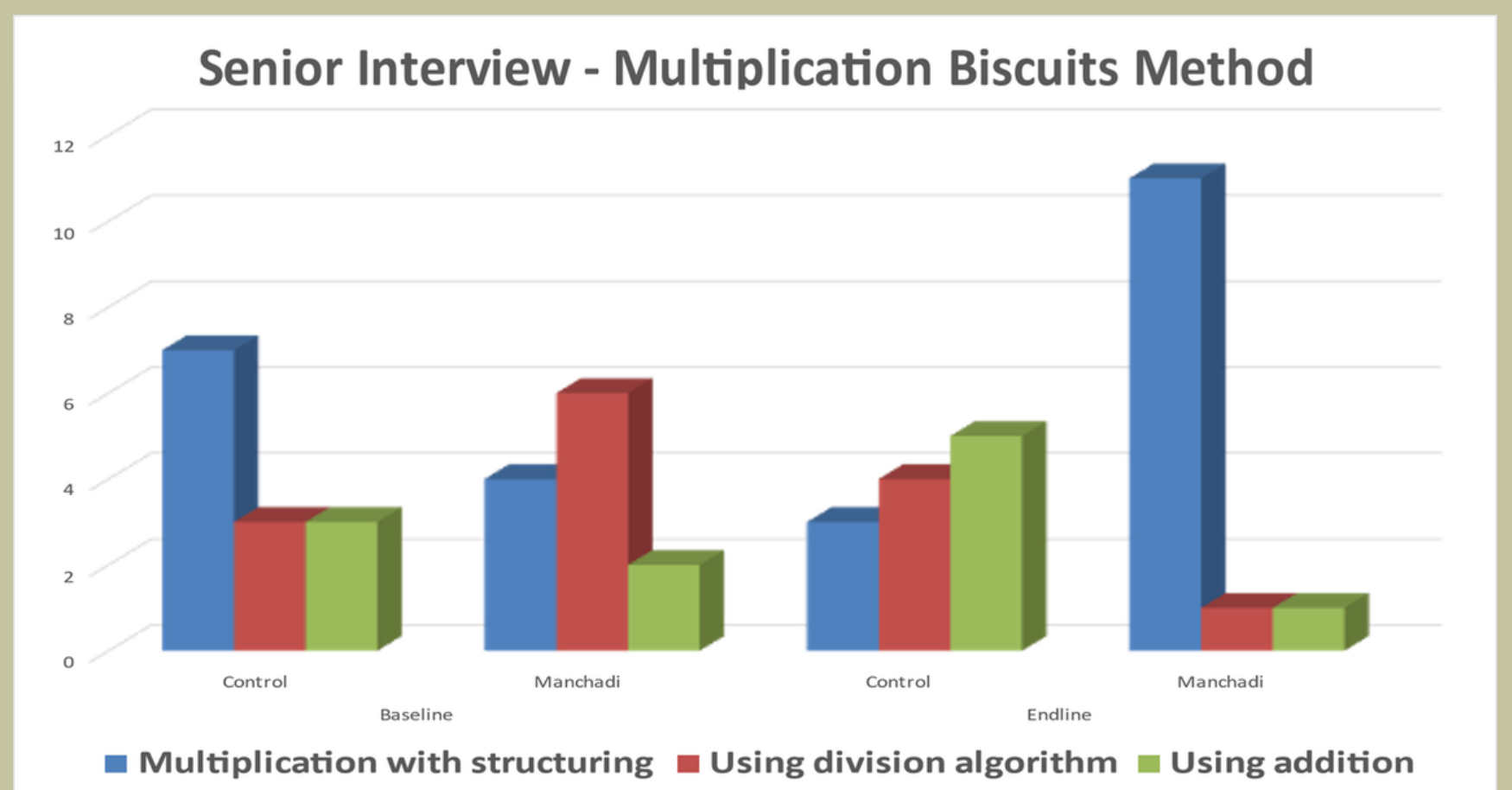
*Results of interviews conducted with Senior students (Class 5, 6 & 7)
Baseline (February 2019) & Endline (October 2019).*

Children started choosing methods which are mathematically more advanced.

■ **Multiplication with structuring:**
 $10 \times 6 = 60$ and $2 \times 6 = 12$. Remaining 2 biscuits. A total of 12 friends can given.

■ **Using division algorithm:** $6/74$

■ **Using addition:** $6 + 6 + 6 + 6 + \dots$



Creating a Culture of Cooperation

In real life contexts, we work in teams and share ideas within our communities of practice. With this in mind koodarams also have been spaces where children's tendency to cooperate is given conscious support. When the focus shifts from the answer to, 'How did you think?', children learn to respect others' ways of thinking. Problem-solving, and reflecting about the solutions naturally lead to discussions and dialogue.

Taking Manchadi Further...

Through review and reflection of these experiences, Manchadi is now poised to evolve to the next stage of its development. In the post-Covid situation, the possibility for more Manchadi koodarams emerges naturally. More active connections with the world around could be established once children's mathematical understanding has been consolidated.

Connecting with the youth and adults in work-related situations to create contextualized learning modules is an endeavour that could be taken up. Creating a culture of co-operation taking Manchadi further connecting with the adults in the locality to support their efforts is also to be explored through linkages with Kudumbashree members. Along with sense-making in mathematics, developing a more reflective attitude and critical thinking would be goals for Manchadi to strive for.

The experiences of Manchadi could also provide useful inputs to the formal educational processes.





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