

L-bit

Learning (a bit) about Teaching and Learning through the Teaching and Learning of Maths

Program Summary

We would love for learning (in general, and Mathematics in particular) to be an enjoyable experience for all children, generating positive emotions. This may be a hard ask, but a worthwhile aspiration. While it is nearly impossible to know how exactly this might be achieved, certain ‘seeds’ sown in our classrooms can perhaps help in the germination of good feeling for both the teacher and the learner.

L-bit opens up a variety of strands for educators to reflect over. Each strand examines a seed in greater detail and asks what it might take for it to germinate in our classrooms. We meet once-a-week, over 90-minute sessions, spread over six months.

The sessions themselves involve some reading, video watching and problem solving. These serve as cues to thinking and reflection of the specific strand being examined, and should prompt us to freely interact and exchange ideas. It is hoped that this process will help us critically reflect upon our own belief systems, and gain some insights about specific elements of teaching and learning.

In addition, participants will be expected to maintain a ‘journal of ideas’ that contain concrete examples of curricular and pedagogical interventions that they would like to make in their own teaching and learning practice, related to each specific strand being examined. This they will do after reflecting on their individual needs and by drawing upon their own experiences.

Strands Being Examined

Strand 1: Exploration and Discovery

All exploration – including of the academic variety – is done for the joy and excitement of it, often without time constraints and a prior knowledge of what discoveries will be made. By revealing the answer too soon, we take away from students the opportunity for discovery. It is an art to know when to reveal and how much to reveal.

How do we find the right balance though, given our obligations towards pre-determined lesson plans and well-defined learning outcomes?

Strand 2: Collaboration and Competition

Deep and joyful learning is unlikely to take place in a classroom that houses fear, including the fear of being judged. Should our classrooms then encourage collaboration and distance themselves from the pressures of competition? But judgments, perceptions and status tend to accompany most intellectual endeavours, including the study of Mathematics. Moreover, our education system rewards competitive excellence.

As educators, how do we contend with these twin realities?

Strand 3: Creativity and Diversity

The conditions in a classroom ought to be conducive for a child's latent creativity to flower. In disciplines like Art, creativity is expressed in the form of a unique outcome. In Maths classes however, creativity may be expressed in the form of a unique approach to arriving at a desired outcome. Such diversity must be celebrated.

In this session, we will look at ways by which creativity can be nurtured in a Maths classroom. Participants will attempt to solve friendly problems of different sorts, and then be asked to assess if they were indeed creatively stretched.

Strand 4: Thinking and Reasoning

While the ability to think and reason must be honed in all classrooms, the study of Mathematics easily lends itself to this. Teachers of the subject ought to bear this in mind, and also the fact that the thinking skills developed will be employed by children in multiple contexts, across disciplines, all through their lives.

How do we ensure that children are thinking and exercising their minds while solving problems, and not merely mechanically applying a set of techniques, methods and formulae that have been memorized?

Strand 5: Differentiated Content and Instruction

We must be conscious of the fact that self-esteem can interfere with learning, particularly in Maths classes where children are expected to arrive at an unambiguous answer.

How important is it to differentiate the challenges we pose to children in the classroom to cater to a wide range of skills and abilities? Equally, can we approach every concept in at least a couple of different ways to increase the likelihood of children catching them?

Strand 6: Intuition and Insight

Our classrooms – across disciplines, but especially Mathematics – should provide students the opportunity to use their intuition, verify the accuracy of their hypotheses and share with one another their insights.

Is it possible to allow students these opportunities within the remit of the curriculum? Would such experiences be relished only by those children with a Mathematical bent of mind? Or is it possible to generate enrichment, extension and recreational material that can cater to a wide range of skills and abilities?

Strand 7: Patterns and Play

'Play' is an important part of children's lives. But it is most often seen as something to be experienced outside of the classroom. Yet, ironically, we often appear to learn effortlessly in the midst of play.

Can we bring to academic learning some of the emotions associated with play? What would it take for us to encourage children to 'play with a problem' or 'play with a puzzle' or 'make playful patterns'? What might the benefits be? How do we incorporate both 'free play' as well as 'structured play' in our classrooms?

Strand 8: Links and Connections

Much of classroom learning - including Mathematics learning - tends to be theoretical and abstract. The onus is on the teacher to make the topic come alive in a manner that children can relate to.

How do we get children to visualise what is being taught in class or read in text books? Can we encourage them to tinker around with problems and look at the same concept in different ways? Can we share material or trigger curiosity that helps children build links and connections between topics, between disciplines, and between the abstract and the concrete?

Strand 9: Doubt and Uncertainty

Mathematical truths (unlike other truths) may be unambiguous. But the paths to reach them may be filled with uncertainty and doubt. Our classrooms must perhaps embrace the failures that are inevitably experienced in any exploration.

Is it misplaced idealism to think this way when the classroom context is one where we are all too eager to teach children the correct methods, expect them to mimic us speedily and then reward their proficiency in doing so? If not, how do we live up to these ideals when we are simultaneously tasked with the responsibility of getting children 'to know'?

Strand 10: Beauty and Upliftment

It should not seem exaggerated to state that one of the key purposes of learning is to kindle the spirit and uplift the soul. This is particularly true of creative and aesthetic pursuits, of which the study of Mathematics is one.

Have we ourselves experienced beauty and joy in our own studies? Can we pose stimulating challenges that result in the discovery of a beautiful pattern or a deep insight or an elegant solution that would make the entire process beautiful in an utterly inexplicable way?

Intended Audience

This L-bit program is for in-service school educators intent on reflecting on the teaching and learning process. It should be of particular interest to those Mathematics educators who are keen on examining and developing their teaching practice. The program is offered at three levels - Primary / Middle / Senior - depending on the experiences and teaching responsibilities of the participating teachers. The material presented will be thus curated appropriate to context.

Other Details

Level:	Primary / Middle / Senior
Batch Size:	5 - 15 participants
Mode:	In-school, In-person
Duration:	90 minute sessions, 4 times a month, for 6 months
Timings:	Based on mutual convenience