

Small wonder

– Rupa Suresh

The junior school children, aged around eight, are in class for a geometry module. They look forward to these classes, for here they have discovered that objects like straws and sticks assume a more purposeful role. We have in the previous class learnt about quadrilaterals, which they will now make using ice-cream sticks. I sit down to watch as each child chooses a place in the room to begin work. Squares, parallelograms, rectangles and rhombuses take form and fill up floor space. I notice that many polygons too have made an appearance in the collection. The floor looks like a large canvas on which the children have painted a geometric pattern. A child remarks, 'This is my portion.' Another shouts, 'Hey, you're crossing my boundary!' A few others follow suit. My attention is drawn to the children arranging lines of sticks that define their individual boundaries. Why do they feel the need for demarcation? I wonder, and quickly brush the question aside so that I'm not distracted. Those who haven't created their own lines of territory are happy that their friends have willingly done it for them. I now hear: 'We are making and connecting boundaries. No. We are connecting everything.' After a while, I'm taken by surprise with what unfolds before me: boundaries refuse to be defined distinctly and a large piece of land has emerged. There seems to be sudden unspoken agreement to work together in creating what the children would like to call the 'Ice-cream Stick Land'. The children busy themselves in building houses, a cricket pitch, a pond, a tunnel, a swimming pool, a fire station, a sanctuary, a dump place (for garbage collection), a temple, a church, a hospital, a park (I wouldn't recognize this were it not for the see-saw), a duck bridge (a toy duck stands on the bridge), a town aquarium, a crab house (crabs live here!) and a pleasure land park! They pile sticks, break some into different lengths, incline them at various angles to suit their needs, add toy animals in the sanctuary, and look for other objects in the vicinity to adorn their piece of land. They work tirelessly, well beyond the timetabled math block period; the timetable has faded into oblivion. I try hard to gather and make sense of the multiple conversations in the room: 'Hey, somebody just kicked this.' 'I'm helping, does anybody need more sticks?' 'Arjun, pass this to Dyuti.' 'We need to open another packet of sticks!' I see a child jump over some of the structures created. She repeats this several times. Somehow her peers do not think it is a bad idea; perhaps I am the only one worried about the park or the bridge being knocked down. Once all the structures in Ice-cream Stick Land are labelled, I notice the one that says 'Town exit' and instantly the pattern on the floor begins to look like a maze. For a while the students walk around, taking a closer look at the display. They look pleased with what they have created and I appreciate their work. I suggest that they calculate the area and perimeter of Ice-cream Stick Land. A few of them begin to think of how they can do this. 'We measured the plant beds outside junior school with paper,' says a child. As three of them tape sheets of newspaper with my help to make a square metre, the others get signboards ready for visitors. Needless to say, they are eager to invite other teachers and children for a guided tour of their land. The square metre sheet, carried by four children, slowly descends and hovers delicately just over the structures they have created. Another child assists by marking lines on the floor with a chalk to show the portion measured. The children take turns measuring the land and arrive at 10 sq.m. Since the shape of the land is irregular, the answer, they say, can only be an approximate measurement. The students now discuss how they can calculate the perimeter. At this point I wonder if the few who are confused about area and perimeter will now see the difference between

the two clearly. They decide to count the number of sticks and multiply that by the length of each stick. They tell me the other option is to run a thread along the outline and then measure its length to get the perimeter. To be sure and precise about the number of sticks, three children begin to count the sticks that form the outline of the land, each starting from a different point. They count again as one child arrives at 121 and the other two at 122. The three then confirm the number as 122. I help a child measure the length of the ice-cream stick: 11cm. Calculations are made:

1342 cm is the perimeter. Signboards with special messages, smiling faces and constant chatter greet the visitors who have come to see the display. The children definitely enjoyed the process; this is evident from the excitement and initiative displayed. They have spent many hours on this creative project. The activity was another opportunity for them to see the relevance of concepts like area and perimeter. I'm not certain that all the children in the class have understood the concepts clearly. I will be able to tell only later, perhaps in working with them in the next class. Was my learning objective fulfilled? Were there new learning objectives? Indeed, the learning objective I sought for the class was fulfilled. The children did make quadrilaterals. As the children created not just their land but also more opportunities to learn, new learning objectives came to mind: reinforcement of maths concepts and drawing a map of the land. These objectives need not be rigidly held, for they will then pose demands on the direction the activity takes. The children have initiated an activity and may have their own ideas on how to see it through. I bear this in mind even when I make suggestions to them in the course of the activity. I play it by ear; I make a suggestion and some of them take it on while others do not. There are many learning outcomes of this activity. The children have learnt to work cooperatively, to share material and resources, to apply concepts learnt, to communicate ideas clearly and to present their work to others. For any activity, there can be unexpected learning outcomes. Apart from those learning outcomes that can be directly linked to objectives, it is likely that many others become apparent only in retrospect. In the ice-cream stick land activity, for example, planning the presentation is a learning outcome not immediately perceptible, as it is perhaps masked by the efficiency with which the children work. This activity by the children illustrates certain principles. • Freedom to initiate and explore activities of their own: From observing children, it is clear that they are able to create activities that they will enjoy. Furthermore, they are also able to make these challenging. A very young child walking on a path may suddenly choose to walk over a narrow line of bricks lying nearby; another may try to jump over three steps, having succeeded at jumping two; a group of children may create a running game with a set of rules that make it challenging and interesting. They can create,

experiment and modify activities to suit the individual or the group. This valuable capacity in children can be nurtured even in the classroom. Of course, this requires us to provide the space and time. Sometimes, as in the case of the ice-cream stick land activity, the children's initiative makes the activity possible and so the task of planning for such an experience does not rest on the adult. Here, the adult's response to such an initiative plays an important role in creating the experience for the children. • Working in a group: The creation of the ice-cream stick land depended considerably on the children's ability to cooperate and work together. They shared ideas and resources, and volunteered to help each other while engaging in this activity. I have also noticed that children are able to distribute work amongst themselves, often with an awareness of each other's areas of proficiency and difficulty. These are worthwhile skills, which can only be honed while they are engaged in group work. The children in my example were motivated to participate in the process. Even those children who did not readily show interest when I suggested that they measure the land

were slowly drawn to participate with enthusiasm. It is also likely that a few children tend to be passive in their participation. Working in a group allows the children space to give each other feedback about their contribution to the group effort, and this may well encourage participation. • Opportunity for application of concepts learnt: As teachers, we like to give our best to planning how we will present a particular concept to the children. While this can be a one-time affair, opportunities come by where children can appreciate the relevance of something they have earlier learnt. One such opportunity came in the form of the ice-cream stick activity and, fortunately, it did not slip by. I am not suggesting that teachers go after several opportunities in some sort of rabid fashion. However, being alert to these provides us a range to choose from. Wherever possible, children can be encouraged to apply concepts they have learnt to enable reinforcement. Such opportunities may not promise motivation in children. Nevertheless, they do make learning meaningful to them.