



*Using Locally Resourced
Low Cost Materials
to extend young children's learning*



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INTRODUCTION

Using locally resourced low cost materials to extend young children's learning

Young children are inventive in using materials they find around them as tools for play and learning. A rubber band, a stick, a strip of cloth, materials frequently discarded by others as waste or junk, provoke children's individual thinking, play and learning. For one child a box may become a phone, for another it may be a car. Similarly a lid may be an ice cream, a container to be filled, or a building tool, whilst a bag may be for transporting, covering, filling.

People working with children must be inventive and need to plan and create the environment for children's learning. A range of junk and low cost resources can be used to support children as they learn, develop mathematical concepts, explore scientific ideas and extend their understanding of the world around them. People need to encourage and observe the imaginative play.

To support and extend young children's learning, people must give opportunities and time for a range of thinking, observing closely, listening carefully, interacting, mediating and questioning sensitively.

This booklet is to support ECD facilitators and those that work with young children in Nepal. It uses examples from individual children's responses to materials that they have found in the environment. There are also examples from facilitators who took the opportunity to revisit play and through play, observation and discussion, extended their thinking of how young children learn.

This booklet has sample activities, questions and concepts. Children can do many more activities from these kinds of resources. Let the children explore. Observe them and make notes.

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The Junk Box/Bag

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Junk box	Waste from the locality	Dry and check for cleanliness Store in baskets, bags, boxes, rice trays.	Encourage child to experiment, on table, floor or mat outside. Encourage child to sort, classify, sequencing with their own rational. Encourage to develop curiosity and use resources in imaginative play	Colour, pattern, size, same, long short, longer, shorter, fewer, more, less. Why is it like that? What would happen.if...?. How?	Classification, sorting and matching, quantity, ordering, estimating, weight and volume, capacity, spacial awareness, counting objects, pattern making.	3.2 Emotional development 4.1.1 Intellectual concepts and skills (cognitive)a, b 4.2.2 Mathematical development 4.2.1 Language development 3.3 Social development	Observe how they attempt to be independent and develop self reliance. Observe how they line up, build, match, classify, pattern make. Listen to language the child uses relating to the games they play, patterns they make. Observe how they work alongside and with other children.



testing horizontal and vertical surfaces



a cardbox can be a mobile phone



the junk box/bag



filling a bag



a bag full of shopping



**exploring horizontal and vertical,
lining up and stacking**

STONES

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Stones, small and regular sized and mixed sizes	From the locality	<p>Wash and check for smooth surfaces.</p> <p>Use in natural way or color by adding dye or paint.</p> <p>Store in basket, box or on large rice tray.</p>	<p>Encourage child to experiment on floor, or on table.</p> <p>Pieces of card or wood could be used as ramps.</p> <p>Containers could be used for filling and estimation</p> <p>Stones can be replaced in water to test displacement.</p> <p>Striking the stones with each other.</p>	<p>Rough, hard, smooth, bumpy, roll, stone, full, empty, colour, pattern, light, heavy, big, small, sink.</p> <p>How does it feel? Why is it like that? What would happen if.....? Could you fit any more in there? How many more might the container take?</p>	<p>Classification, sorting and matching, quantity, ordering, estimating, capacity, spacial awareness, counting objects, pattern making, mathematical and scientific concepts, difference in sound.</p>	<p>4.1.1 Intellectual concepts and skills (cognitive)a, b</p> <p>4.2.1 Language development</p> <p>4.2.2 Mathematical knowledge</p> <p>4.2.4 Environmental Science</p>	<p>Observe children's strategies as they select, order, classify, count, experiment.</p> <p>Observe how they line up, pattern make and use this resource.</p> <p>Observe how many times they repeat it.</p> <p>Listen to language the child uses and observations they make relating to the shapes and patterns and games they play.</p>

very long pattern - exploring length



making circles and using colored stones



ordering and making patterns



counting and estimating



joining patterns together



learning from friends



selecting and pattern making



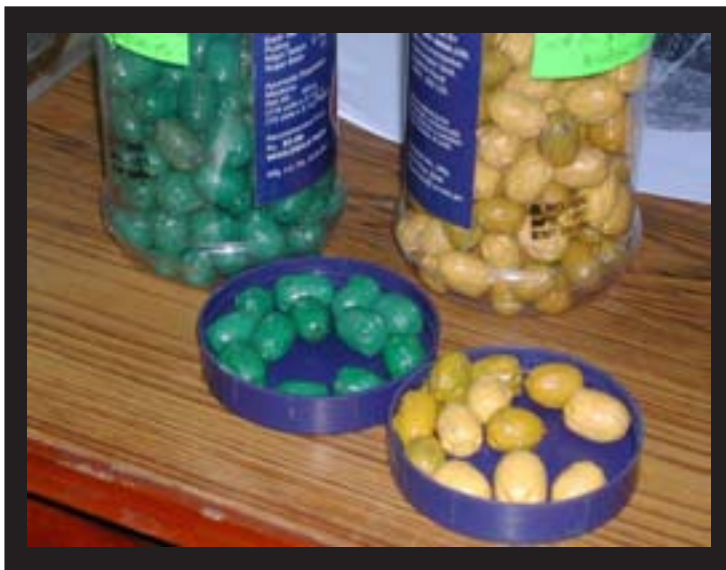
LAPSI & BEANS

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Lapsi also seed of peach , plum and apricot. Dried Beans	Centre stone of fruit	Boil, clean and leave to dry. Use in natural way or color by rolling in dye, paint Store in dry container eg jar with lid.	Encourage child to experiment on floor, on table, on a piece of board or on rice tray. Adding a range of small containers, eg lids, would encourage filling and estimating. Encourage to flick and twist the seeds.	Rough, hard, smooth, bumpy, roll, plant, fruit, seed, stone, fast & slow, far & near, rotate & not rotate How does it feel? Why is it like that? What would happen if.....? Can you tell me about your pattern?	Classification, comparing, arranging, sorting and matching, quantity, ordering, estimating, capacity, spacial awareness, counting objects, pattern making, concept of movement investigation.	3.1 Finger movement balance the motion of finger-eye-hand coordination 4.1.1 Intellectual concepts and skills (cognitive)a, b 4.2.1 Language development 4.2.2 Mathematical knowledge 4.2.3 Creativity	Observe children's strategies as they select, order, classify, count, experiment. Observe how they line up, make pattern and use this resource to fill containers and shapes. Observe their movement, how they perform. Observe the length of time they spend on self initiated activities. Listen to language the child uses and observations they make relating to the shapes and patterns.

modelling, sorting and counting



lapsi stored in Jars



painted lapsi



filling container with lapsi



BEADS

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Beads, cardboard and other tubes	From the tailors shop when the thread is finished. Strips of cardpaper, rolled and taped Wooden beads made locally	Use in natural way or color by adding dye or paint Pieces of string to thread through Store in basket, box, bag or on rice tray.	Encourage child to experiment Help the child to thread the beads	Colour, pattern, size, same, long short, longer, shorter, fewer, more, less symmetrical, roll. Why is it like that? What would happen if.....? How many more?	Classification, sorting and matching, quantity, ordering, estimating, , counting objects, pattern making	3.2 Emotional development 4.1.3 Physical development 4.1.1 Intellectual concepts and skills (cognitive)a, b 4.2.1 Language development 4.2.2 Mathematical knowledge	Observe how they attempt to be independent and develop self reliance Observe child's manipulative skills and coordination as it threads. Observe how they line up, make pattern and use this resource. Observe how they concentrate, how they try and repeat. Listen to language the child uses and observations they make relating to the shapes and patterns and games they play.



beads and reels



eye-hand coordination



concentrating



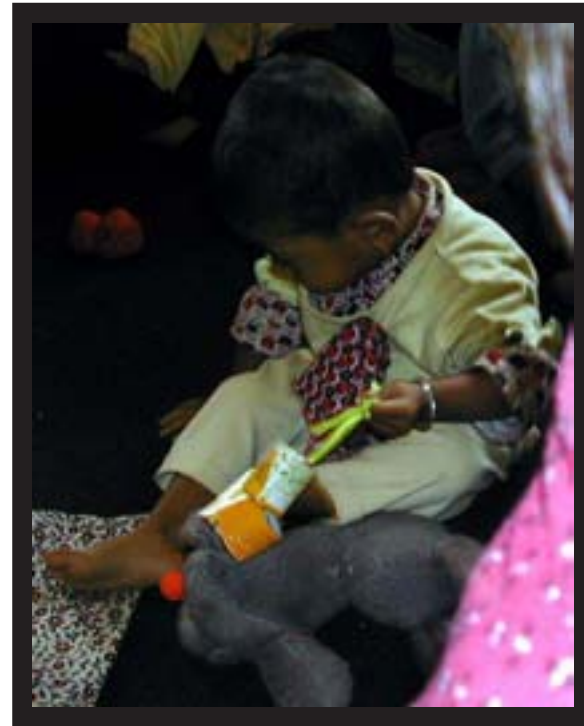
purposeful threading



colored tubes for threading



cardboard tubes



threading cardboard tubes on ribbon



straws & strings

Pieces of cloth

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Strips of cloth, card, ribbon, string, rope	From the pieces in the tailors shop	Store in basket, box, bag or on rice tray.	Encourage child to experiment.	Colour, pattern, size, same, long short, longer, shorter, fewer, more, less symmetrical, hard, thin, thick, soft, rough, easy squiz, easy dry	Classification, sorting and matching, quantity, ordering, estimating, measurement, counting objects, pattern making, speed, light	3.2 Emotional development 3.3 Social development	Observe how they attempt to be independent and develop self reliance.
Larger pieces of cloth	From old garments From the locality	Encourage children to use in a safe way. Facilitator can use for stitching to make bags of all sizes for storage filling& containing. Small bags can be filled with beans (beans bag). Finger and other puppets for adult led and child led storytelling Imaginative play	Make decisions work with other children. Let children use water soap, sunlight with the cloth. Encourage them to hold pieces of cloth in the wind. Encourage imaginative play.	Why is it like that? What would happen if.....? How could you make it fit, be longer?	Guessing games using all senses Story telling	4.1.1 Intellectual concepts and skills (cognitive)a, b 4.1.2 Health and safety 4.2.1 Language development 4.2.2 Mathematical knowledge 4.2.4. Science experiment	Observe children's manipulative skills. Observe how they line up, pattern make and use this resource. Listen to language the child uses and observations they make relating to the shapes and patterns and games they play. Observe how they use imagination in their play & story telling.



using cloth as a strap



using cloth to make a doll



making a doll



measuring



covering



strips of cloth for pattern making

MAKAI KO KHOYA

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Khoya	Waste from makhai khoya From the locality	Dry and check for cleanliness Store in baskets, bags, boxes, rice trays.	Encourage child to experiment, on table, floor or mat outside. Use water & sand soil. Imaginative play	Colour, pattern, size, same, long short, longer, shorter, fewer, more, less, float, stick Why is it like that? What would happen.if...?. How? Why does that happen?	Classification, sorting and matching, quantity, ordering, estimating, weight and volume, capacity, spacial awareness, counting objects, pattern making	3.2 Emotional development 3.3 Social development 4.1.1 Intellectual concepts and skills (cognitive)a, b 4.2.2 Mathematical development 4.2.1 Language development 4.2.2 Science experiment	Observe how they attempt to be independent and develop self reliance. Observe how they line up, build, match, classify, pattern make. Listen to language the child uses relating to the games they play, patterns they make. Observe how they work alongside and with other children.

lining up and balancing



building



selecting and building



STICKS

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Small sticks Strips of card board	From the locality	<p>Check for cleanliness and safety</p> <p>Store in bundles with rubber band in baskets, bags, boxes, rice trays</p> <p>Can be colored with paint</p>	<p>Encourage child to experiment, on table, floor or mat outside.</p> <p>Encourage them to sort, measure, tap sticks together and listen to sound.</p> <p>Encourage imaginative but safe play.</p>	<p>Colour, pattern, size, same, long short, longer, shorter, fewer, more, less, fit, measure, high, thick, thin</p> <p>How long? How short? How many?</p> <p>What would happen.if...?.</p>	<p>Classification, measurement, sorting and matching, quantity, ordering, estimating, height width, length, spatial awareness, counting objects, pattern making.</p>	<p>3.2 Emotional development</p> <p>3.3 Social development</p> <p>4.1.1 Intellectual concepts and skills (cognitive)a, b</p> <p>4.2.1 Language development</p> <p>4.2.2 Mathematical development</p>	<p>Observe how they attempt to be independent and develop self reliance.</p> <p>Observe how they line up, build, match, classify, pattern make, problem solve..</p> <p>Listen to language the child uses relating to the games they play, patterns they make.</p> <p>Observe how they work alongside and with other children.</p>



exploring length



classifying size and color



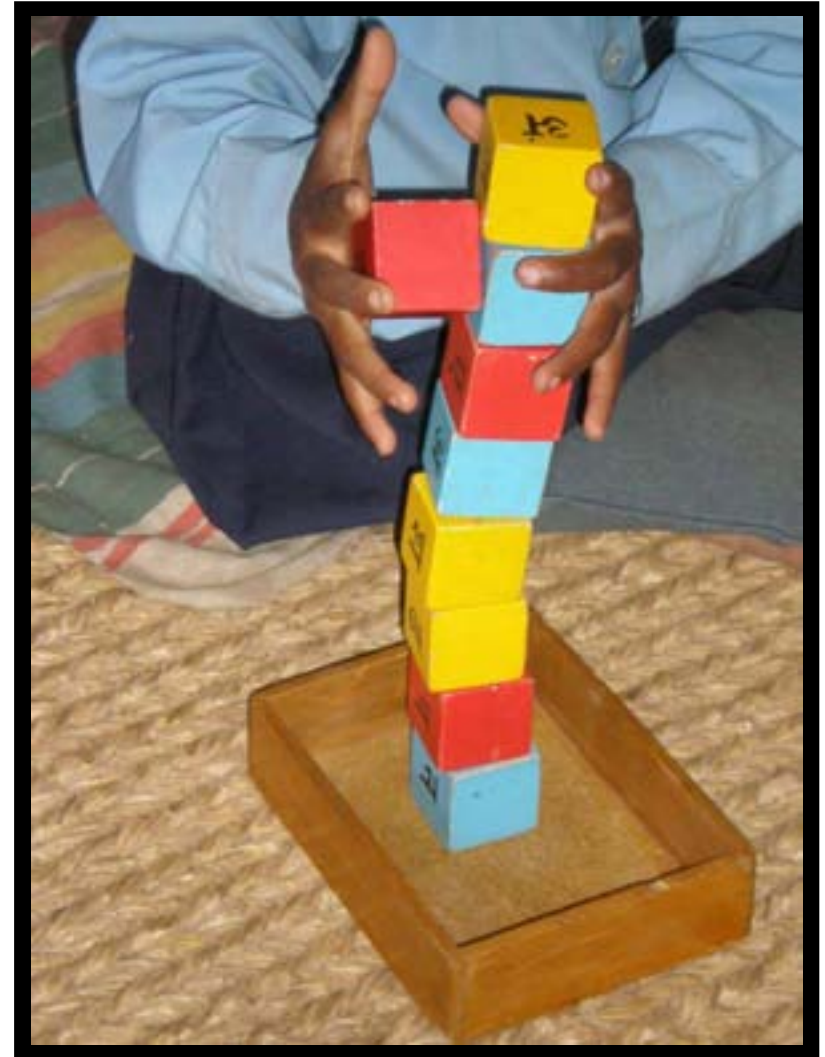
stick as a horse

WOODEN BLOCKS

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Wooden blocks, regular and irregular sizes Boxes of wooden blocks	Blocks from wood, cardboard, brick, plastic from locality or carpenter. Sets of blocks.	Cut to manageable regular lengths. Smooth any rough edges Check safety Store in baskets, boxes, on shelves.	Encourage child to experiment on floor on table, to build, stack, make patterns, order. Show them using different wooden block into the water Let them outline the block using as template	Feel, texture, hard, shape, space, pattern, tower, wall, stack, balance, bridge, structure How do you feel when you hold in different way? What happens when you pile them in another way? Why does not it stand when you pile it that way? Tell me about what you have made? What sound can you produce by striking, hitting the block together?	Estimation, measurement , length, shape, height and volume, geometrical expression Thinking creatively Exploring movement, forces, position	3.2 Emotional development 3.3 Social development 4.1.1 Intellectual concepts and skills (cognitive)a, b 4.2.1 Language development 4.2.2 Mathematical development 4.2.3 Visual art and sound	Observe how they attempt to be independent and develop self reliance. Observe how they create, line up, build, match, classify, make pattern. Observe and note how individuals follow stages in block play. Observe what they do, how they solve problems and how they work alongside and with other children. Listen to language the child uses relating to the games they play, patterns they make, the new words they repeat and use.



lining up



stacking and balancing

satisfaction



testing theories



TYRES

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Tyres Pieces of water pipe and make it round	Waste From the locality	Check for cleanliness and safety. Place in ground securely or lie flat on ground for jumping in and out. Tyres can also be hung on rope as swing. Cycle tyres can be rolled and chased. Can be painted.	Encourage child to experiment, and explore physically, over, under through. Encourage child to be imaginative.	Over, under, through, below, above, inside, outside, fast, slowly, swing, climb, rolling on the floor, rolling around the self, throwing from different sides What would happen.if...?. How? Why does that happen?	Physical Texture, pattern, big, small insert hollow, solid, soft, hard, content of the tyres, use of tyres	3.2 Emotional development 3.3 Social development 4.1.3 Physical development 4.2.1 Language development 4.2.2 Mathematical development 4.2.4 Mathematics	Observe how they increase independence and develop self reliance. Observe how they test themselves and extend balance and control movement. Observe the child's efforts to try something new. Listen to language the child uses relating to the games they play. Observe how they work alongside and with other children. Observe how long they are engaged.

crawling through tyres



running and chasing

SAND

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Dry sand Wet sand	Locality Plastic materials eg water bottle from waste to make container and funnel. Holes can be made in old plastic cups, lids, containers to make funnels, sieves, for sand to pass through. Small toys, sieve, spoons bowls from local shop.	Keep in a clean place, large bowl, container, inside a tyre set in the ground. Check regularly for cleanliness if left uncovered. Provide a range of plastic materials for children to use in play eg. Spoons, cut up water bottles (for filling and pouring through lids, sieves, wood, stones, cardboard pieces for pattern making.	Encourage child to experiment, explore properties, capacity, volume, make shapes, fill containers. Encourage children to replace materials after use. Encourage children to wash after using sand. Encourage children to make different models balancing different amount of sand Imaginative play	Pour, fill, more, less, empty, half, smaller, larger, same, sieve, through, tall, deep Which will hold more? Hold less? Why is it like that? How did you make that pattern? What would happen if.....? How does the sand look as it falls? What is different when the sand is wet? Why will it not go through the holes?	Classification, sorting and matching, quantity, ordering, estimating, weight and volume, capacity Concept of different things, role characters. Properties of wet and dry sand.	3.2 Emotional development 3.3 Social development 4.1.1 Intellectual concepts and skills (cognitive)a, b 4.2.1 Language development 4.2.2 Mathematical development 4.2.4 Environmental Science	Observe how they attempt to be independent and develop self reliance. Observe how they line up, build, match, classify, pattern make. Listen to language the child uses relating to the games they play, patterns they make. Observe how they work alongside and with other children. Observe how they repeat and test ideas.



digging and discussing



playing with sand



observing



playing inside with sand and stones



facilitators explore sand and stones

sand in a tyre



WATER

Name of Resource	Where from	Preparation, Storage and maintenance	Learning activities	Key vocabulary and questions	Concepts	Link to ECD Curriculum	Observation, what to look for and note
Water Bowls A selection of waste materials to use in water eg plastic bottles and cups, lids sieves and strainers, pieces of sponge, pieces of pipe, fat and thin, long and short	Bowls from the locality Waste materials from the home	Prepare child with talk re safe water/non-safe water. Change water regularly. Take precautions eg. rolling up child's sleeves. Encourage children to clean utensils used and return to storage.	Encourage exploration, pouring, measuring, filling, floating and sinking. Awareness of others and taking responsibility. Imaginative play. Creative play.	Pour, fill, more, less, empty, half, smaller, larger, same, shorter, fewer, more, less, wet, dry, damp, drip, splash, bubble, squeez Why is it like that? Why did that happen? What would happen.if...?. How? Which will hold more?	Classification, sorting and matching, quantity, ordering, estimating, weight and volume, capacity, spacial awareness, counting objects, pattern making, more or less Properties of water eg, floating and sinking Movement of water	3.2 Emotional development 3.3 Social development 4.1.1 Intellectual concepts and skills (cognitive)a, b 4.2.2 Mathematical development 4.2.1 Language development 4.2.2 Environmental Science	Observe how they attempt to be independent and develop self reliance Observe how they line up, build, match, classify, pattern make. Listen to language the child uses relating to the games they play, patterns they make. Observe how they work alongside and with other children Observe how they repeat activities & test theories.

pouring



squeezing



Observation

Observation is an important part of the facilitators role for teaching and learning and vital for future planning.

Why do we observe?

When should we observe?

How can we observe?

Who are the observations for?

Why?

To give knowledge about the child and the child's development.

To see that the child is making progress.

Observations can/should be used as a basis for future planning for individuals, and large and small groups of children.

When?

When the child is following their own choice of activity.

When the child is taking part in planned activities.

How?

Participative observations are made when the observer is working with the child.

Non participative observations are made when the observer is not involved in the activity, not interacting with the child.

Who are observations for?

Observations can be shared with all those who have an interest in the child's development and learning, for parents, present and future teachers of the child.

How to manage

Observations need to be objective and the choice of language is important

Watch carefully and write what you actually see and hear and not what you think the child is doing. There can be a difference. Start with watching a child who interests you or causes concern and record what you see and hear.

Managing these observations could be on small pieces of paper and then placed in a folder with a space for each child or in a notebook with a page for each child. There will be a time when all the notes made on each child will need to be considered to support discussion / assessment of the child to plan future provision. It is good to have pencil and paper available at all times so that observations can be written as soon as they are made.

It is important to observe a child in different situations and at different times of day. If there are other people working with the child it is good to share observations.

Observations should become the major part of continuous assessment of the child.

Observation sheet (sample)

Name of Child: **Geeta Gurung**
 Age of child: **3 yrs**

Observation	Link to ECD curriculum	Analysis of Learning	Facilitator action and suggestions for what next	Date observed
<i>She selected stones and placed one after another until she had a long wiggly line. Said "look! it's a long snake with red bits"</i>	4.1.1Intellectual 4.2.2 Mathematical development. 4.2.1Language development	<i>Able to focus and work with positive attitude independently. Able to choose materials and make pattern of shape like snake. Knows colour red. Uses word long Able to use language to express herself.</i>	<i>Provide materials for playing with different lengths, eg these stones, lapsi, pieces of string, sticks. Use language long and short, longer, shorter</i>	4.9.07

Observation 1 also shows Geeta's emotional and social development. She can work independently and focus on a task for several minutes. She explains to others what she has been doing

Observation sheet

Name of child:

Age of child:

Observation	Link to ECD curriculum	Analysis of Learning	Facilitator action and suggestions for what next	Date observed

Observations of these individual children learning from self initiated tasks using makai ko khoya and coloured stones show the children's understanding and their satisfaction and delight in achievement.

Makai Ko Khoya

She tipped the basket of multi-coloured Mochai Khoya on to the floor and sat down beside it. She selected 2 pink pieces and carefully placed them side by side. Then she reached again to the pile, selecting other pieces, all of similar length and all pink, lining them up until she had 5 in a row. Then she picked up one more



piece and holding it carefully between her first finger and thumb, she balanced it horizontally across the centre of the others. She sat back put her hands on her knees, looked at what she had made and smiled.

Stones, Ball and Symmetry



He looked across at other children playing with stones and put down the ball he was holding. He picked up a pile of coloured stones and placed them in a row, green, blue, green,

green. Then looking at the other two stones in his hand he placed them blue, green. He looked at what he had done and sat down. Then he glanced across the room and seeing another ball, he rushed over and picked it up and placed it carefully at the end of his row of stones. Suddenly he jumped up and danced around his pattern of stones and balls, then sat down and still looking, clapped his hands.

Threading in and out of a boundary : one child's learning through repeated patterns of behaviour

Ram is sitting on grass on his own. He picks a piece of clover grass and examines it. Sliding his fingers along the stem, he moves the piece of clover so that the thin end goes through the hole in a small red plastic ring. He looks intently at what he has done then holds it up, shakes it and the clover falls. He picks another piece and once more he threads it through the object leaving a small length either side of the hole. He repeats this, each time looking closely holding it up and shaking. Finally the grass does not fall out and after a final hard shake he drops it on the ground. He then stands, moves to a row



of tyres, and begins to move his body, crawling through and out the other side of each tyre. After passing through the first four, he stands up, looks over the next one before crawling through the last two. Then he stands upright again and yawns.

Ram appears to be exploring taking both the grass and later himself through a boundary. He might be exploring the *insideness* of things in which he can contain the grass and later himself but his interest appears to be the passing of the grass and later himself in and out, *through the space and out the other side*. In both tasks pauses, considering the action, developing thinking and learning and when satisfied moves on.