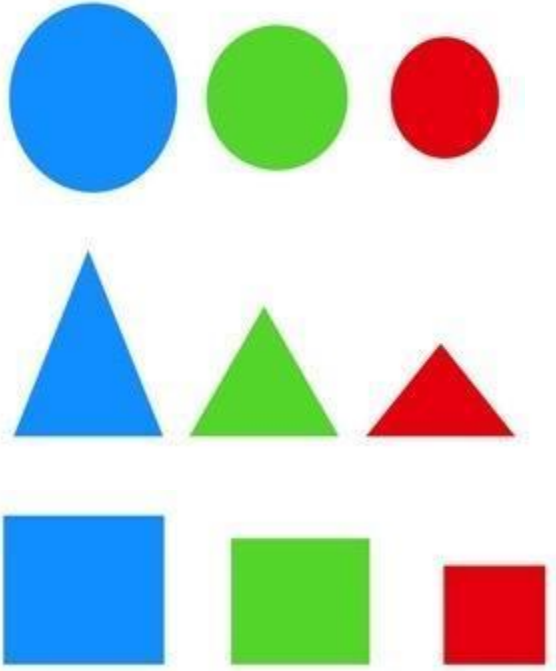


PATTERNS EVERYWHERE (LEVEL 0)

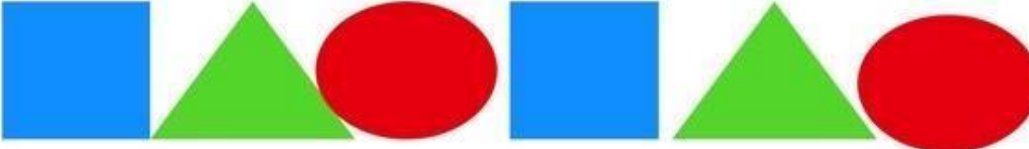
Description:	Learners will understand how patterns help us make sense of the very complex world. Learners will visually represent different patterns around them.
Leading question:	How can patterns help us understand the world?
Subjects:	Math, Art and Design, Social and Emotional Learning
Total time required:	~ 5 hours over five days
Self-guided / Supervised activity:	Supervised
Supplies required:	Paper, pencil, coloring pencils/crayons
Learning outcomes:	<ol style="list-style-type: none"> 1. Observe and explore different patterns. 2. Discover patterns in daily life, nature, and music. 3. Create patterns with different shapes.
Previous learning:	N/A

DAY 1 - Today, learners will start to discover patterns. Through games, outdoor, and sporting activities, they will understand patterns in daily life and begin to create their own patterns.

Suggested Duration	Activity and Description
10 minutes	<p>Patterns are things, numbers, or shapes that repeat logically.</p> <p>Start the learning with a clapping game:</p> <ul style="list-style-type: none"> ● Clap your hands in a pattern and encourage the learners to try to follow the pattern. For example, clap two times fast and two times slow. ● You can extend the pattern by stamping your feet, snapping your fingers, or clapping on other parts of your body, such as your head or knees. ● After the learners are familiar with the activity, let them take turns leading the pattern.
20 minutes	<p>Patterns help children learn to sequence and make predictions, leading to mathematical skills and establishing order in life.</p> <p>Patterns in Life: Days and nights repeat and happen regularly as a pattern.</p> <ul style="list-style-type: none"> ● Ask the learners what other patterns they can see daily. For example, days and nights repeat and occur periodically as a pattern; we follow the same path to go to the grocery store every day. Also, the week has the same number of days, and we work for some and rest for others.

	<ul style="list-style-type: none"> ● Ask the learners to draw other patterns that they can see daily. (Wake up in the morning/go to sleep in the evening, eat breakfast/eat dinner, etc.) They can draw a sun for things we usually do during the day and a moon for something we typically do at night.
<p>30 minutes</p>	<p>Learners will now create some shapes and colors, sort them, and keep them to make patterns the next day.</p> <ul style="list-style-type: none"> ● Ask the learners to draw three circles (large, medium, and small). ● Ask them to draw three triangles (large, medium, and small). ● Finally, they will draw three squares (large, medium, and small). <p>Now the learners will choose three colours (blue, green, and red) and color the large shapes with blue, medium shapes with green and small shapes with red. See the examples below.</p>  <p>Ask the learners to sort the shapes by</p> <ul style="list-style-type: none"> ● Colour ● Size <p>Learners will keep these colored shapes for the next learning day.</p>

DAY 2 - Learners will start the day with a sorting patterns activity, listen to a pattern story, and at the end of the day, learners will become pattern detectives and discover patterns in nature.

Suggested Duration	Activity and Description
10 minutes	<p>Warm-up activity: To start the learning day, ask the learners to take the colored shapes that they made the day before and:</p> <ul style="list-style-type: none"> • Order them by color • Order them by size • Finally, ask the learners to create some patterns; for example, square, triangle circle, square, triangle circle(see example below) 
20 minutes	<p>After the warm-up activity, learners will listen to the Pattern story: “Pranav, the pattern detective” You can click the storyweaver link or go to the appendix for the story: https://storyweaver.org.in/stories/122951-pranav-the-pattern-detective Ask the learners</p> <ul style="list-style-type: none"> • Where did Pranav see patterns? • Where do you see patterns around you? • Ask them to draw their favorite pattern. <p>After listening to the story, learners like Pranav will become pattern detectives!</p>
30 minutes	<p>Learners will do 2 outdoor activities:</p> <p>Task 1 “The Pattern Detective”: The purpose of this activity is for learners to think and discover patterns around them, in nature and in daily life.</p> <ul style="list-style-type: none"> • Ask the learners to go around their house and neighborhood/school/class and find examples of 3 patterns. For instance: <ol style="list-style-type: none"> 1. Look at flowers, trees, and fruits. 2. Your routines, how your house is constructed, etc. <p>Task 2: Allow learners to spend some time searching to find diverse examples with rich and different attributes. Learners will search outside for some objects in nature to make their own patterns, you will ask them to find:</p> <ul style="list-style-type: none"> • 3 different sizes of rocks • 3 different sizes of leaves, • 3 different sizes of flowers,

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	<ul style="list-style-type: none"> • 3 different sizes of sticks. <p>Once they have found all the required, ask them to form patterns, for example, rock-leaf-flower-stick/ rock-leaf-flower-stick...</p> <ul style="list-style-type: none"> • Ask the learners to think and show you which combinations of patterns they can make. <p>They can spend time doing this activity.</p> <p>Hint: By studying patterns in nature, learners appreciate and understand the world we live in and how everything is connected.</p>
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DAY 3 - Today, learners will draw shapes and, following the pattern, will be able to predict what will come next. Learners will find and create their own musical patterns through a music game.

Suggested Duration	Activity and Description
15 minutes	<p>Learners will start the day by drawing some patterns.</p> <p>Give a piece of paper and ask the learners to draw the following pattern:</p> <ul style="list-style-type: none"> • Triangle, square, circle. Ask them what comes next and add (triangle, square, circle) • Circle, circle, triangle. Ask them what comes next and add(circle, circle, triangle) • Circle, triangle, triangle, square, etc. <p>Alternatively, learners can use the template below.</p>

<p>15 minutes</p>	<p>Music and Patterns: in this part of the learning, learners will think about ways of understanding music and how it relates to patterns. They will follow music patterns and repeat.</p> <p>First, ask the learners to follow you in the “Echo clapping” game</p> <ul style="list-style-type: none"> ● Clap four times and invite learners to copy you. ● Clap a new rhythm for them to copy. ● Change to tapping two fingers onto the palm of the hand. Invite learners to copy this. ● Combine clapping and tapping. <p>TIP: When they are confident with the first part, you can add some stamping or jump to the beat, making the game more challenging for them.</p>
<p>30 minutes.</p>	<p>Finally, learners will create their own movement and sound pattern, taking into account the following keys:</p> <div data-bbox="407 724 1349 1249" style="text-align: center;"> <p>A <i>Snap your fingers.</i></p> <p>B <i>Clap your hands.</i></p> <p>C <i>Stomp your feet.</i></p> </div> <p>Ask the learners to write their own music pattern; they will write:</p> <ul style="list-style-type: none"> ● A for snapping their fingers ● B for clapping their hands ● C for stomping their feet <p>Ask them to combine these different keys, for example, A A B C C or B B A A C A and make their own music.</p> <p>Ask them to choose one pattern and present it to their peers or family members. Learners will take turns.</p> <p>HINT: Repetition is a crucial component of learning. When we repeat something, the brain starts to get used to it and understand it. Patterns are the great key to accelerating this learning.</p>

DAY 4 - Today, learners will have the chance to spend some time outside playing a pattern challenge game. Through an art activity, learners will design their dream house using patterns.

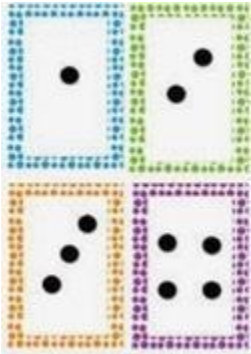
Suggested Duration	Activity and Description
20 minutes	<p>Start the learning day with a fun outdoor activity, "Pattern Challenge"</p> <p>Split the group into 2 to 3 players.</p> <p>How to Play</p> <ul style="list-style-type: none"> • Player 1 draws any pattern using shapes. • Player 2 must continue the pattern correctly. • They earn a point if it is correct. <p>If learners have the chance to play outside, they can use sand, mud, or flour. Otherwise, they can play using paper and a pencil.</p>
10 minutes	<p>Learners will be drawing their "Dream House" for this, they will think of different patterns they would like to use to draw their dream house.</p> <ul style="list-style-type: none"> • Recall the "Pranav the pattern detective" story and remind the learner how patterns are everywhere, in our daily activities, nature, and around us. • Ask the learners to think about which patterns they would like to use to draw their dream house, for example, shapes, and colors,
30 minutes.	<p>Now, provide the learners with paper and coloring pencils to design their patterns dream house.</p> <p>You can show them the pictures below to know what to do or guide them by giving some ideas on how to use patterns for their houses: " add some triangles or squares, use three different colors and alternate them...etc.)</p> <div data-bbox="386 1262 1382 1539"> </div>

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DAY 5 - Learners will start the day by doing a pattern exercise. Today learners will understand that we can create patterns with words and numbers.

Suggested Duration	Activity and Description										
20 minutes.	<p>With physical activity, learners will discover that patterns can be made even with our bodies. Give a number code to 4 different body movements. Example:</p> <div style="text-align: center;"> <p>A B C D</p> <p>Jumping Dancing Star Jumps Bending</p> </div> <p>First, ask the learners to follow you:</p> <ul style="list-style-type: none"> • Say out loud to them A-Jumping and jump • Now say out loud B- Dancing and dance • Next, say out loud C- Star Jumps and do star jumps • Finally, D- Bending and bend yourself <p>Learners will follow you and learn that A is for jumping, B is for dancing, C is for star jumps and D is for bending. TIP: Repeat this activity at least four times so learners will remember the letters and the exercise. You can challenge them by saying only letters without the keyword, ABCD or BCCA, etc.</p> <p>Learners can make 2 of their own exercise patterns! Example:</p> <div style="text-align: center;"> <table border="0"> <tr> <td style="background-color: red; color: white; padding: 5px;">3</td> <td style="background-color: red; color: white; padding: 5px;">3</td> <td style="background-color: green; color: white; padding: 5px;">2</td> <td style="background-color: red; color: white; padding: 5px;">3</td> <td style="background-color: red; color: white; padding: 5px;">3</td> </tr> <tr> <td style="background-color: blue; color: white; padding: 5px;">1</td> <td style="background-color: green; color: white; padding: 5px;">2</td> <td style="background-color: purple; color: white; padding: 5px;">4</td> <td style="background-color: blue; color: white; padding: 5px;">1</td> <td style="background-color: green; color: white; padding: 5px;">2</td> </tr> </table> </div>	3	3	2	3	3	1	2	4	1	2
3	3	2	3	3							
1	2	4	1	2							

<p>20 minutes</p>	<p>Patterns with numbers: The more children can understand how numbers relate to each other, the more confident they will become.</p> <p>To understand and make patterns, it's essential to ensure that learners properly grasp numbers and their order.</p> <ul style="list-style-type: none"> ● Ask learners to write numbers from 0 to 10 and repeat this a few times. ● If you think learners can be challenged, ask them to write numbers from 0 to 20. ● Check the order of the numbers. <p>Here are some examples of patterns in math: 1 1 1 1 1 1 1 1 Can you guess what number comes next? Of course! 1. This is a straightforward pattern.</p> <p>Let's try another one: 0 1 0 1 0 1 0 1..... What number comes next?</p> <ul style="list-style-type: none"> ● Explain that this - 0, 1, 2, 3, 4 - is a number pattern. <p>Can learners continue the number pattern? What comes next?</p> <ul style="list-style-type: none"> ● Explain that this - 11, 12, 13, 14, 15 - is a number pattern. <p>Can learners continue the number pattern? What comes next?</p> <ul style="list-style-type: none"> ● Ask learners to create their own patterns with numbers from 0 to 10 and from 11 to 20. <p>Learners can challenge family members or peers to guess the following number in the sequence.</p> <p>TIP: If learners are struggling with numbers, you can take a step back and first ask them to create patterns with drawings. Instead of numbers, they can draw some dots. See the example below.</p> 
<p>20 minutes</p>	<p>Patterns with letters: Learners will now write some patterns following the Alphabet.</p> <ul style="list-style-type: none"> ● Ask the learners to write capital letters from A to Z ● Ask learners to write small letters from a to z. <p>Now you will show learners the following example: Capital A small a, Capital B small b, Capital C small c (Aa Bb Cc).</p> <p>This pattern follows the sequence of capital and small letters in the alphabet.</p>

- Ask the learners if they can tell you what comes after Cc?
- Ask the learners to work in pairs and choose letters from the alphabet and make some patterns taking turns to ask what comes next, for example, AaBbCc__ ?
AaBbCcD__?

If learners can't distinguish between capital and small letters,

- Ask them to follow the template.
- Ask them to choose different letters and make some patterns.

Alternatively, you can write the letters for them on a piece of paper, and they can complete the missing letters.

A		C	D	
F	G		I	
K			N	O
	Q	R		T

	B	C		E
F		H		J
	L	M		
P			S	
U	V		X	Y/Z

Additional enrichment activities:

- Create a behavior chart to follow throughout the week and identify patterns.

Modifications for simplification

- Learners can work only with number patterns or only with alphabet patterns.

ASSESSMENT CRITERIA

By the end of the project, a majority of my students were able to:

- Observe and explore different patterns.
- Discover patterns in daily life, nature, and music.
- Create patterns with different shapes.

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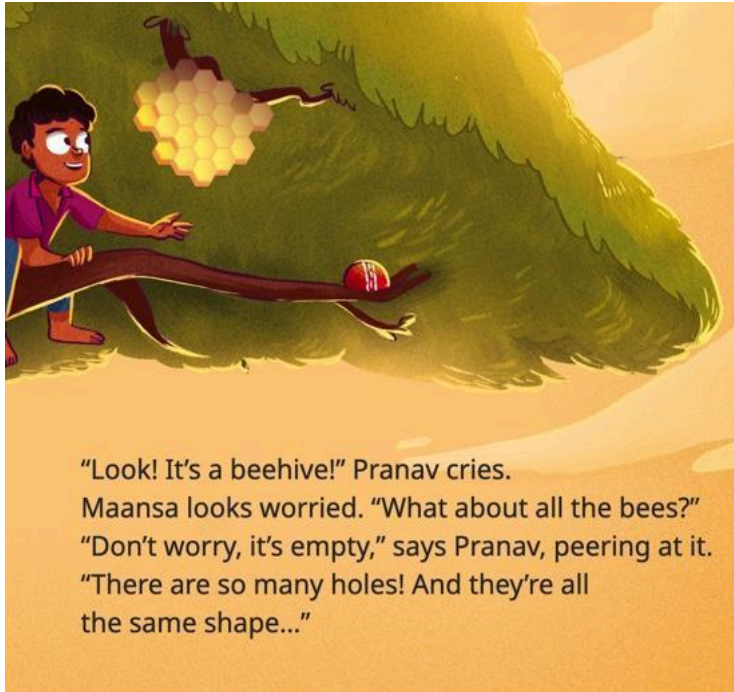
APPENDIX



Pranav the Pattern Detective

Author: Aditya Swaminathan

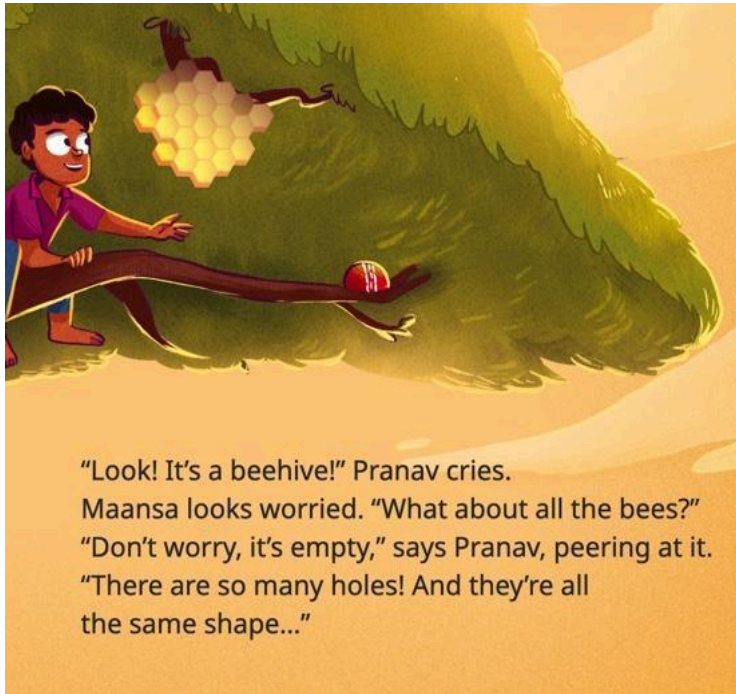
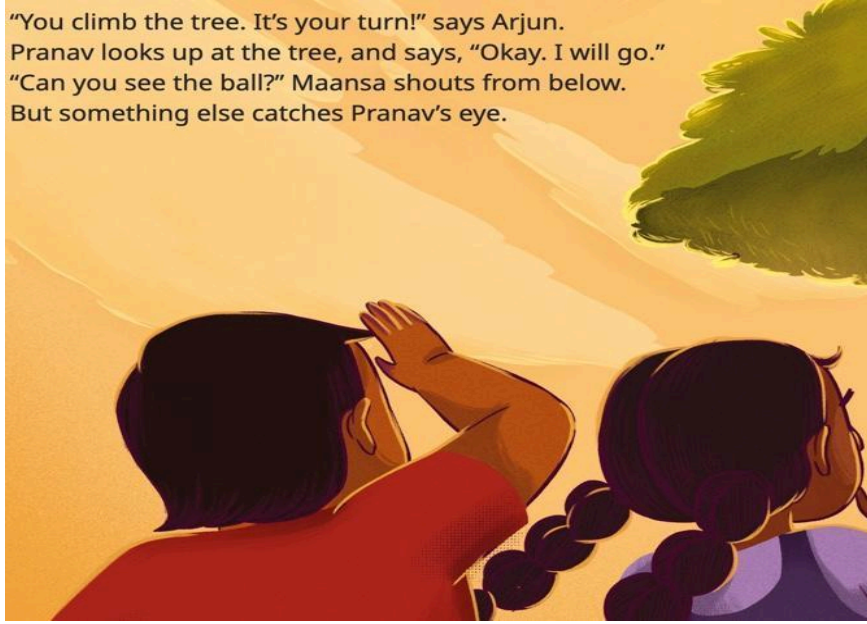
Illustrator: Jemma Jose



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"You climb the tree. It's your turn!" says Arjun.
Pranav looks up at the tree, and says, "Okay. I will go."
"Can you see the ball?" Maansa shouts from below.
But something else catches Pranav's eye.



"Look! It's a beehive!" Pranav cries.
Maansa looks worried. "What about all the bees?"
"Don't worry, it's empty," says Pranav, peering at it.
"There are so many holes! And they're all
the same shape..."

"Why did the bees choose this shape? Why not a circle?" Pranav wonders.
He imagines the hive in circles. "That would not work."

"Bees are very clever," Pranav tells his friends the next day. He has been reading all about them. "They have discovered the best shape for their home. Hexagons come together with no holes or gaps, just like a jigsaw puzzle."

Their maths teacher, Mr Das, overhears them. "The six sides of the hexagon provide more room for the bees," he adds.

"Where did they learn how to do that?" asks Pranav.

Mr Das says, with a smile, "Patterns are everywhere!"



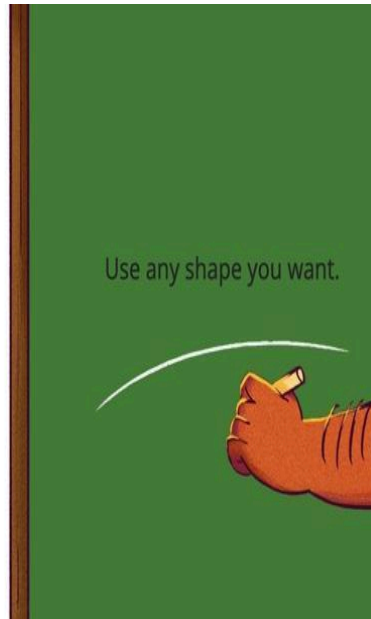
Pranav becomes a pattern detective!

"There are so many things in nature that are created using repeating patterns," Pranav tells his class the next day.

"We use repeating patterns in our man-made world as well," says Mr Das. "Why don't you try to create something using a pattern? That can be your homework."

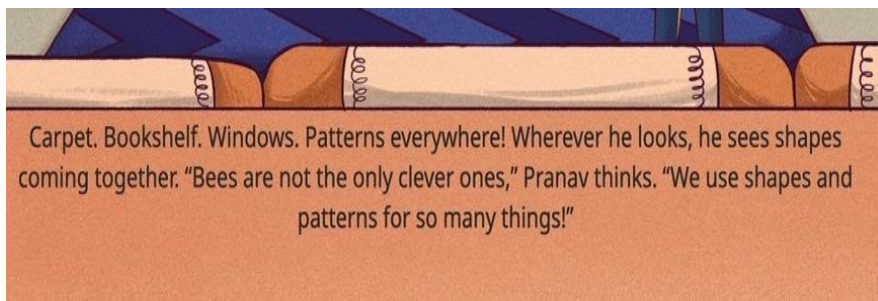
"What shapes shall we use to make the pattern?" Pranav asks.

Mr Das writes the answer on the blackboard.



At the market the next day, Pranav looks carefully at the fruits and vegetables. He looks at the pineapples, ridge gourds and the insides of oranges. So many sizes, colours, shapes... but Pranav can see the patterns!

"Are patterns really everywhere?" he wonders.



Carpet. Bookshelf. Windows. Patterns everywhere! Wherever he looks, he sees shapes coming together. "Bees are not the only clever ones," Pranav thinks. "We use shapes and patterns for so many things!"

And so Pranav gets busy
drawing his dream house.

Red rectangular bricks.
Black and white square tiles
at the entrance, like in his
grandmother's house.

Who knew simple shapes
could make a home—for bees,
for me and for you!

