Describing and Creating Patterns

Math Background
Children see, hear, and experience patterns everywhere in their world. They hear patterns in songs and chants, and they make patterns when they engage in sports, dance, and physical routines. Children see patterns in art, in architecture, and in familiar items such as clothing. To understand and work with patterns, children need to recognize and describe attributes (characteristics) such as colour, size, shape, texture, sound, and orientation (relative position). They also need to use position words such as before, after, and next to.

In the early years, children begin to recognize that a repeating pattern has an element of repetition that they can observe in the pattern. They learn to identify which part of the pattern repeats itself over and over.

For example, in the pattern shown here, the attribute of the pattern that changes is shape. The shortest part of the pattern that repeats itself is circle, square. This part of the pattern is called its core. (Note that it is not necessary for children to use this term.)
Children in Kindergarten learn to describe simple patterns that have two elements, such as red, blue, red, blue, red blue, or a pattern that has three elements, such as circle, square, star, circle, square, star, circle, square, star. They also learn to create their own simple patterns in which one attribute changes.

Purpose
In this activity, children will identify and describe a pattern and identify the shortest part of the pattern that repeats itself. They will also tell what comes next in a pattern. Children will create their own patterns and then describe them. Note that some displays on the Activity Card are not patterns, to help children distinguish a pattern from a non-pattern.

Materials
- Any objects that can be used to create patterns, such as beads, pom poms, pipe cleaners, stickers, LEGO® blocks, small toys, bingo dabbers, crayons, stones, leaves, shells, pinecones, buttons, washers, bolts, paper clips. Children will need enough objects to make at least three repetitions of each pattern they create.
- Yarn or string (optional)
- Long strips of paper on which to lay each pattern (optional)

Identify and Describe Patterns
1. Point to the display on the Activity Card that shows orange and yellow flowers. Ask, What do you see? Say it out loud. (orange flower, yellow flower, orange flower, yellow flower, orange flower, yellow flower) Encourage children to point to each flower as they say it. Ask, What changes about the flowers? (the colour) Is this a pattern? How do you know? (yes, because some parts repeat the same way over and over; yes, because the colours change from orange to yellow over and over) What is the shortest part of this pattern that repeats itself over and over? (orange flower, yellow flower) Alternatively, you may wish to create your own patterns and non-patterns using objects found in your home.

2. Point to the display on the Activity Card showing the coloured pom poms. Ask, What do you see? Say it out loud. (yellow pom pom, blue pom pom, yellow pom pom, green pom pom, blue pom pom, orange pom pom, blue pom pom, pink pom pom) Is this a pattern? (no) Why not? (because there is no part that repeats itself over and over again)
3. Ask children to find another example of a pattern on the Activity Card. Ask, **How do you know that this is a pattern? What is the shortest part of the pattern that repeats itself?** Encourage them to identify one or more of the following patterns:
   - Pipe cleaners: The pattern is short pipe cleaner, medium pipe cleaner, long pipe cleaner
   - Pink and blue beads: pink bead, pink bead, blue bead
   - Craft sticks: straight craft stick, slanted (or angled) craft stick, straight craft stick

4. Ask children, **Is there another example on this card that is not a pattern?** (yes, the orange beads) **How do you know that this is not a pattern?** (There is no part that repeats itself over and over.)

5. You may wish to cover one of the elements on the display that shows a pattern, for example, the medium and long pipe cleaners in the top left row. Ask children to identify the missing element or elements.

**Create Patterns**

1. Provide a variety of materials such as those listed in the “Materials” section above.

2. Have children create a pattern similar to the orange and yellow flower pattern. Ask, **Can you create a pattern like this one using different materials?** The pattern should have one attribute that changes. For example, if children select LEGO® pieces to show their pattern, they will need to decide which attribute of the LEGO® pieces will change (perhaps colour or size). They then proceed to create their pattern. (For example: green block, yellow block, green block, yellow block, green block, yellow block.) Be sure that children repeat the core of their pattern at least three times. Ask, **How do you know that this is a pattern?** (because part of it repeats itself over and over) **What is the shortest part of the pattern that repeats itself over and over?** (green, yellow)

3. Have children create their own patterns using a variety of materials. Ask them to explain how they know that each arrangement of materials is a pattern. Be sure to have them make a minimum of three repetitions of their pattern.

4. You may wish to create sound and action patterns with children. An example of a sound pattern is: clap, stomp, clap, stomp, clap, stomp. An example of an action pattern is: hop, hop, jump, hop, hop, jump, hop.

5. Have children look for and describe patterns around the home and, if appropriate, outdoors as well.