Instructional Design Project

An Introduction to Patterns in the Kindergarten Classroom

Erin Oswanski

EDTL 7100 Curriculum and Instructional Design

Summer 2009

**Statement of Purpose**

Predictable patterns are an important component of learning in a kindergarten classroom. According to Maslow’s Hierarchy of Needs, safety (the feeling of security) is one of the basic needs that must be met before an individual can begin meaningful learning. A daily schedule and routine provide the structure that helps children understand what to expect and what is expected of them. The patterns of daily routines provide a framework within which students can perform without worrying about every little part of their day. The second lesson included in this instructional plan will introduce students to one of the daily routines of kindergarten.

However, students cannot learn pattern concepts without putting these concepts into context. In fact, a unit on patterns has many of the characteristics of CTL described by Chiarelott (2006), including connecting content to experiences, active learning, self-directed learning, and developmentally appropriate practice. As students notice, investigate and create patterns of their own, they begin to make connections between themselves and the world around them. The first lesson can be used to practice listening for, extending, and creating patterns in a way that lets each student express his or her individuality. Some will make large, loud patterns while others are more quiet and small.

Studies have shown that making connections is at the core of brain development, and that connection-making is an actual biological synaptic process that occurs between neurons in the brain (Ewell, 1997). Meta-cognition also develops as students connect and apply what they have learned in the past to their current learning. Again, it is also important for students to learn about patterns in a contextualized way. Along with the more obvious patterns found in math and nature, students will begin to notice patterns in music and art. The lessons move from very simple to more complex in terms of Bloom’s Taxonomy for most students. Practicing as a whole group before practicing alone or with a partner, and then applying these concepts through expressive art, will give all students a chance to participate at their own level.

To help all students better understand the concept of patterning, these activities engage students by allowing them to experience visual, auditory and kinesthetic learning methods. Gardner’s Theory of Multiple Intelligence argues that we are all smart in different ways (Campbell, et. al 2004). By presenting patterns through sound, movement, observation, and creation, children can experience the concept of patterns, and show what they know in their own best way.

**Unit Outcomes**

*Math*

* Students will identify a sequence of sounds, shapes or motions (knowledge)
* Students will describe the pattern of a given sequence (comprehension)
* Students will copy a sequence of sounds, shapes or motions (application)
* Students will sort shapes or objects by a variety of properties (analysis)
* Students will extend a sequence of sounds, shapes or motions (analysis)
* Students will create a sequence of sounds, shapes or motions (synthesis)

*Music*

* Students will identify same and different (knowledge)
* Students will demonstrate same and different (application)

*Language Arts*

* Students will identify rhyming words and patterns (knowledge)

*Visual Arts*

* Students will explore art elements to express ideas in a variety of visual forms (application)
* Students will generate ideas and images for artwork based on memory, imagination, and experience (synthesis)

**Pre-Assessment Observation Checklist**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1. Copies and extends a sound pattern (AB, AAB, etc.) | 2. Copies and extends a color pattern with connecting cubes (AB, AAB, etc.) | 3. Sorts colored buttons using a rule given by the teacher. | 4. Uses own rule to sort colored buttons, and names the rule. | 5. Echoes teacher’s high/low pitch greeting. | 6. Moves correspond to rhythm and tempo of a familiar song. |
|  | Type of pattern:  AB, AAB, etc. | | Color, shape, size, other rule  S=Sorts/N=Names | | Y=yes, N=no | |
| Student Name |  |  |  |  |  |  |
| 1. |  |  |  |  |  |  |
| 2. |  |  |  |  |  |  |
| 3. |  |  |  |  |  |  |
| 4. |  |  |  |  |  |  |
| 5. |  |  |  |  |  |  |
| 6. |  |  |  |  |  |  |
| 7. |  |  |  |  |  |  |
| 8. |  |  |  |  |  |  |
| 9. |  |  |  |  |  |  |
| 10. |  |  |  |  |  |  |
| 11. |  |  |  |  |  |  |
| 12. |  |  |  |  |  |  |
| 13. |  |  |  |  |  |  |
| 14. |  |  |  |  |  |  |
| 15. |  |  |  |  |  |  |
| 16. |  |  |  |  |  |  |
| 17. |  |  |  |  |  |  |
| 18. |  |  |  |  |  |  |
| 19. |  |  |  |  |  |  |
| 20. |  |  |  |  |  |  |

**Lesson 1: Sound and Motion Patterns**

Objective: To introduce patterns through multisensory, experiential activities.

Key Concepts and Skills: Create and extend patterns with sounds and motions.

Vocabulary: pattern, repeat

Time: approximately 15 minutes

* Begin by having students copy and extend sound patterns such as
* Tick, tock; tick, tock; tick, tock…
* Clap, clap, hum; clap, clap, hum; clap, clap, hum…
* Soft, LOUD; soft, LOUD; soft, LOUD…
* Clap, clap, stomp, stomp; clap, clap, stomp, stomp…
* If some students seem ready, allow one or two to begin a pattern for the rest of the class to copy and extend.
* Next, use body movements in a pattern. Demonstrate a pattern for students and say the words of the movement while moving, for example
* Touch your head, touch your toes; touch your head, touch your toes…
* Step, step, jump, jump; step, step, jump, jump…
* Stand, stoop, kneel; stand, stoop, kneel…
* To close the lesson, sing “B-I-N-G-O” and discuss with students the patterns they hear, including the clapping pattern. Ask: How are the lines of the song the same? How are they different?

**Lesson 2: Days of the Week**

Objectives: To introduce a song that helps students remember the days of the week in order. To reinforce pattern concepts through rhythm and rhyme.

Key concepts and skills: copy patterns using sound and motion by singing the “Days of the Week” song.

Materials: calendar, or days of the week posted where students can see.

Vocabulary: calendar, week

Time: approximately 10 minutes

* Begin by asking students if they know the days of the week. (Some will know a few, others will know all of them in order.) Tell them that they will learn a song that will help them remember the days in order.

**Days of the Week**

***(Sung to the tune of The Addams Family)***

**Days of the week (snap, snap)**

**Days of the week (snap, snap)**

**Days of the week, days of the week, days of the week (snap, snap).**

**There’s Sunday and there’s Monday,**

**There’s Tuesday and there’s Wednesday,**

**There’s Thursday and there’s Friday,**

**And then there’s Saturday.**

**Days of the week (snap, snap)**

**Days of the week (snap, snap)**

**Days of the week, days of the week, days of the week (snap, snap).**

* Discuss with students the patterns in the song (repeated lines, snapping fingers, each name of the days ends with “day”).
* This song can be used daily with the calendar routine. When students feel more confident, ask questions such as what day comes before Tuesday? After Saturday?

Differentiation:

Allow students who cannot snap their fingers to clap the beat instead.

**Lesson 3: Introduction to sorting**

Objective: To introduce attributes and sorting

Key Concepts and Skills: find ways to sort objects using a variety of attributes. Identify attributes

Vocabulary: sort

Materials: a collection of small objects with common characteristics and different attributes, such as button, beads, pasta shapes, magnetic letters and numbers, **or** hardware such as nuts and bolts; sorting containers such as egg cartons or muffin tins.

Time: whole group—approximately 15 minutes, learning centers—5 to 10 minutes

* Sitting in a circle, begin by asking a child to name someone who has something (an attribute) the same as he or she has. For instance, “Joe has a white shirt on like I do.” Or, “Shane and I both have blonde hair.” Have the child who was named find something that is the same as another child. Continue until all children have had a chance to name something.
* Use students to model the concept of sorting. Have all students with lace-up shoes stand together in a group, those with Velcro stand in another group, and the rest stand in a third group. Explain that you have sorted them according to the types of shoes they are wearing. Ask for volunteers to explain what the word *sort* means. Repeat the activity using a different attribute.
* Show the small objects and sorting containers. Explain that there are some things that are the same, and some that are different about the objects. Demonstrate sorting some of them, placing them in the containers to model what they will be doing during learning centers.
* During centers, use a checklist to record the attributes students are using to sort the objects, demonstrating their understanding of *sort*.

Extensions:

* Sing about attributes to the tune of “Mary Wore a Red Dress” using a variety of attributes, such as “Children with red on stand up…” or “Children with brown hair stand up…”
* To help children observe natural items more carefully, sort collections from nature, such as shells, rocks, leaves, seeds, or even apples during a unit on apples.

**Lesson 4: Onsets and Rimes**

Objective: To introduce pattern concepts in language.

Key Concepts and Skills: changing the onset of a word, keeping the rime creates rhyming words. Knowing some words helps you read unknown words

Materials: index cards with rimes such as –at, -it, and –ad, magnetic letters or index card pieces with a variety of onset letters written on them.

Time: whole group—approximately 15 minutes, learning centers—10 to 15 minutes

* Begin the lesson by asking, “Who knows the book, *The Cat in the Hat*?” “Does that title have any rhyming words in it? Which words rhyme?
* Write the word *cat* on the board and ask a volunteer to read the word. Ask which letter they would change to make the word *hat*. Have students name other words that rhyme with cat and hat, and have them give the beginning letter that changes the word.
* Write *it* on the board. Ask someone to name a word that rhymes with *it,* and the letter needed to make the word. Repeat this several times so that students see the pattern of the rime in rhyming words.
* Show students the materials they will use in the Word Work learning center. Model placing the onset letter before the rime, saying the onset, then the rime, and then blending them together (c-at, cat).

Extensions and differentiation:

For students who are ready, have them write their words on paper or a dry erase board. For students who need more challenge, make cards with other rimes such as –as, or –ow, or those that have long vowels such as –ite, -ain, etc.

**Lesson 5: Repetition and Patterns**

Objectives: To learn about repetition and pattern as principles of design.

Key Concepts and Skills: using repetition and patterns in a design. Create a design using block stamp pads.

Vocabulary: repeat, pattern

Materials: 12 x 18” white drawing paper, newspaper pads, “rubber” stamps (made from wooden building blocks and sticky foam), black stamp pads, crayons, examples of finished work, samples of art created by Henri Mattise and M.C. Escher.

Time: introduction—approximately 5 minutes, independent work—20 to 25 minutes

* Begin with a discussion about the different kinds of patterns students have noticed and used in the classroom. Ask, “What does it mean to repeat something?” “How do you make a pattern?” Explain that artists often use patterns in their work as well. Show the examples of work by famous artists.
* Demonstrate the method students will use to get ink on the stamps, and then decide where to place the stamps on the paper. Show samples of finished work that shows a variety of patterns. Explain that they will also use crayons to color over, around, and between the shapes. Students can plan to use one or two stamp patterns and several colors, or a variety of shapes and colors, as long as they make a pattern. They can also create a frame for their work using stamps and crayons. The paper should be nearly covered with stamps and color.
* Mount the artwork on black paper for display. After hanging, have students tell their observations about the different patterns that were used.

**Post Assessment Observation Checklist**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1. Extends a sound or movement pattern (AB, AAB, etc.) | 2. Extends a color pattern with connecting cubes (AB, AAB, etc.) | 3. Sorts objects using a rule given by the teacher. | 4. Uses (own rule to sort objects, and names the rule. | 5. Sings and snaps (or claps) Days of the Week song. | 6. Student demonstrates ability to create and name patterns using stamps and color. | |
|  | Type of pattern:  AB, AAB, etc. | | Color, shape, size, other rule  S=sorts, N=names | | Sings  Snaps  Claps | 4-standard met  3-developing  2-needs improvement  (notes) |
| Student Name |  |  |  |  |  |  | |
| 1. |  |  |  |  |  |  | |
| 2. |  |  |  |  |  |  | |
| 3. |  |  |  |  |  |  | |
| 4. |  |  |  |  |  |  | |
| 5. |  |  |  |  |  |  | |
| 6. |  |  |  |  |  |  | |
| 7. |  |  |  |  |  |  | |
| 8. |  |  |  |  |  |  | |
| 9. |  |  |  |  |  |  | |
| 10. |  |  |  |  |  |  | |
| 11. |  |  |  |  |  |  | |
| 12. |  |  |  |  |  |  | |
| 13. |  |  |  |  |  |  | |
| 14. |  |  |  |  |  |  | |
| 15. |  |  |  |  |  |  | |
| 16. |  |  |  |  |  |  | |
| 17. |  |  |  |  |  |  | |
| 18. |  |  |  |  |  |  | |
| 19. |  |  |  |  |  |  | |
| 20. |  |  |  |  |  |  | |

**References**

Beer, D., Bell, J., Bell, M. (2007) Patterns, Sequences, Functions and Algebra. In *Everyday Mathematics teacher’s reference manual* (pp 128-140). Chicago: Wright Group/McGraw-Hill.

Campbell, L., Campbell, B., Dickinson, D., (2004) *Teaching and learning through multiple intelligences*. Boston: Pearson

Chiarelott, L. (2006) *Curriculum in context*. Thomson Wadsworth. Bowling Green, OH.

Denton, P. & Kriete, R. (2000). *The first six weeks of school*. Greenfield, MA: Northeast Foundation for Children.

Ewell, P.T. (1997) Organizing for learning:  a point of entry. Intime. Retrieved May 14, 2009 from <http://www.intime.uni.edu/model/learning/learn_summary.html>