

A Year of Growing Patterns

Summary

Students will learn to recognize and create patterns.

Group Size

Large Groups

Materials

Invitation to Learn

Markers

Journals

September

- *There Was an Old Lady Who Swallowed a Fly*
- *Various Character Masks*

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Board or chart

Markers

- *Dr. Jean & Friends CD*
- [Tooty Ta Lyrics](#)
- *The Deep Blue Sea*

October

- *The Little Old Lady Who Was Not Afraid of Anything*
- *There Was An Old Woman Who Swallowed a Bat*

Large shoes

Pants

Shirt

Gloves

Pumpkin

Drum

Tambourine

Shakers

Cymbals

Rhythm sticks

Journal

Halloween stickers

November

- *There Was An Old Woman Who Swallowed a Pie*
- *Shoes From Grandpa*

December

- *There Was An Old Lady Who Swallowed a Bell*
- *The Twelve Days of Christmas*
- CD player
- *15 Christmas Favorites: Twelve Days of Christmas CD*
- [Twelve Days of Christmas Book](#)
- [True Love Book](#)
- Crayons

January

- *There Was A Cold Lady Who Swallowed Some Snow*

February

CD player

- *Dr. Jean & Friends CD*
- [*Mother Goose Bird Lyrics*](#)
- *This is the House that Was Tidy and Neat*

March

- *There Was a Bold Lady Who Wanted a Star*
- *There Was an Old Lady Who Swallowed Fly Guy*

April

- *I Know a Shy Fellow Who Swallowed a Cello*
Various instruments
Sound clips
Pictures of instruments
- *There Was an Ol' Cajun*

May

- *There Was a Coyote Who Swallowed a Flea*
- *There Was An Old Lady Who Swallowed a Trout*
- *There Was An Old Lady Who Swallowed the Sea*
- *Old MacDonald*

June

- *There Was An Old Lady Who Swallowed a Shell*
- [*There Was An Old Lady Who Swallowed a Shell Shell Book Page*](#)
Crayons

Additional Resources

Books

There Was an Old Lady Who Swallowed a Fly, by Simms Taback; ISBN: 0670869392
The Little Old Lady Who Was Not Afraid of Anything, by Linda Williams; ISBN: 0690045840
The Deep Blue Sea, by Audrey Wood; ISBN: 0439753821
There Was An Old Lady Who Swallowed A Bat!, by Lucille Colandro; ISBN: 0439737664
I Know an Old Lady Who Swallowed a Pie, by Alison Jackson; ISBN: 0525456457
There Was an Old Lady Who Swallowed a Bell, by Lucille Colandro; ISBN: 043986643X
The Twelve Days of Christmas, by Dorothee Duntze; ISBN: 1558581510
The 12 days of Christmas, by Linnea Asplind Riley; ISBN: 0689802757
Hilary Knight's The twelve days of Christmas, by Hilary Knight; ISBN: 0689835477
The twelve days of Christmas, by Vladimir Vagin; ISBN: 0060276525
There Was A Cold Lady Who Swallowed Some Snow!, by Lucille Colandro; ISBN: 0436567033
This Is the House That Was Tidy and Neat, by Teri Sloat; ISBN: 0805069216
There Was a Bold Lady Who Wanted a Star, by Charise Mericle Harper; ISBN: 0316146730
There Was An Old Lady Who Swallowed Fly Guy, by Tedd Arnold; ISBN: 0439639069
I Know a Shy Fellow Who Swallowed a Cello, by Barbara S. Garriel; ISBN: 1590780434
There Was an Ol' Cajun, by Deborah Ousley Kadair; ISBN: 1565549171
There Was an Old Lady Who Swallowed a Trout, by Teri Slowat; ISBN: 0805042946
There Was an Old Lady Who Swallowed the Sea, by Pam Adams; ISBN: 1846430739
There Was a Coyote Who Swallowed a Flea, by Jennifer Ward; ISBN: 0873588983
There Was An Old Lady Who Swallowed a Shell, by Lucille Colandro; ISBN: 0439815363
Inside a Zoo in the City, by Alyssa Satin Capucilli; ISBN: 0590997157

There Was An Old Witch, by Howard W. Reeves; ISBN: 0786804386

Media

15 Christmas Favorites: Twelve Days of Christmas, Songs for Children Label; ASIN: B00009V7TU; www.amazon.com

Dr. Jean & Friends, by Jean R. Feldmen; Tampa, FL : Progressive Music, 1998; ASIN: B000F8VD3K

Dr. Jean's Totally Math CD, ASIN: B000JELRJU

There Was An Old Lady Who Swallowed a Fly, DVD ASIN: B00023TG6E

Organizations

National Counsel of Teachers of Mathematics, 1906 Association Drive, Reston, VA 20191- 1502, (703) 620-9840, www.nctm.org

Background for Teachers

"John A. Adam says the beauty of nature is revealed by mathematics and the beauty of mathematics is revealed in nature.... Many mathematicians and scientists consider mathematics to be the science of patterns. It is a way for the invisible world to become visible" (Waters, Jen. 8/11/2005. Math, naturally. *The Washington Times*. 0732- 8494).

Patterns are found throughout nature, and consequently found all through music and writing.

Repeating patterns are quite common, but growing patterns are much more difficult to identify and re-create.

Repeating pattern--a sequence of items repeated over and over without change; it can be repeated and predicted infinitely, (e.g., ababab, or aabbccaabbcc).

Growing pattern--a sequence of items that repeats, but which decreases or increases with a constant amount. It can also be repeated and predicted infinitely. (e.g., ababbabbbabbbb or aababcbcd)

Growing patterns are really quite popular in literacy, especially children's books and songs. As children learn to recognize patterns in all things around them, they are able to make connections between the things they learn and the everyday world. Just as they may recognize a simple repeating pattern, it is important for them to identify growing patterns, as growing patterns are the basis of algebraic reasoning.

One story that blatantly contains a growing pattern amidst its text is the classic tale of *There Was an Old Woman or I Know an Old Lady*. With the fly, followed by the spider, and then repeating the fly once more, ending with the horse followed back down to the fly again, it is evident that the original item increased by one each time, but repeating the previous items in declining sequence.

This growing pattern is seen in other well-known stories/songs such as *The Twelve Days of Christmas*, *This Is the House That Jack Built*, *A-Tooty-Ta*, and *Old MacDonald Had a Farm*. In this activity, we will explore different texts with growing patterns that can be used throughout the year in conjunction with seasonal and/or holiday themes.

Before beginning to teach the following lessons, introduce growing patterns to students (see *Additional Resources* for ideas on teaching the basics of growing patterns). After they have at least a basic understanding of growing patterns (in the mathematical/geometric/ numeric sense), tell students you will now be looking for growing patterns in books and songs.

Intended Learning Outcomes

2. Develop social skills and ethical responsibility.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures

Invitation to Learn

Have the students create a growing pattern using the markers and paper in the center of the table.

Tell them if they don't know what a growing pattern is, give their best guess and if necessary, "Ask three before me!"

Tell the students to think about what they know about growing patterns, and ask if they can think of any examples (without looking at other parts of this lesson) of any growing patterns in books or songs.

Instructional Procedures

September

Quickly review growing patterns.

Read the story, *There Was an Old Lady Who Swallowed a Fly*, by Simms Taback.

a) The first time, read all the little comments by the other characters, pointing out all the rhyming words.

b) The second time, have the students read along and recite the repeating pattern phrases in the story.

c) You can even make up masks for each of the characters (*There Was an Old Lady Who Swallowed a Fly Character Masks*) for the students to act out the story while the story is read.

d) When finished, list the elements of the story in correct order. Then list them all again, but in the repeating, growing pattern.

e) Read the last page from the book that has the complete sequence again, checking to make sure that all the elements are right, also making certain that the students join with you to reinforce the pattern.

f) Place manipulatives (pattern blocks, UNIFIX cubes, stackers, etc.) in centers where small groups can use them to recreate the story. Pull a small group and recreate the pattern on a board using different shapes and colors. You be the "fly" and have the student be the "spider". Have the student draw his/her shape next to yours, then draw your shape above the subsequent character from the story. Continue in like manner through the rest of the story.

Tell the students that you are now going to sing a song that has a growing pattern in it. Tell them it has some actions that they need to follow along with in order to complete the pattern. Then sing Dr. Jean's Tooty Ta with the students. When finished, see if they can do the last phrase in order again, repeating the concluding section of the growing pattern.

A great book about growing patterns, to use when you teach about colors is *The Deep Blue Sea* by Audrey Wood. Have the students re-create this story in their own way or copy the final picture into a journal. (We will visit this more in Activity #2.)

October

There are two great stories for October, *The Little Old Lady Who Was Not Afraid of Anything*, and *There Was An Old Woman Who Swallowed a Bat*.

If you choose to use *The Little Old Lady Who Was Not Afraid of Anything*, then it would be a great kinesthetic activity for students, or it can easily be acted-out in a "play" by the students as the elements of the repeating pattern are simple to follow.

a. This is an exciting one to use with simple musical instruments to represent each of the items in the story: a drum for the shoes (stomp, stomp), a tambourine for the pants (wiggle, wiggle), shakers (castanets, egg shakers, maracas, etc.) for the shirt (shake, shake), cymbals for the gloves (clap, clap), rhythm sticks for the head (nod, nod), and all the kids can shout "Boo Boo" for the head.

b. This activity is also easily adapted for students who are shy and don't want to talk, but may be willing to "perform"-- especially ESL students. It is also good for those who may not show their skills through "paper and pencil," but can demonstrate understanding more easily through performance.

There was an Old Lady Who Swallowed a Bat can be expanded by discussing other "Halloween" characters/symbols she could have swallowed. Also have the students create a

growing pattern in their journal using Halloween stamps or stickers representing what she ate in the book.

November

1. *There Was An Old Woman Who Swallowed a Pie*

is a great story for Thanksgiving. One element to use for this story, now that they may be more familiar with the patterning and way the previous "Old Woman" stories go, is to have them predict what the "old woman" will swallow next.

For those who follow the *Houghton-Mifflin* reading program, *Shoes From Grandpa* is included in Unit Four: Family. This is another great story to use for growing patterns, especially as November/December is usually when you are talking about families.

December

In December, either of these books can be used to demonstrate growing patterns: *There Was An Old Lady Who Swallowed a Bell* or *The Twelve Days of Christmas*.

With *The Twelve Days of Christmas*, many other curriculum areas can be integrated, such as music, art, and writing.

a. You can play the song for the students and then have them sing along, which the kids really enjoy.

b. Also, you can have students illustrate a class book, *Twelve Days of Christmas Book*, to go along with the song, having each student draw one or two of the elements. Even the student(s) who just has to draw one "partridge in a pear tree" will have to do it twelve times!

c. Have the students record in their journal something that they would give their "true love" for Christmas and how many they would want to give them! *True Love Book*.

d. Finally, you can have the students come up with their own things (as a class shared writing or individually) that they would give someone for each of the twelve days, making that into a class book as well.

January

January is all about winter, and so is the next story-- *There Was A Cold Lady Who Swallowed Some Snow*. What would the students want to swallow from each of the different seasons? If they also chose snow, what would they make when they coughed it back up?

February

Another fun song to sing that follows a growing pattern is *Mother Goose Bird*. This song also has actions that the students must repeat for each new thing and then do continuously while singing the next verse. It makes adults dizzy, but the students love it!

2. *This is the House that Was Tidy and Neat*

is a cute story about some kids who mess up their home while their mom is out. It is another story that can be acted out or otherwise recreated.

March

1. *There Was a Bold Lady Who Wanted a Star*

and *There Was an Old Lady Who Swallowed Fly Guy* are two more wonderful examples of exciting stories that include growing patterns.

a. For *There Was a Bold Lady Who Wanted a Star*, discuss different modes of transportation.

b. Do a class shared writing activity brainstorming other ways not mentioned in the story that the "Bold Lady" could use to get to the star that she desires.

c. In their journals, have students come up with another shape that they might want and a word that would rhyme with that shape to complete the statement. Also, ask what would they want to do with that shape.

April

April can get a little long sometimes. An enjoyable story to break-up the monotony is *I Know a Shy Fellow Who Swallowed a Cello*. Similar to *The Little Old Lady Who Was Not Afraid of*

Anything, this story can easily be integrated with musical instruments. If possible, bring in real examples of each instrument, such as a cello, harp, sax, fiddle, cymbal, flute, kazoo, or cascabel; at least have a real picture and sound clips for the instruments (see additional resources for where to find those).

a. Refer to the pictures and show how each instrument is used in a different genre of music. Discuss how music changes through time and across different areas of the country/ world.

b. Again, have the students participate in helping you tell the story by playing each instrument/sound (or showing the picture) at the appropriate time.

2. *There Was an Ol' Cajun*

is a good story to talk about how people are different in different areas of the world. This story takes place in Louisiana. The story is told using the Southern dialect and colloquial terms and the animals that would be found in that area of the country.

a. If you have a large population of students from a given area of the world, you could write a version of the story using animal names in their language, or animals native to that area of the world.

May

There are a few different stories (including animal versions) about getting ready to enjoy the outdoors: *There Was a Coyote Who Swallowed a Flea*, *There Was An Old Lady Who Swallowed a Trout* (great for talking about different animals that live in the water, expanding on just fish), *There Was An Old Lady Who Swallowed the Sea*, and *Old MacDonald*.

a. *Old MacDonald* would have to be modified slightly in that you would need to repeat each previous animal sound at the end of each verse to show the repeating pattern each time rather than only at the end. This is a perfect time to discuss different animals on a farm.

June

To get the students ready for summer, an amusing, culminating book to read is *There Was An Old Lady Who Swallowed a Shell*. This one has her swallowing things found on a beach necessary for building a sand castle. This can also be used to make a final class book with groups of students illustrating each page (*There Was an Old Lady Who Swallowed a Shell Book Page*).

Extensions

Curriculum Extensions/Adaptations/ Integration

Any of these stories can easily be acted out using simple props, puppets, masks/costumes, etc. When talking about *I Know a Shy Fellow Who Swallowed a Cello*, you can also share the music for *Peter and the Wolf*, by Tchaikovsky, or *Carnival of the Animals*, by Camille Saint-Saëns and demonstrate how each animal/character is represented by a different instrument and sound.

Family Connections

When reading *There Was an Ol' Cajun*, send home a letter to your students' parents, asking for information about their country of origin, and whether this heritage is recent in their family history or many generations back. Use this information to write a variety of stories using words or animals/creatures from that area/country of the world. Send home a copy of the story that they can have as a keepsake.

Assessment Plan

Collect student samples to see if students have understood growing patterns.

When the students show that they understand growing patterns, have them create a growing pattern using different types of manipulatives.

Bibliography

Research Basis

Sutton, J., and Krueger, A. (2002). How does integrated instruction in mathematics affect teaching and learning? *EdThoughts: What we know about mathematics teaching and learning*. 56.

Mathematics need to be taught in a context that connects it to the real world. If it is taught in a strict academic environment, students are not able to build deep understandings and connections to the world around them. "Through classrooms that provide rich problem situations as a vehicle for learning mathematics, students develop a flexible understanding of the disciplines and learn to integrate content and process strands of mathematics, learning when, how and why to use their knowledge to solve unfamiliar problems."

Annenberg Media. (2007). Defining reasoning and proof: growing patterns. *Teaching Math, Grades K-2*.

"Kindergarteners reinforce their understanding and ability to reason about counting numbers through examples of growing patterns.... A great deal of reasoning is occurring in this activity. The children begin by describing the pattern and extending it with physical materials. They make conjectures about the pattern and predict the number of tiles in elements that come later in the series. Finally, they make generalization about [what is needed for any place in the sequence], based on the patterns they have discovered. Throughout the...activity, the children explain their reasoning."

Authors

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