Tunnel Book

Gazing into a tunnel book is like entering a small, dimensional world. It's a fun and interactive structure, in which two concertinas support a series of layered, flat panels. The panels have cut-outs that allow the viewer to look through the depth of the book when it's opened. The placement of these cut-outs plays a large role in the viewer's experience; is everything visible at first glance, or must the viewer peer in closely to reveal content? Tunnel books frequently sport image-heavy content, but the possibilities for inclusion of text (or even using text exclusively) are great. This lesson plan outlines a simple version that can be made from just a few sheets of 8.5 x 11 paper. The tunnel book is a very adaptable structure, so play around with size, materials, and production methods to discover what else is possible!

Grades/Age Group: K-12th (younger grades may require assistance)

Approximate Time Required:
Prep: 30 minutes
Teaching: 30 minutes (additional time will be needed for content)

Materials needed (sizes can be scaled as desired for your class project needs):
1. 1 sheet 8.5" x 11" text weight or copy paper, for concertinas
2. 1-2 sheets 8.5" x 11" cover weight or cardstock, 1 for panels and 1 for optional covers
3. Pencil
4. Glue stick
5. Scissors or X-Acto knife
6. Drawing tools and/or collage materials
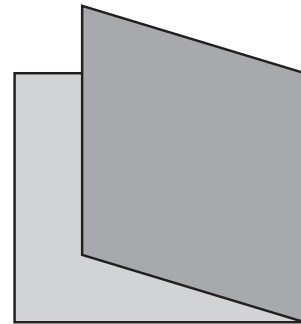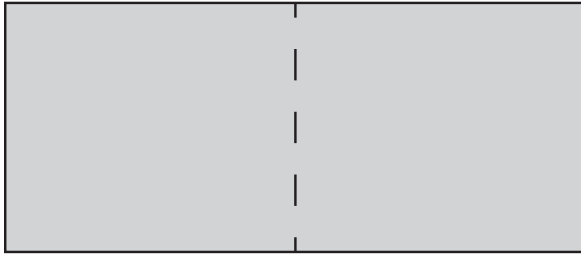7. Scratch paper for gluing

Procedure:
1. Start by folding a sheet of text-weight paper in half lengthwise (hotdog), then tear or cut along the fold to get two long strips.
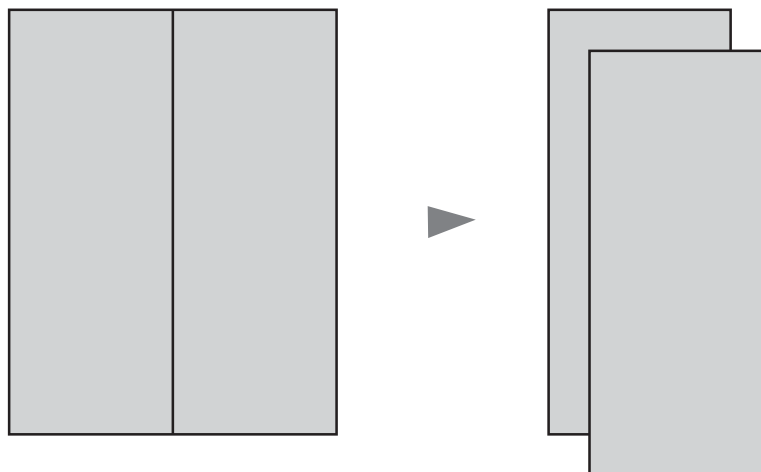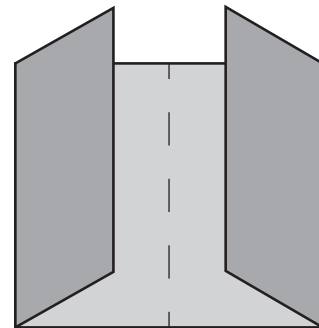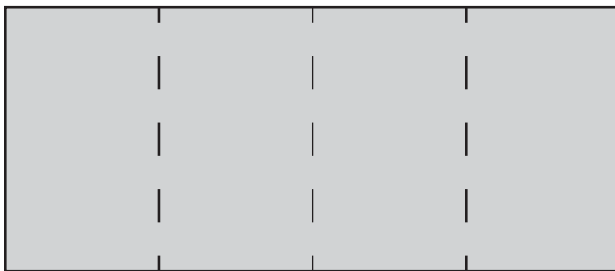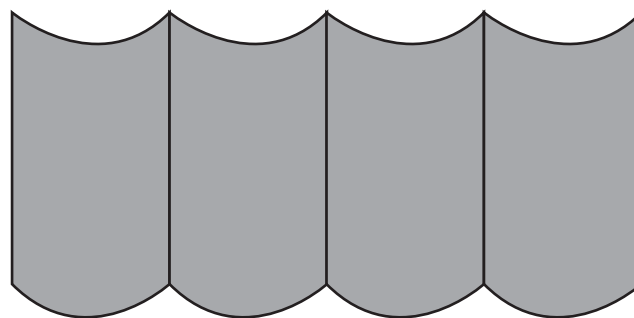
2.   Fold each strip into an 8-panel accordion. Begin by folding in half as shown below.

3.   Next, open the paper with the first fold pointing down, like a valley. One at a time, bring both edges of the paper in to meet the first fold you made, and crease.

4.   Once again open the paper, and flip it over so that all three folds point up, like peaks.

5. Bring the first fold or "peak" over to meet the edge of the paper and crease. Repeat this process with each peak one at a time until all of the folds are stacked on top of each other. The last section simply folds in half. This will give you an eight-panel accordion, or concertina. It can be useful to use the analogy of "waves crashing to the shore" when teaching this folding method to students.
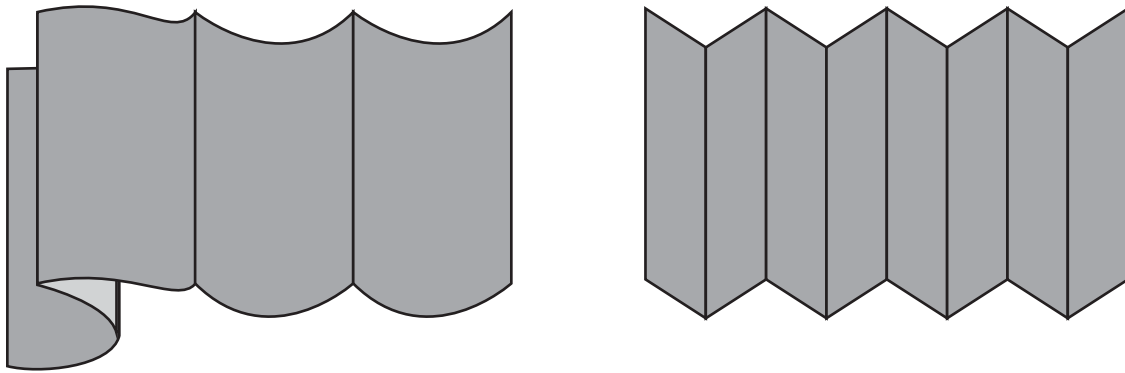
6. Next prepare the panels for the tunnel book by folding a sheet of cover weight paper in half in both directions. Tear or cut along the folds to yield four rectangles.
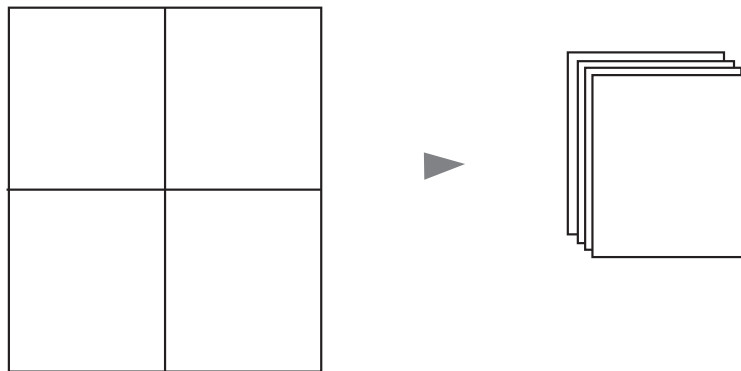
7. Take one of the folded concertinas and collapse it to use as a measuring tool.
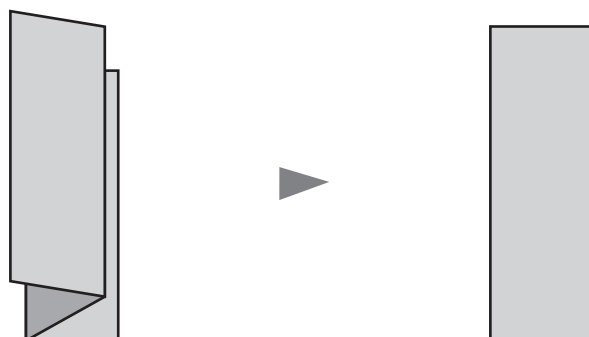
8. On two of the four panels, align the collapsed concertina with the left side of the panel, and lightly trace a line in pencil. Repeat on the right side of the panel. This measurement will ensure that the concertina is hidden behind the frame once the tunnel book is assembled.
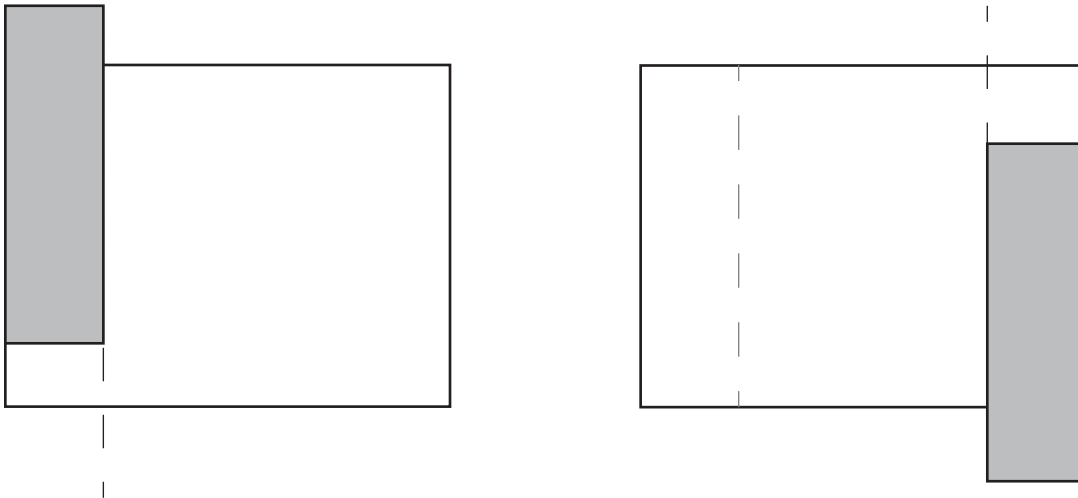
9. The measurement for the top and bottom edges of the frame can be smaller to allow more visibility. Position the concertina at about a half-width distance from the top of the panel, and lightly trace a line. Repeat on the bottom of the panel.
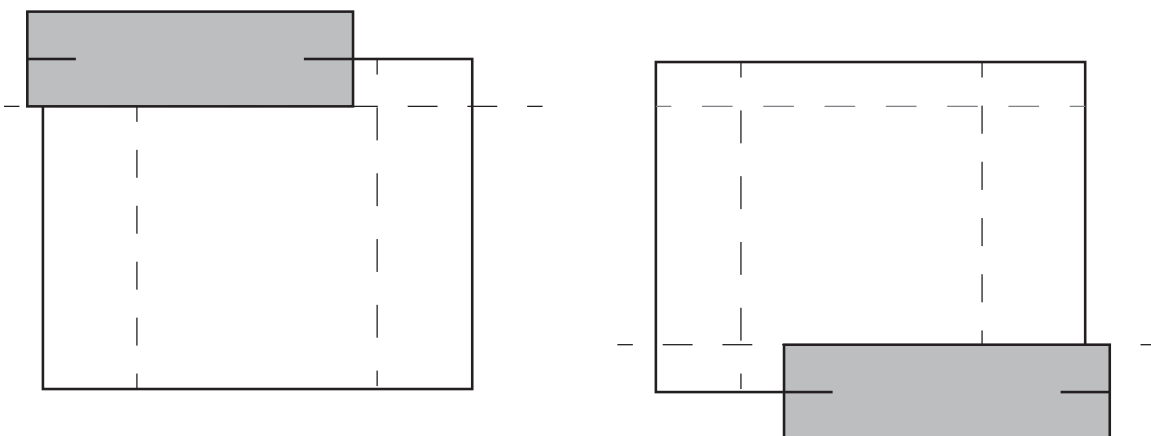
10.	Using scissors, poke a hole in the center of the frame, and cut away the interior rectangle you created in steps 8 and 9. Cut out from the center so that the outside edges of the frame remain intact. You can also use an X-Acto knife and ruler for this. Remember to only do this with two of the panels. The remaining two panels should remain solid.
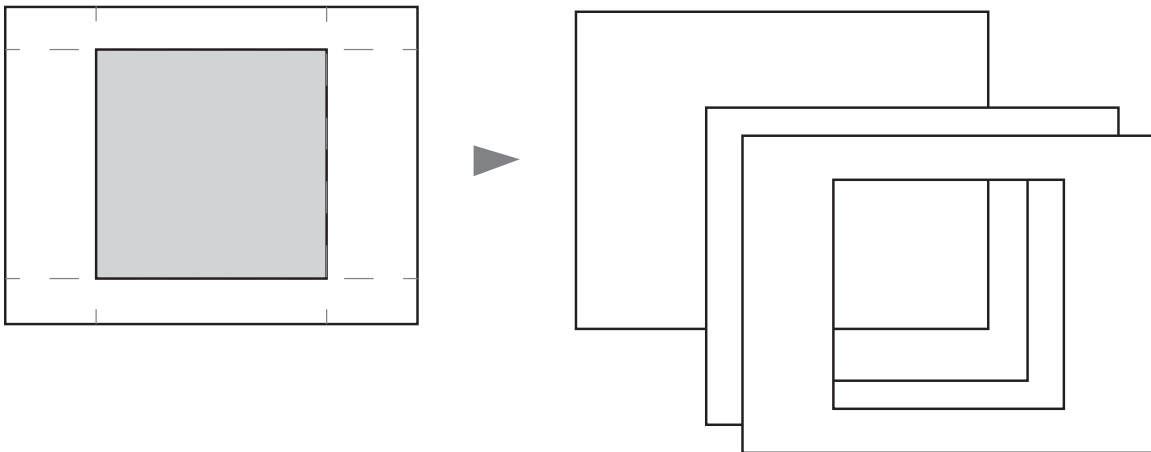
11.	Grab one of the uncut panels. Using a glue stick, adhere one concertina to either side of the panel, forming the back cover and sides of the book. Make sure that the fold closest to the bottom is positioned at the edge of the panel with the fold facing out. If it faces toward the center, your interior space will be limited. Set aside as you design your content.
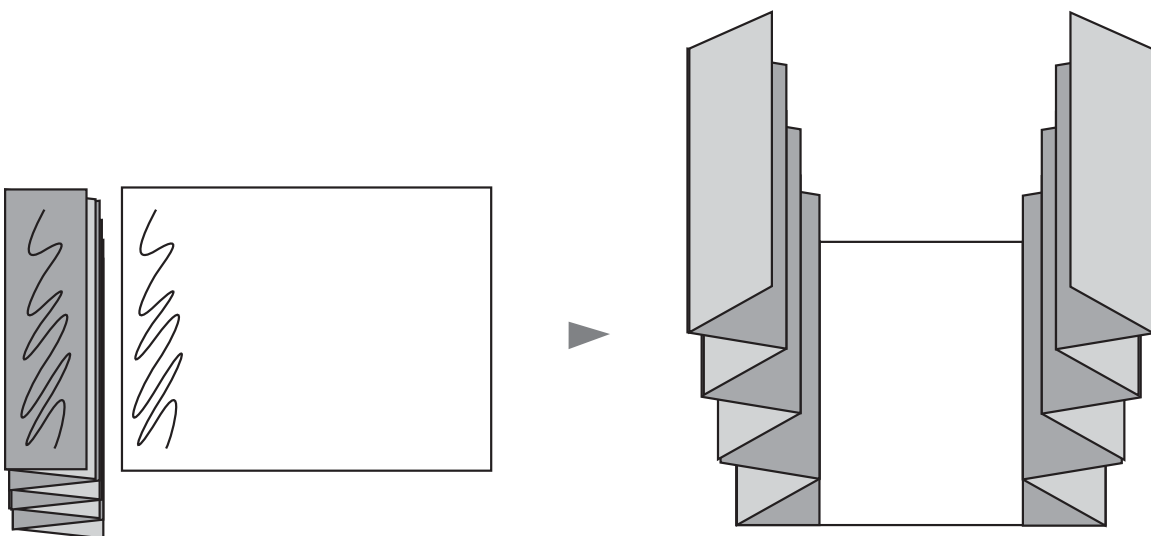
12.   Now comes the fun part! Create your content by breaking up your design into three layers: *foreground*, *middle ground*, and *background*. There are instructions for adding optional covers below, which you can also use to add additional content (text, title, more imagery). While it is possible to add elements to the tunnel book after it has been assembled, it is much easier to design and complete everything first.

Pointers for planning your layout:
▪ The final uncut panel is for your *background*. It can either be inserted and adhered to the interior back cover, or it can be unattached so that you can remove and replace it with different background options. The two cutout panels from step 10 will become the *middle ground* and *foreground*.
▪ Decide on your setting, characters, and scenery. Once you have an idea of how you would like your tunnel book to look, make a rough sketch. Number the different parts of your drawing to indicate where they will fit in the book, *1) foreground* for objects and scenery that appear closest to the viewer, *2) middle ground* for anything in the middle distance, or *3) background* for imagery that appears farthest away.
▪ It can be helpful to create a separate thumbnail sketch for each of the three panels to make planning easier.
▪ Once you have your plan figured out, paint, color, or collage each of your 3 panels. Layering objects and having them extend past the edges of the frame out into the interior space of the book will create a more dynamic scene.
▪ Now you are ready to assemble the book!

13.   If you would like to adhere your *background* panel to the tunnel book, please do so now. Otherwise it can remain as a removeable insert.

14.   The *middle ground* panel will adhere to the corresponding concertina folds on either side of the tunnel book. Take care to ensure that it sits on the same fold on either side to keep it level. Attach one side first, and then the other.
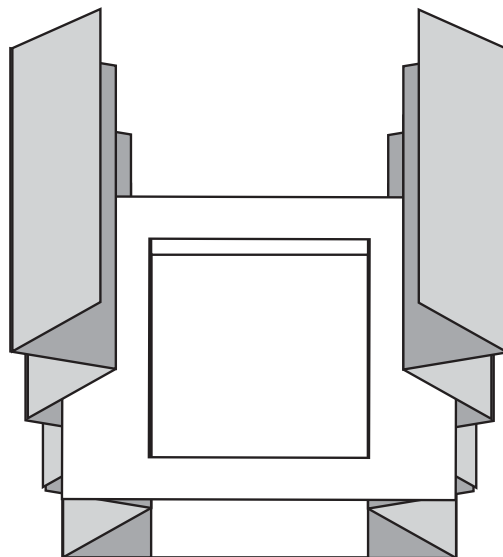
15.   The *foreground* panel will adhere to the very top fold of the concertinas. **If you decide to add the optional covers, follow the directions below <u>before</u> adhering the last panel.** Attach one side first, and then the other.
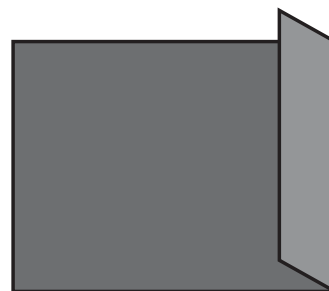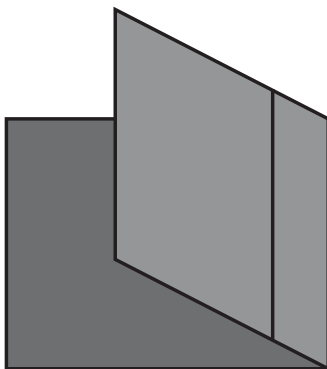
16.
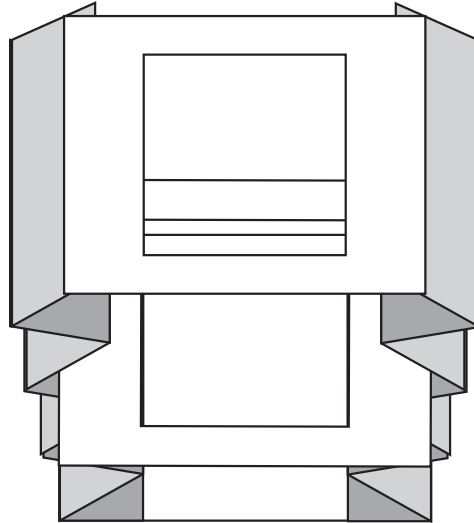
17.   Enjoy your tunnel book!

Optional cover

Materials needed:

1 sheet 8.5" x 11" cover weight or cardstock

Procedure:

1. Fold a sheet of cover-weight paper in half lengthwise. Tear or cut along the fold in order to get two long strips, as shown in step 1, above.

2. Fold each strip in half. Trim off one side of the fold leaving a 1" tab.

3. Take the *foreground* panel, and glue the 1" tab behind either the left or right hand side so that the cover closes over the front, and the tab is hidden beneath. You can add one or two covers, depending on preference.
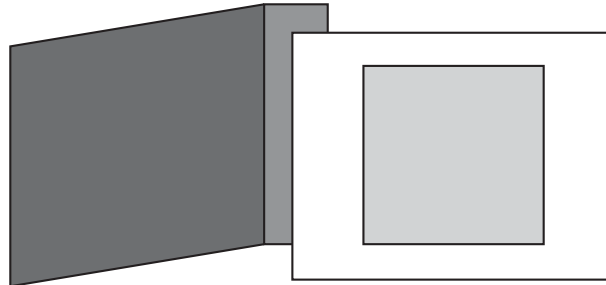
4. For two covers, repeat step 3 on the opposite side of the panel. **Attach the covers before gluing the *foreground* panel to the book structure.**
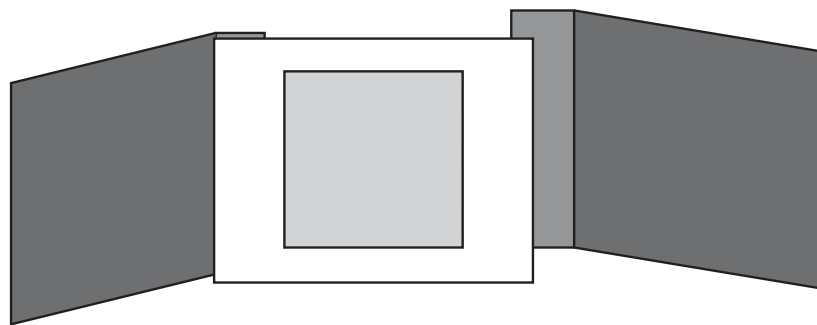
Tunnel Book – Lesson Overview:

Key Points:

1. This is an example of an artists' book based on a simple accordion. Content can be added to the entire book, even the concertinas! Use image, text, colors, photographs, etc.

Ideas for Innovation:

1. Play around with different shapes and sizes for the openings. The front can be as small as a peephole, encouraging the viewer to get close to see inside. Or have progressively smaller openings, with the largest toward the front and smallest closer to the back.
2. Glue more than one concertina together and add more panels for greater depth.

3. Use popsicle sticks to make puppets. Have them interact inside of the book.

4. Design your tunnel book as a stage where you can perform stories or plays. The *background* and *middle ground* panels can be unattached and interchangeable to create more scene options. Let your imagination run wild!

5. For more advanced students, discuss techniques for creating the illusion of perspective. e.g. Objects closer to the viewer appear larger, brighter, and more detailed. Objects father away appear smaller, less distinct and muted.

Learning Objectives:

1. Students will increase their dexterity skills by folding, cutting, and gluing accurately.

2. Students will explore new ways to interact with what they're learning.

3. Students will have foundational skills for making simple books on their own.

Core Standard Applications:

Math:

Kindergarten math. Objective: Identify and describe shapes. Application: Have students make a tunnel book that is full of shapes and their names.

4th grade math. Objective: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Application: Have students make a tunnel book about fractions. On the furthest back layer of the tunnel book, students could draw a picture of a whole pizza and write the number 1. On each consecutive layer of the tunnel book as more of the pizza is eaten, draw additional pizzas with more and more slices cut out (7/8, 3/4, 1/2, 3/8, 1/4, 1/8). the layer closest to the viewer would be an open viewing hole and the number 0 as the whole pizza has been consumed.

Science:

2nd grade science. Objective: Observe, describe and measure seasonal weather patterns and local variations. Application: Have students observe the weather outside on a few separate days. Each time have them draw pictures and make observations. Turn each of their drawings and writings into a panel for their tunnel book.

3rd grade science. Objective: Classify living and nonliving things in an environment. Describe the interactions between living and nonliving things in a small environment. Application: Have students build a habitat in their tunnel book by drawing living and non-living things they would find in a specific habitat. Create a narrative around how these living and non-living things interact within the habitat.

4th grade science. Objective: Students will understand the physical characteristics of Utah's wetlands, forests, and deserts and identify common organisms for each environment. Application: Have students choose one of Utah's habitats, and one of the animals or organisms that live in that habitat to be the main character in a narrative. Conduct research based on this animal or organism. Some research topic suggestions are: habitat, diet, characteristics, predators, behavior, defense, reproduction, and life span. Using their research to guide them, have students write a

narrative from the perspective of the animal or organism. What would a day in the life look like? Next have students bring their narrative to life by creating a tunnel book with the habitat as the setting, and its inhabitants as the characters. Students may write their narrative directly onto the covers or back of the book. Extra credit: have students make a pocket accordion to help collect and organize their research during the planning phase.

Language Arts:

K-5th grade language arts. Objective: Read and comprehend complex literary and informational texts independently and proficiently. Have students make a tunnel book about a book they have read, drawing pictures of characters and important events or places from the text to demonstrate comprehension.

6-8th grade language arts. Objective: Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics. Application: Have students read a poem and short story that have a similar mood. After a discussion of the two works, have students write their own poem in response to the two works and make a tunnel book that captures the same mood of the works they have examined. Have students cut out images to collage and incorporate the words of their poems into their tunnel books.

Social Studies:

Kindergarten social studies. Objective: Students will recognize and describe how individuals and families are both similar and different. Application: Have students make a tunnel book about their families with their oldest family member at the back of the book and the youngest on the front panel of the book. Students can share their books with each other to learn about how each other's families are similar and different.

9-12th grade world civilizations. Objective: Students will understand the distribution of power among the national, state, and local governments in the United States federal system. Application: Have students make a tunnel book that has images and text about the levels of government. With national government at the back panel of the tunnel book and local government at the front.