

Tessellation Transformations

Sharon Boyle

A tessellation is a design made from repeating congruent shapes, joined together so that there are no gaps or overlaps. There are lots of books that tell you how to make tessellations, but there are not many that tell you how to make them with thirty young artists in your classroom. It is much easier to do something like this if you carefully plan and allow students to imagine what their subjects might be as they work. I love this project because it combines imagination with concrete artistry.

Tessellations Everywhere

I begin by talking about looking up at a cloud and imagining horses or dragons in the shapes of the cloud. If it is possible to go outside and look at clouds, we do. I also show the works of M.C Escher. There is a wealth of information about tessellations and tessellation artists online and many real-life examples.

For example, a honeycomb is a tessellation found in nature. A soccer ball has tessellated shapes on its sphere, and many wallpaper and fabric designs are tessellations. Regular tessellations are those that are made up of a single shape. Only three types of regular tessellations exist: triangles, squares, and hexagons. These shapes by themselves can fill a surface because their interior angles are exact divisors of 360. My students start with a square.

Guided Practice

On the first square draw a line from right angle in corner A down into the square and leaving the square at the

middle of the right angle in Corner B. Label this line AB. Cut on line AB and move the smaller section away from the larger section. Move the small section to the bottom of the square. Use tape to secure this piece at the bottom of the template (see fig. 1).

The same procedure is followed on the side of the template. Whatever shape is removed from the left side is moved to the right and secured there with tape. This tem-

plate will get lots of use, so tape on both sides, but do not let the tape add any area to the template, trim edges of tape off (see fig. 2). This template can be traced in a sketchbook and students can discuss what they "see" in their classmates' work. Where one student sees a puppy, another student

will see a bird in a hand or a whole aquarium full of sea creatures.

There are lots of books that tell you how to make tessellations, but there are not many that tell you how to make them with thirty young artists in your classroom.

Creating a Tessellating Template

No area can be lost from the original square; whatever is cut from one side must be either rotated to an adjacent side of the square, or flipped over and slid to an opposite side. Whether you move the cut piece to the opposite side or rotate it like a hinged door to the adjacent side, or (the most complicated movement) flip the small piece over and slide it to the opposite side, the same technique must be used for the whole template. In the illustrations here the wolf is rotated and the puppy is slid along.

Making a Tessellating Design

The template is traced over and over again to fill a paper with the design, leaving no gaps or spaces, much like fitting together a jigsaw puzzle. Students decide what image they want to use to fill the template and repeat it in each of their traced shapes. The same colors also should be repeated in each of the shapes.

Sharon McKittrick Boyle is an artist, art teacher, and photographer from Dumfries, Virginia. mckboyle24@gmail.com

NATIONAL STANDARD

Students intentionally take advantage of the qualities and characteristics of art media, techniques, and processes to enhance communication of their experiences and ideas.

WEB LINK

www.mcescher.com

Materials

- squares of tag board or Manila folders, three to six per student.
- scissors
- sketchbooks or drawing paper
- pencils
- tape
- markers
- colored pencils

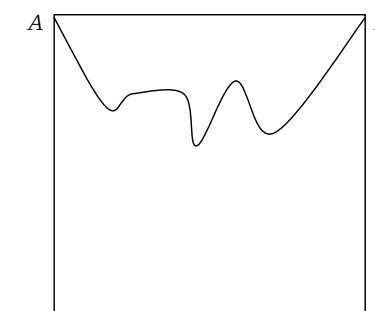


Figure 1.

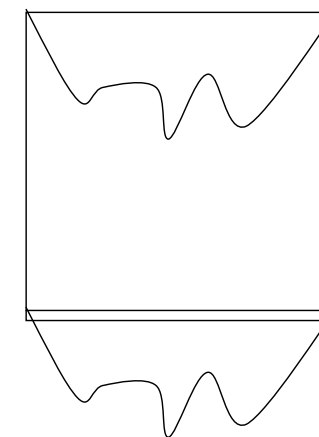


Figure 2.

