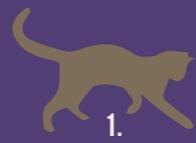


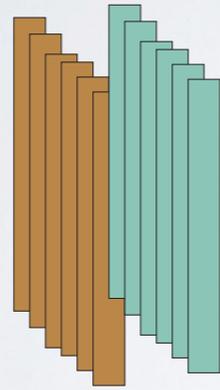


If you're looking to bring open-ended but focused play activities to a controlled environment, consider these 5 funtivities inspired by the gifts and occupations of Froebel's educational system.

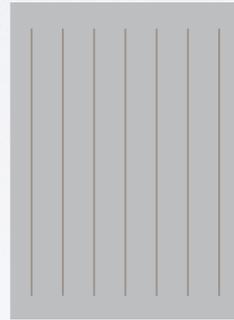
All of these activities are both analog and digital and can be adapted for use in a wide variety of foundation coursework. If you don't have the equipment specified, consider adapting the suggestions to materials and tools that are at your disposal instead.



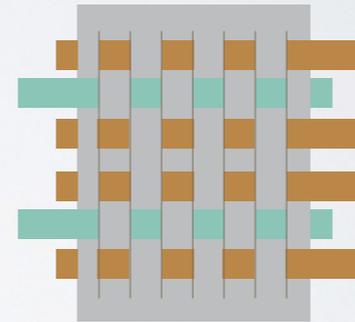
# PAPER WEAVING



cut paper paths



cut paper lines



woven paper surface

unbeweaveable

## Paper Weaving

This activity is a great way to cover technical proficiencies in vector drawing such as line vs path while also introducing basic protocol for subtractive manufacturing.

**Foundation skills:** point/line/plane; texture; color; scale

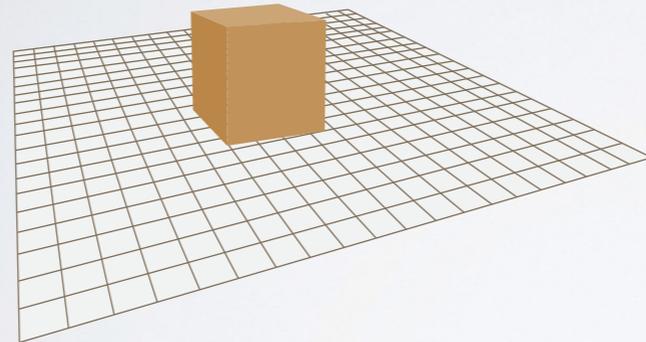
**Equipment:** Vector drawing program (Illustrator or Inkscape) and a digital cutter (Silhouette or Cricut) or laser cutter.

### Play Instructions:

- Start with 2 new letter sized files in the drawing program of your choice.
- In one file, create a series of rectangles that are almost the length of the page and of different widths using the rectangle drawing tool. These will be the strips for weaving, so different widths will give different results.
- In the other file, begin by creating a one inch margin with ruler guides on all sides. Next, create a series of lines using the line tool. These will be the cut lines that the paper will be woven through,
- Following the instructions of your digital cutting tool, export your drawing files (the rectangle strips and the scored paper) to the proper file format. Usually a .dxf for digital cutters.
- Cut the two files out of the paper of your choice. Use a thicker paper for the cut paper lines and a thinner paper for the cut paper paths. (see diagram)
- Have at it with the weaving! Be as directive, or not, as is appropriate for your classroom community culture.



# BUILDING BLOCKS



digital solids



modular constructions

she's a brick house

## Building Blocks

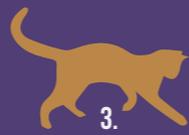
Really, you can do anything with blocks and the experience of making one's own set of blocks is terrifically informative for curious adults. It's also a very sensible first thing to make with additive technology (3d printing). Not only will you have a very accessible way to approach modeling and printing but at the end, you also have blocks! Win Win Win.

**Foundation skills:** Scale; Perspective; Grit; Observation; Texture/Material Study; Interface

**Equipment:** 3d Modeling Program that can export .stl files (literally anything is fine) and a 3d Printer

### Play Instructions:

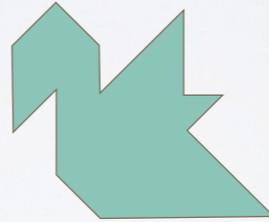
- Start with a new file in whatever program you're using. Make sure to pay attention to the units of measurement. mm are a thing in modeling (looking at you america).
- Find the tool command that lets you create "solids." This will be called something different depending on the program you're in.
- Create as many 1 inch cubes as you can fit on your print bed. Make sure they are all flat on the x plane. For bonus points, try neatly arranging them!
- Export your cubes as an .stl file.
- Follow the directions of your specific printer and prepare the file for printing.
- Try to print your cubes and see what happens hot shot.
- If all goes well on your first try, go immediately to the nearest 7-11 and play the lottery. Please send me some of the winnings.
- If all doesn't go well on your first try, which it probably won't, slow down, take a breath, put on your metaphorical lab coat and try to break down the problem into manageable parts.
- Keep trying till you get a nice set of blocks.
- Play with them however you like. Try not to throw them at anyone. Learning to deal with setbacks is part of 3d printing when you're using a filament based printer. But if you can print a perfect cube, that is GOOD news! You're ready for anything.



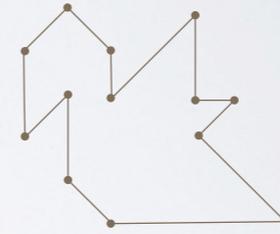
# PARQUETRY



laser cut tangrams



prompted puzzle



digital recreation

## visceral vectors

### Parquetry

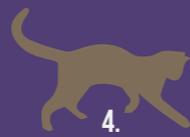
If there's one thing lots of people seem to like, it's working with tiles! I don't know why. That's another sabbatical's worth of research, but in my experience, it's true. Making tangram tiles is double duty, nay, triple duty. Duty the first: Understanding the relationship between vector paths and machines. Duty the second: Puzzles! Duty the third: Concrete to abstract drawing skills.

**Foundation skills:** Problem solving, balance, form/counterform, critical thinking

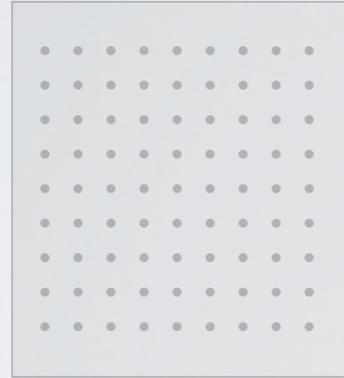
**Equipment:** Vector drawing software and laser cutter. Also, something to cut. How about some 1/8th inch acrylic or wood?

### Play Instructions:

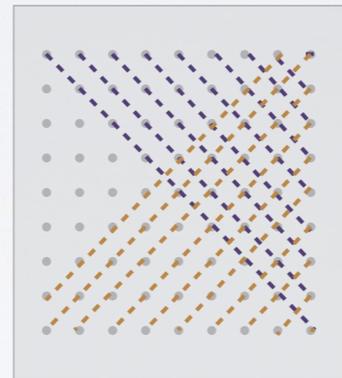
- Download the vector tangram file @ [jennafrye.com/froebel](http://jennafrye.com/froebel).
- Follow the instructions for your laser cutter and prepare the files for cutting.
- Cut tangrams out.
- Find tangram puzzles on interwebs. there are a bunch. i'm not going to micromanage you.
- Solve some puzzles.



# THREAD LINES



paper dot grid



connect the dots



flip and reveal

sew and tell

## Thread Lines

Back in the day, Kindergarten kittens would use a needle and poke holes in paper for embroidery. We have sewing machines though and one of the basic skills of sewing is straight lines. Using a paper dot grid to teach sewing can be a lot of fun, and an interesting way to get students to think about how line work can function as visual communication.

**Foundation skills:** Sewing, point/line, texture, color.

**Equipment:** Sewing Machine and two colors of thread

### Play Instructions:

- Download the paper dot grid file @ [jennafrye.com/froebel](http://jennafrye.com/froebel) and print it onto some cardstock.
- Pick a dot to start with, i like to start at the bottom corner, and sew in a straight line through the other dots to the opposite side like the picture.
- Repeat this process across the X axis.
- Using another color of thread, repeat this process along the Y axis.
- Turn your paper over and look at your thread art!
- Now keep going!!!



# MUSIQUE CONCRÈTE



noises ON! (theatre joke!)

## Musique Concrete

One really cool thing to observe about digital fabrication machines, is the sound! 3d filament based printers, for example, make crazy sounds. Taking the time to focus on the sounds in our natural and unnatural world is a powerful experience. Why not make sound the goal of using a machine and not another kind of product?

**Foundation skills:** Rhythm, observation, problem solving, curiosity, balance, sound mixing

**Equipment:** Any machine that makes noise; microphone/recording device, sound editing software

### Play Instructions:

- Gather some equipment that makes noise like a sewing machine, digital cutter, 3d printer etc.
- Get a microphone and a recording device.
- Try to get the machines to make a noise and record it. Some ideas to try might be:
  - running a demo file
  - turning it off and on
  - trying to make something
  - investigating the material the machine is made of. what happens if you flick it?
- After you've collected a bunch of sounds, bring it into a simple sound editor and make an audio collage. Keep playing till it feels like you're done.
- Share your music with the world! Just let your soul glow!