

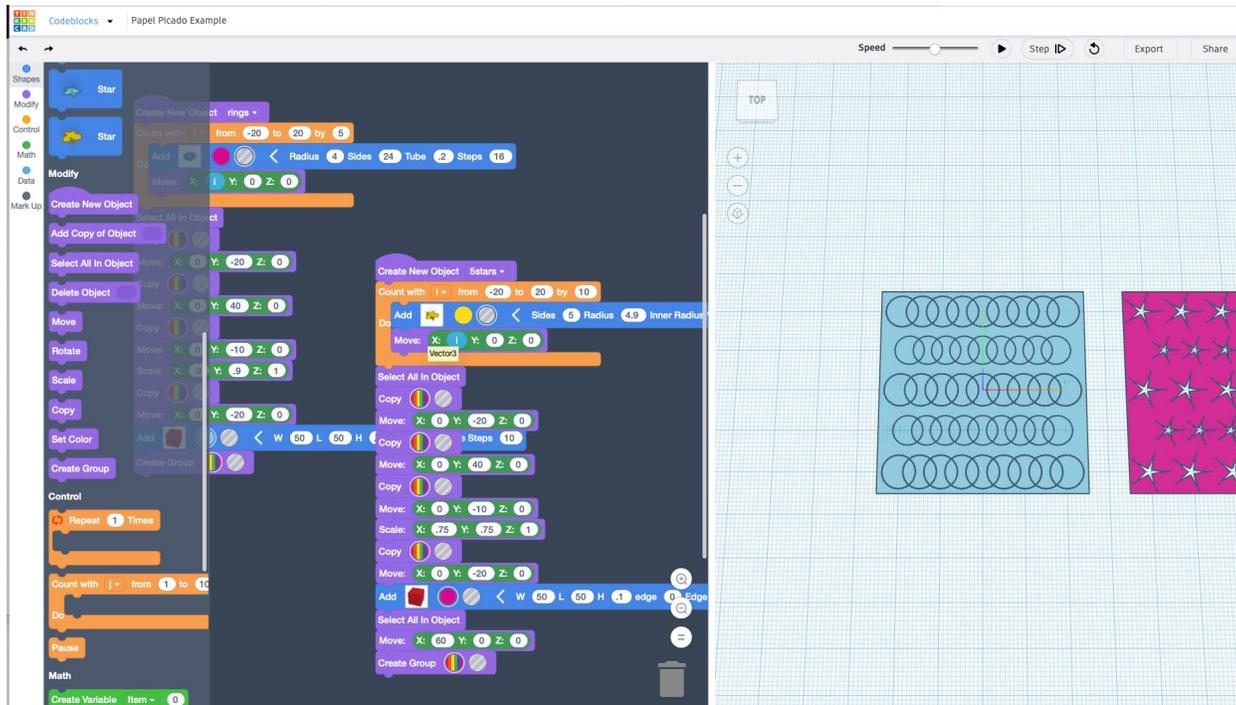
	<h2 style="text-align: center;">Papel Picado with Algorithmic Composition</h2> <h3 style="text-align: center;">HS Accomplished</h3> <p style="text-align: center;"><i>This lesson is part of a larger project where students design and produce their own papel picado using algorithmic composition 3D tools and a laser cutter. In this lesson, students learn about the tradition of papel picado in Mexican culture and observe how symbols and messages are communicated within the art and imagine how to communicate their own stories through symbols in their own papel picado designs. The result is a blending of modern digital art practice with a traditional art form.</i></p>
Lesson Objective(s):	Student Friendly Standard Learning Statement(s): <ul style="list-style-type: none"> • I am learning to synthesize my personal resources and resources from the world to create papel picado designs.
Arts Standard(s):	Artistic Process – Connecting Anchor Standard #10 – Synthesize and relate knowledge and personal experiences to make art. <ul style="list-style-type: none"> ○ (MA:CN.10.HS2a) a. Synthesize internal and external resources to enhance the creation of persuasive media artworks, such as cultural connections, introspection, research, and exemplary works.
Essential Question(s):	<i>How do we relate knowledge and experiences to understanding and making media artworks? How do we learn about and create meaning through producing media artworks?</i>
Vocabulary:	NCCAS: Balance: Principle of the equitable and/or dynamic distribution of items in a media arts composition or structure for aesthetic meaning, as in a visual frame, or within game architecture Composition: Principle of arrangement and balancing of components of a work for meaning and Message Model: a digital or physical representation or sketch of an idea, usually for testing; prototyping Contrast: Principle of using the difference between items, such as elements, qualities and components, to mutually complement them Hybridization: Principle of combining two existing media forms to create new and original forms, such as merging theatre and multimedia
Lesson Procedure: ~2 hours	<ol style="list-style-type: none"> 1. Introduction: Show Video of Coco Opening Scene, and images of Papel Picado works. Explain the traditional process of hand chiseling through 40-50 layers of paper. 2. Discuss observed cultural significance in these examples; weddings, Day of the Dead, Christmas, Shaman life stories. ask: What images are used as symbols for each significant event? 3. Look at several specific examples of Papel Picado; include examples that demonstrate symbols, symmetry, algorithmic design through repetitive features, and balance. Students make observations about patterns they see and commonalities in composition. Specifically note how repeated geometric features have mathematical relationships. Here are some examples to start with:

	<p>a. example 1</p> <p>b. example 2</p> <p>4. Discuss other types of content including cultural content that could be represented in a papel picado (symbols, phrases, iconography, pop culture). Ask students to think about what images and symbols they would put in their own designs for a papel picado that represented them or something from their culture</p> <p>5. Using examples as inspiration, students use pencils and paper to sketch a model for their own papel picado. Encourage students to use elements of symmetry, repetition, and contrast. Assist the students to create specific geometric patterns, and note the shapes they use (lines, rectangles, circles, half circles).</p> <p>Extension Overview (to provide context for what students would do in subsequent lessons) <i>Students are going to digitize their papel picado designs using TinkerCAD and an SVG editor and then laser cut them.</i></p> <p>6. Introduce project; including a brief overview of the process steps (see below) and examples of each step (TinkerCAD models, SVG edits, and laser cut papers)</p> <p>a. the hybridization of combining a traditional hand art practice with digital tools. Demo finalized laser cut designs.</p> <p>7. Use TinkerCAD codeblocks to implement the algorithmic portions of their design. Export design as an SVG (How to export SVG for laser cutting) Make any non-algorithmic edits to the SVG in an online SVG editor such as https://svgeditoronline.com/editor/. (this whole process can take several hours)</p> <p>8. Finally, use the final SVG file in a laser cutter to cut out the final product. Note that tissue paper burns easily and should not be laser cut itself; colorful construction paper is a good alternative. If you do not have access to a laser cutter, you can print the exported design and use a traditional chisel method to cut through the tissue paper using the lines as a guide.</p>
Assessments:	<p>Checking for understanding: Students can explain that papel picado designs contain symbols to create meaning and contain repeating geometric shapes.</p> <p>End of Lesson: Students pair up and share their designs.</p> <p>Unit assessment (if applicable): when the unit is over, students will have laser cut colorful construction paper designs and these can be hung on walls or over wooden dowels.</p>
Related Standards/ Competencies:	<p><i>for production: (MA:Pr5.1.1) c. Demonstrate adaptation and innovation through the combination of tools, techniques and content, in standard and innovative ways, to communicate intent in the production of media artworks.</i></p>
Resources:	<p>Related example lesson plan: https://www.internationalfolkart.org/learn/lesson-plans/papel-picado-(dia-de-los-muertos).html</p> <p>Required Materials:</p> <ul style="list-style-type: none"> • paper and pencils

For extension activity:

- 1:1 laptops with internet access and TinkerCAD classroom account (free) <https://www.tinkercad.com/dashboard>
- construction paper
- chisel/Xctos and cutting surface and laser cutter

Appendix A. Photos of TinkerCAD digital design process in-progress



Appendix B: Student worksheet

Paper Picado, Algorithmically Designed

Design and sketch your own papel picado that represents you, your culture, or something you stand for or believe in.

Design hints: Consider the symbols that you need to include and what they represent. Keep it simple, 1-2 symbols at most. Include geometric shapes and repetitive patterns, like crosshatch, circles and half circles, etc. **Label the geometric shapes you use**, along with their sizes and locations if you know them.

What symbols are you using, and why are they important to you?

Draw your sketches below and add more paper if necessary.