EdSutra

Teaching guide

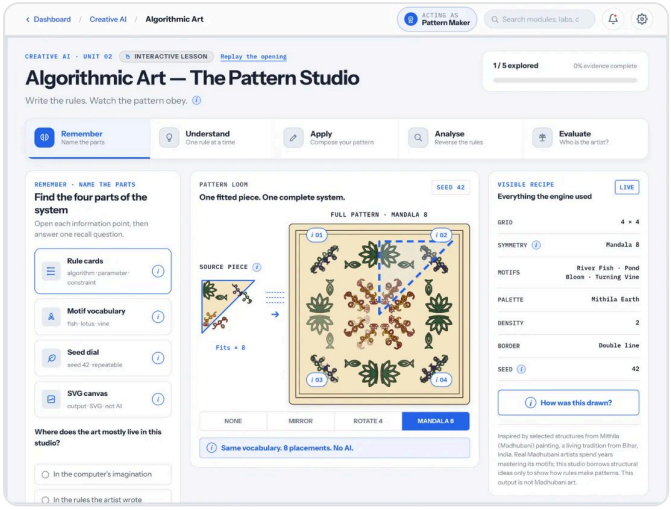
Module 07 · Creative AI · Unit 02 · Stage 2, Capabilities

Algorithmic Art

The Pattern Studio

Grades 7–11 | **25 minutes** | Role: **Pattern Maker**

Grade 7: About age 12–13 · Year 8 in the UK · Class 7 in India



The big idea

Not every computer-made picture is AI. In the Pattern Studio a person writes the rules and a seed picks one repeatable arrangement; the computer only follows them. Same rules and seed always give the same pattern. Fair credit separates who chose the rules, what drew the marks and which tradition inspired them.

The learner's job

Learners are the **Pattern Maker** at The Long Room · Pattern Bench. You are not drawing this. You are writing the instructions that draw it. Their task: write rules that make something worth looking at.

By the end, learners can say

- I can identify the grid, motif, symmetry, palette, density, border, and seed rules in a generative pattern
- I can predict and explain how one rule changes a pattern while the other rules remain fixed
- I can build, test, replay, and save a deterministic pattern recipe
- I can infer hidden rules by comparing generated patterns with candidate recipes
- I can evaluate authorship, originality, and cultural credit using relevant evidence

Before class

- One computer or tablet for each learner or pair, with EdSutra open (this Module is part of the full EdSutra studio).
- Open the studio once on each device before class, so the Unit still runs if the internet drops.
- Play the opening and the first two steps yourself, so you know where learners will click.
- Read the note on the opening screen: the patterns borrow ideas from Mithila painting, a living tradition, but are not Madhubani art.
- Pairs work well: one learner changes the rules, the other predicts what the pattern will do before each Regenerate.
- Best after Generative AI.
- Units open in order, and Module 1 comes first. To start a class here, switch on Open every Unit in Settings → Teachers & parents.

Words to introduce

Algorithm: A precise, finite set of instructions a computer follows step by step.

Generative system: Rules plus inputs that can produce many related results.

Motif: A reusable shape, such as a fish, a lotus or a vine.

Symmetry: A rule that repeats one piece by mirroring or turning it around a center.

Seed: A number that starts a repeatable stream of choices: same seed, same picture.

Parameter: A setting you can change inside the rules, such as density or palette.

Living tradition: An art form people still practice today, such as Mithila painting.

Running the lesson 30 minutes

Open 5 min

"Can you make a picture without drawing a single line? What would you have to write down instead?"

Before anyone clicks, ask: if we keep every rule the same and change only one number, the seed, what changes: everything, nothing, or something in between? Write the guesses on the board and test them in Understand.

Step	What learners do	Ask the class	Listen for
1. Remember 4 min	Learners open the four information points on the loom (rule cards, motif vocabulary, seed dial and canvas), then answer one recall question: where does the art mostly live?	• What does the computer receive from the artist? • Can the loom draw a shape that is not in its motif vocabulary?	The art lives in the rules a person wrote. The computer only follows them; it cannot invent a new motif.
2. Understand 5 min	In two experiments only one input changes: Mirror becomes Mandala 8, then seed 42 becomes 43. Learners predict before each reveal, then explain why style is predictable but exact layout is not.	• When the seed changed, what stayed the same? • What does the seed decide, and what do the rules decide? • Look at our guesses on the board. Were we right?	The rules fix the shapes, colors and symmetry; the seed only picks a new arrangement of the same pieces.
3. Apply 6 min	Learners change at least three settings of the recipe, press Regenerate, try two seeds on the same rules, and save the recipe. Replaying it redraws exactly the same pattern.	• Why does the gallery save the rules instead of a picture? • Is your pattern closer to wallpaper or to static? Which rule would you change?	Same rules and same seed always give the same pattern, so saving the recipe is enough to make it again.
4. Analyze 4 min	Learners study three mystery patterns and pick the rule card that could have made each: count the arms, read the shapes, inspect the frame. Verify with the engine draws their card beside the mystery.	• What clue in the picture told you the symmetry rule? • How did you rule out the wrong cards?	Evidence from the picture: eight repeated sectors mean Mandala 8; a visible fish means the card includes fish.
5. Evaluate 6 min	Learners judge three cases: who a gallery label should credit, whether 1,000 seeds make 1,000 originals, and an app that never names the Mithila tradition. Each verdict needs two facts that support it.	• Who should the gallery label credit, and which fact backs your choice? • Is a new seed a new idea? Why or why not?	A verdict backed by facts that separate who chose the rules, what drew the marks and which tradition inspired them.

Steps follow Bloom's revised taxonomy, in the order the Unit presents them.

Deepen the thinking

Critical thinking	The Unit calls itself a control group: computer-made, but no AI. How could you tell a rule-based tool from one that learned from examples?
AI thinking	Here a person wrote every rule. In an AI image maker, where do the "rules" come from, and could you read them?
Ethics and fairness	An app copies the look of a living tradition without naming it. Who loses something, and what should the app's label say?
Connect to life	Think of a pattern you see every day, on a floor, a fabric or a screen. What rules and what seed could make it?

Misconceptions to listen for

"The computer imagined the picture."
Every mark traces back to the visible recipe. "How was this drawn?" shows every rule and the seed's first numbers. Nothing is hidden or imagined.

"Random means you can never get the same picture again."
Same rules and same seed always redraw the same pattern. That is why the gallery saves the recipe, never a screenshot.

"Algorithmic art is the same as AI art."
No model learns here and nothing is trained on examples. A person writes rules and JavaScript follows them. Computer-made does not always mean AI-made.

In real life the card learners see at the end of the Unit

- Patterns on fabric, tiles and wrapping paper often follow rules: a motif, a grid and symmetry.
- Some video games build worlds from rules plus a seed: share the seed and a friend gets the same world.
- Rangoli, Islamic tile patterns and Mithila painting are living traditions; a pattern borrowing from them should credit them.

Try it this week. Write three rules for a doodle, like "draw a circle, mirror it, add a border". Swap rules with a friend. Do your drawings match?

Watch out for. Computer "randomness" is repeatable: same rules and seed, same picture. And the tool running the rules isn't automatically the artist.

Talk about it. If you write the rules and a computer draws the picture, who is the artist?

Exit ticket

1. Name two rules in the Pattern Studio and say what each one controls.

2. When only the seed changes, what changes and what stays the same?

3. Why does saving the recipe let you make the exact same pattern again?

Going further

Ask learners to save at least one recipe: in Machine Creativity, the Creativity Court traces who did what in their own saved pattern. For homework, use the "Try it this week" activity from the In real life card.