

Code a game that uses your model

40 minutes

Strand 2: Let's get connected

Built in Scratch

Outcome 2.8

Outcome 1.7

Outcome 2.9

WHAT THIS LESSON DOES

Students load their trained Teachable Machine image model into Scratch and build a rock-paper-scissors game against the computer, then tune the confidence threshold and test what happens when it is set too low or too high.

CURRICULUM OUTCOMES

Outcome	What the specification asks for
2.8	Identify different AI models and how they apply in coding, from generative AI and code assistants to recommendation systems, classifiers and agents.
1.7	Discuss and implement core features of a structured programming language: variables, operators, loops, decisions, assignment and modules.
2.9	Discuss the advantages, limitations, and ethical and safety issues of AI models.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Use a machine-learning model you trained inside your own program (LO 2.8, LO 1.7)
- Set a confidence threshold and explain why a model needs one (LO 2.9)

BEFORE THE BELL

- Students logged in at devices with cameras working; browsers ready for Stretch3 (stretch3.github.io) and camera permission allowed when prompted.
- Each student (or pair) has the Teachable Machine image model URL from the earlier part of this project, or the class fallback model URL ready to paste.
- Open Stretch3 on the board, show where Extensions and TM2Scratch live, and have a sample model URL ready to demonstrate.

WHAT YOU NEED

Item	Qty	Per	If you do not have it
tablet or laptop with Scratch	1	pair	run the lesson on the IWB with students taking turns

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HOW THE LESSON RUNS

4 min	introduction	Start: what we're building
2 min	content	The plan: four parts to build
3 min	content	Setup Scratch and TM2Scratch
2 min	content	Add a Sprite
2 min	content	Create Variables
2 min	content	Randomize Computer Choice
3 min	content	Load Teachable Machine Model
2 min	content	Display Image Label
3 min	content	Set the Confidence Threshold
2 min	content	Get Player Choice
2 min	content	Determine If It's a Draw
3 min	content	Determine If You Win
2 min	content	Else You Lose
2 min	content	Challenge
3 min	content	Make sense: what worked, what broke
2 min	content	Reflect
1 min	summary	What you covered

TEACHING MOVES

- Model the first blocks on the board (extension, video on, model URL) before pairs continue; paste the model URL carefully and check the stage camera preview.
- Keep label names exact matches to the model classes (Rock, Paper, Scissors); mismatched spelling is a common silent fail.
- For the threshold beat, have the class try 0.3, 0.6 and 0.9 and say what changes: false triggers when low, missed gestures when high.
- Remind students the green flag re-rolls the computer choice each round; that is expected, not a bug.

WHAT TO WATCH FOR

- Camera blocked or video left off: stage stays blank and labels never fire. Allow camera and check turn video on .
- Wrong or incomplete model URL: labels stay empty. Repaste the full Teachable Machine link and click the green flag again.
- Win/lose conditions nested or compared the wrong way: draws never show or every round is a win. Walk the three win cases on the board against the number mapping (1 rock, 2 paper, 3 scissors).

DIFFERENTIATION

- Support: Provide the fallback model URL and a printed number map (1 rock, 2 paper, 3 scissors); let pairs complete draw logic first, then add one win case.
- Extension: Start a new round on space bar, add sound effects, or retrain the model with more example images and compare recognition.
- Extension: Try two threshold values back to back and note which gestures break at each setting.