

Train your own image model

40 minutes

Strand 2: Let's get connected

Built in Teachable Machine

Outcome 2.8

WHAT THIS LESSON DOES

Students train, test and improve a rock-paper-scissors image model in Teachable Machine using their own webcam examples, then export the improved model for the next lesson.

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.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Train, test and improve an image-recognition model using your own examples, and explain what training data is (LO 2.8)
- Show how more and better examples change what the model gets right

BEFORE THE BELL

- Students logged in on devices with working webcams and a modern browser; allow camera permissions when prompted.
- Open Teachable Machine (teachablemachine.withgoogle.com) ready to model Get Started and Image Project on the board.
- Plan where students will save the shareable model link (school drive note, email to self, or class routine).
- Quiet space helps; noisy backgrounds and busy clothing can confuse the model.

WHAT YOU NEED

Item	Qty	Per	If you do not have it
tablet or laptop with Teachable Machine	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
3 min	content	How the model learns
2 min	content	Open Teachable Machine
3 min	content	Create an Image Project
2 min	content	Create the Classes
4 min	content	Add Images to the Rock Class
2 min	content	Add Images to the Paper Class
2 min	content	Add Images to the Scissors Class
3 min	content	Train the Model
3 min	content	Test the Model
3 min	content	Export your Model
3 min	content	Conclusion
3 min	content	Make sense: what worked, what broke
2 min	content	Reflect
1 min	summary	What you covered

TEACHING MOVES

- Model the first class on the board: hold to record, vary angle and distance, then delete any blurry or wrong-gesture frames before students fill all three classes.
- Stress balanced training data: roughly similar numbers of clear examples per class so one gesture does not dominate.
- When testing, ask pairs to find one hand position the model gets wrong, add examples of that pose, retrain, and check again so they see data quality change the result.
- Export early enough that every pair has copied the shareable link before pack-up; the next lesson needs it.

WHAT TO WATCH FOR

- Camera blocked or permission denied: prompt students to allow the webcam and refresh if the preview stays blank.
- Too few, blurry, or mixed-gesture images in a class: delete poor samples, add clear varied poses, and retrain.
- Testing without clicking Train Model again after new samples: the preview still uses the old model until they retrain.

DIFFERENTIATION

- Support: Provide gesture photo cards and work beside the student for the first class; aim for a small solid set of clear images before training.
- Extension: Challenge pairs to fool the model with lighting, angle or a partial gesture, then fix it with targeted examples and compare accuracy before and after.
- Extension: Ask stronger pairs to explain in plain words what the training data was and why balanced, clear examples matter.