

Classroom Pack

12 lesson plans for ages 3 to 12: AI thinking, ideation, prompt writing and game design. Every lesson works without devices; no student accounts, nothing personal collected.

- **AI thinking, Ages 3 to 5:** Is it a person or a machine? (25 min)
- **AI thinking, Ages 6 to 8:** Teach the robot: learning from examples (40 min)
- **AI thinking, Ages 9 to 12:** Who made it, and who checks it? (45 min)
- **Ideation, Ages 3 to 5:** Mash-up animals (25 min)
- **Ideation, Ages 6 to 8:** The idea jar: many ideas first (40 min)
- **Ideation, Ages 9 to 12:** From what if to pitch (45 min)
- **Prompt writing, Ages 3 to 5:** Draw what I say (25 min)
- **Prompt writing, Ages 6 to 8:** The prompt recipe (40 min)
- **Prompt writing, Ages 9 to 12:** Improve it three times (45 min)
- **Design a game, Ages 3 to 5:** My first game: hero, dodge, collect (30 min)
- **Design a game, Ages 6 to 8:** Design, play, improve (45 min)
- **Design a game, Ages 9 to 12:** Balance and levels (50 min)

Is it a person or a machine?

25 minutes · Ages 3 to 5 · AI thinking · Free to print and share

Goal

Children can say that machines follow instructions and learn from examples, and that they are not alive.

Vocabulary

- machine
- instructions
- example
- guess

Materials

- Pictures of everyday things: a dog, a toaster, a robot toy, a baby, a talking speaker, a tree
- Two hoops or mats labelled "alive" and "machine"

Warm-up (5 minutes)

Hold up the robot toy. Ask: "Is it alive? How do you know?" Accept every answer.

Activity

1. Sort the pictures into "alive" and "machine" together. Talk about tricky ones like the talking speaker.
2. Say: "Some machines learned by looking at lots of examples, like you learned what a dog looks like by seeing lots of dogs."
3. Play "Guess my animal": describe an animal with three clues, children guess. Then say: "You guessed from clues. Some computers guess like that too, and sometimes they guess wrong."
4. Make a mistake on purpose: describe a cat and say "dog". Ask the children to catch you.

Talk about it

- Can a machine feel happy or sad?
- Who tells a machine what to do?
- What should we do if a machine gets something wrong?

Check for understanding

Each child places one new picture in the right hoop and says why.

No devices?

The whole lesson is unplugged.

Going further

With a grown-up typing, describe a made-up animal and look at what a drawing tool makes. Is it what we imagined?

Teach the robot: learning from examples

40 minutes · Ages 6 to 8 · AI thinking · Free to print and share

Goal

Students explain that AI learns patterns from examples, and that missing or one-sided examples lead to mistakes.

Vocabulary

- artificial intelligence (AI)
- pattern
- example
- mistake
- fair

Materials

- Paper and crayons
- A made-up creature card for each group (a "zibble": round, three legs, spots)

Warm-up (5 minutes)

Ask: "How did you learn what an apple is?" Draw out that they saw many examples.

Activity

1. One student per group is the "robot" and waits outside. The others draw five zibbles that all have spots.
2. The robot comes back, studies the drawings, and must decide whether new drawings are zibbles. Include one without spots.
3. Discuss: the robot thought every zibble needs spots because every example had them. That's a pattern, and a mistake.
4. Redo it with more varied examples. Does the robot do better?
5. Connect it: "AI is a computer program that learned from lots of examples. If the examples are missing things, it can be wrong or unfair."

Talk about it

- What would a computer need to see to learn what a cat is?
- What could happen if an AI only saw pictures of one kind of person?
- How can people check whether an AI is right?

Check for understanding

Exit ticket: "Draw one way an AI could make a mistake, and write one sentence about why."

No devices?

The whole lesson is unplugged.

Going further

Connects to the AI4K12 big idea "Learning". Follow with the prompt writing lesson.

Who made it, and who checks it?

45 minutes · Ages 9 to 12 · AI thinking · Free to print and share

Goal

Students describe how people shape AI through the examples and rules they choose, and discuss responsible use.

Vocabulary

- training data
- bias
- automation
- AI
- responsibility

Materials

- Scenario cards (below)
- Chart paper

Warm-up (5 minutes)

Quick sort on the board: which of these are automation (exact steps) and which are AI (learned guesses)? Traffic light, spam filter, washing machine, voice assistant, photo app that finds faces.

Activity

1. Explain the difference: automation follows exact steps a person wrote; AI learned from examples and makes guesses.
2. Groups get a scenario: an AI that picks the best drawings for a contest; one that writes book reports; one that recommends videos; one that tells you if a mushroom is safe to eat.
3. Each group answers on chart paper: Who made it? What examples might it have learned from? Who could it be unfair to? Who should check its answers?
4. Groups share. Highlight that people make the choices at every step.
5. Agree three class rules for using AI in school work.

Talk about it

- If an AI writes part of your story, whose work is it? When is that okay?
- Should an AI ever make a decision without a person checking?
- What personal information should never go into an AI?

Check for understanding

Each student writes one rule for using AI and one reason for it.

No devices?

The whole lesson is unplugged.

Going further

Connects to the AI4K12 big idea "Societal impact". Students can try improving a prompt three times and compare the results.

Mash-up animals

25 minutes · Ages 3 to 5 · Ideation · Free to print and share

Goal

Children combine two familiar things to make a new idea and describe it.

Vocabulary

- idea
- imagine
- mix

Materials

- Animal picture cards
- Paper and crayons

Warm-up (5 minutes)

Ask: "What if a cat could fly?" Let children act it out.

Activity

1. Each child picks two animal cards.
2. Ask: "What would they look like mixed together?" Children draw their mash-up animal.
3. Ask three questions about it: "What does it eat? Where does it live? What is it scared of?" Write down their answers.
4. Share in a circle. Answer every idea with "Yes, and..." to add something to it.

Talk about it

- Where do new ideas come from?
- Is there a wrong idea?

Check for understanding

Each child names their animal and tells one thing about it.

No devices?

The whole lesson is unplugged.

Going further

Turn the mash-up animal into the hero of a paper board game.

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The idea jar: many ideas first

40 minutes · Ages 6 to 8 · Ideation · Free to print and share

Goal

Students generate many ideas without judging them, then choose and grow one.

Vocabulary

- brainstorm
- idea
- combine
- choose

Materials

- Slips of paper
- A jar or box
- Timer

Warm-up (5 minutes)

Hold up a spoon. In two minutes, how many other things could it be? Count the ideas together.

Activity

1. Rule for today: in the first round, every idea counts and nobody judges.
2. Give a prompt: "Invent a machine that fixes an annoying problem." Students write one idea per slip for five minutes. Aim for lots.
3. Put the slips in the jar. Pull two at random and combine them into one bigger idea as a class.
4. Each student picks one idea and grows it with three questions: Who uses it? How does it work? What could go wrong?
5. Pairs share and answer each other with "Yes, and..."

Talk about it

- Why do we make lots of ideas before choosing?
- How did combining two ideas change them?
- How does it feel when someone says "yes, and" to your idea?

Check for understanding

Students draw and label their chosen invention.

No devices?

The whole lesson is unplugged.

Going further

Keep the idea jar in the classroom for free time. Read our guide on nurturing kids' ideas.

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From what if to pitch

45 minutes · Ages 9 to 12 · Ideation · Free to print and share

Goal

Students use idea techniques (what if, mash-ups, constraints) to generate concepts and pitch one clearly.

Vocabulary

- ideation
- constraint
- concept
- pitch
- feedback

Materials

- Index cards
- Timer

Warm-up (5 minutes)

Round-robin "What if?": each student adds a what-if about school. Write the best on the board.

Activity

1. Teach three techniques: What if? (change one rule of the world), Mash-up (combine two unrelated things), Constraint (make it with a strict limit, like only one button).
2. Students make at least six concepts for a game or story in eight minutes, two with each technique.
3. Each student picks one and writes a one-sentence pitch: "It's about ____ who wants ____ but ____."
4. Groups of three give feedback: one thing that's exciting, one question.
5. Students revise their pitch once.

Talk about it

- Which technique gave you the most ideas? Why?
- How did a constraint help instead of limit you?
- How did feedback change your idea?

Check for understanding

Collect the before and after pitches. Look for a clear hero, goal and obstacle.

No devices?

The whole lesson is unplugged.

Going further

Build the pitched game on paper, then test it on classmates.

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Draw what I say

25 minutes · Ages 3 to 5 · Prompt writing · Free to print and share

Goal

Children learn that clear, detailed words help someone else make what they imagine.

Vocabulary

- describe
- colour
- size
- detail

Materials

- Whiteboard or paper for the teacher
- Crayons

Warm-up (5 minutes)

Say "Draw a monster" and draw something silly and unexpected. Ask: "Is that what you imagined?"

Activity

1. Explain: "I can only draw what you tell me. Let's tell me more."
2. Children add one detail at a time: colour, size, how many eyes, what it's wearing. Draw each detail as it's said.
3. Compare the first drawing with the last. Which one matches what they imagined?
4. In pairs, one child describes a creature, the other draws it, then swap.

Talk about it

- Why did the drawing get better?
- What words helped the most?

Check for understanding

Each child gives a description with at least two details (a colour and one more).

No devices?

The whole lesson is unplugged.

Going further

With a grown-up typing, describe a character to a drawing tool and compare it with the child's own drawing.

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The prompt recipe

40 minutes · Ages 6 to 8 · Prompt writing · Free to print and share

Goal

Students write clear descriptions using a simple recipe: what it is, what it looks like, one fun detail.

Vocabulary

- prompt
- describe
- detail
- improve

Materials

- Recipe card on the board
- Paper and crayons

Warm-up (5 minutes)

Play "robot sandwich": students give the teacher step-by-step instructions to make a sandwich, followed exactly. Laugh at the mistakes.

Activity

1. Show the recipe: 1. What it is ("a dragon"). 2. What it looks like ("small, purple, yellow scarf"). 3. One fun detail ("who loves pancakes").
2. Model a weak prompt ("a dog") and improve it with the recipe.
3. Students write a prompt for a character. A partner draws exactly what is written, nothing more.
4. Compare drawings to the writer's idea. The writer improves one part of the prompt and the partner redraws.
5. Rule for real AI tools: never include names, schools or other personal details.

Talk about it

- What changed when you added details?
- What happens if a prompt has too many ideas at once?
- Why should we keep personal details out of prompts?

Check for understanding

Students write one prompt that uses all three parts of the recipe.

No devices?

The whole lesson is unplugged.

Going further

With a teacher typing, try the best prompts in an AI drawing tool and compare.

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Improve it three times

45 minutes · Ages 9 to 12 · Prompt writing · Free to print and share

Goal

Students iterate on prompts, explain how changes in wording change results, and use AI responsibly.

Vocabulary

- prompt
- iterate
- specific
- constraint
- output

Materials

- Prompt log sheet: version, what I changed, what happened
- Optional: one teacher device with an AI drawing tool

Warm-up (5 minutes)

Show two descriptions of the same scene, one vague and one specific. Which would be easier to draw? Why?

Activity

1. Teach a fuller recipe: subject, appearance, setting, style, one detail; then one idea per prompt.
2. Students write version 1 of a prompt for a game character.
3. A partner sketches it (or the teacher runs it in an AI tool). Students note what matched and what didn't.
4. Students write versions 2 and 3, changing one thing at a time, and log what each change did.
5. Discuss what made the biggest difference.

Talk about it

- Why change one thing at a time?
- When is a result "good enough"?
- What would you never put in a prompt, and why?

Check for understanding

The prompt log shows three versions and at least one clear, explained improvement.

No devices?

Works fully with partner sketching instead of an AI tool.

Going further

Use the final prompt to draw the hero of a game by hand, then compare it with a classmate's drawing of the same prompt.

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My first game: hero, dodge, collect

30 minutes · Ages 3 to 5 · Design a game · Free to print and share

Goal

Children choose a hero, something to dodge and something to collect, and play their game.

Vocabulary

- hero
- dodge
- collect
- win

Materials

- Paper path board (draw a winding road)
- Toy or coin as the hero
- Die
- Optional: one tablet per child or pair

Warm-up (5 minutes)

Play a quick round of tag. Ask: "What did you dodge? How did you win?"

Activity

1. Each child picks a hero (an animal or toy) and says what it dodges and what it collects.
2. Draw dodges and goodies on the paper path. Roll the die to move: landing on a goodie scores, a dodge sends you back.
3. Play in small groups.

Talk about it

- What made your game fun?
- What would you change?

Check for understanding

Each child can name their hero, what it dodges and what it collects.

No devices?

The paper path game is the full lesson.

Going further

Optional: the teacher can send finished games to the arcade and choose how each child is credited (first name, initial, nickname or none). A person reviews every game before it goes live.

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Design, play, improve

45 minutes · Ages 6 to 8 · Design a game · Free to print and share

Goal

Students design a game with a goal, obstacles and rewards, test it on a partner and improve one thing.

Vocabulary

- goal
- obstacle
- reward
- rule
- test
- improve

Materials

- Game design sheet: hero, goal, obstacles, rewards, how it moves, how to win
- Devices with a web browser (one per student or pair), or paper and dice

Warm-up (5 minutes)

Ask: "What's your favourite game? What makes it hard? What do you collect?" List goals, obstacles and rewards on the board.

Activity

1. Students fill in the design sheet.
2. Build it as a paper board game.
3. Play-test: a partner plays while the designer watches silently and notes where they get stuck or bored.
4. Ask the tester: "Most fun part? Most confusing part? Too hard or too easy?"
5. Change one thing and test again.

Talk about it

- What did you change after testing, and why?
- How do real game designers know if a game is fun?

Check for understanding

The design sheet is complete, and the student can explain one change they made after testing.

No devices?

Use a paper board, a die and counters instead of devices.

Going further

Optional: the teacher sends the best games to the arcade (no student accounts; a person reviews every game before it goes live).

Balance and levels

50 minutes · Ages 9 to 12 · Design a game · Free to print and share

Goal

Students design a game with difficulty that increases fairly, test it with several players and use feedback to balance it.

Vocabulary

- mechanic
- difficulty
- balance
- level
- feedback
- iterate

Materials

- Design document template
- Devices with a web browser, or paper prototyping supplies

Warm-up (5 minutes)

Show a game that's too easy and one that's too hard (describe or play briefly). What makes a game feel fair?

Activity

1. Students write a design document: hero, goal, core mechanic (jump, fly, steer), obstacles, rewards, how it gets harder.
2. Build a first version on paper.
3. Test with three players. Record where each one fails or loses interest.
4. Adjust one variable at a time (speed, number of obstacles, scoring) and retest.
5. Present: what the data showed and what was changed.

Talk about it

- Why change one thing at a time?
- What's the difference between hard and unfair?
- How did different players experience the same game?

Check for understanding

The design document shows at least two tested changes and the reason for each.

No devices?

Paper prototypes with dice and cards work for the full lesson.

Going further

Students who want their own characters can describe them in writing and swap descriptions to draw, using the prompt writing lesson.