Lesson 1: What is Artificial Intelligence?

Complete Standalone Lesson Plan • 60 to 75 Minutes • KS3 (Ages 10 to 15)

Learning Objectives

By the end of this lesson, students will be able to:

- Define artificial intelligence accurately and concisely
- Distinguish between AI systems and traditional computer programs
- Identify at least 8 real-world examples of AI in daily life
- Explain at a basic level how AI learns from data using pattern recognition
- Distinguish between Narrow AI (exists today) and General AI (hypothetical)
- Correct at least 3 common misconceptions about AI

Materials Needed

- Projector/interactive whiteboard with internet access
- Mini whiteboards and pens (or paper), one per student
- “AI or Not?” card set, 20 cards per pair (printable below)
- AI Scavenger Hunt Worksheet (from toolkit)
- 3-2-1 Exit Ticket template (printable below)
- Key Vocabulary Reference Sheet (printable below)

- Optional: device per group for Scavenger Hunt research

Curriculum Links

England National Curriculum (Computing KS3): Understand several key algorithms that reflect computational thinking; understand simple Boolean logic; understand how instructions are stored and executed within a computer system.

PSHE/Citizenship: Understanding how technology affects daily life, making informed choices about technology use.

Cross-curricular: Science (data analysis, pattern recognition), Maths (statistics, probability), English (media literacy, evaluating sources).

Teacher Background Knowledge

Read this before teaching. You don't need to share all of this with students, but it will give you confidence to answer questions.

What AI Actually Is

Artificial intelligence refers to computer systems designed to perform tasks that normally require human intelligence. The term was coined by John McCarthy in 1956 at the Dartmouth Conference. Today, the most practical definition is: **technology that learns from data to make predictions or decisions**. This distinguishes AI from traditional software, which follows explicit, human-written rules.

How AI Learns: The Basics

The dominant approach is **machine learning (ML)**: instead of writing rules, you show the computer thousands of examples and it discovers patterns itself.

Supervised learning: The most common type. The AI is given labelled examples (photos tagged "cat" or "not cat") and learns to predict labels for new examples. Used in: spam filters, medical diagnosis, voice recognition.

Unsupervised learning: The AI finds hidden patterns in unlabelled data. Used in: customer segmentation, anomaly detection, recommendation systems.

Reinforcement learning: The AI learns by trial and error, receiving rewards for good actions. Used in: game-playing AI (AlphaGo), self-driving cars, robotics.

Narrow AI vs General AI

Narrow AI (Artificial Narrow Intelligence / ANI): AI that excels at ONE specific task. Every AI that exists today is narrow AI. Siri can understand speech but can't play chess. AlphaGo can play Go but can't recognise a face. ChatGPT can write text but can't actually understand what it writes.

General AI (Artificial General Intelligence / AGI): Hypothetical AI with human-like intelligence, able to learn any task, reason abstractly, transfer knowledge between domains. This does NOT exist. Expert surveys (2023) suggest median estimates of 2050 to 2060 for AGI, but many believe it may never happen. Important to state clearly: "the super-intelligent AI from movies does not exist."

History Timeline (Key Milestones)

- 1956: Term "Artificial Intelligence" coined at Dartmouth
- 1966: ELIZA chatbot (first conversational AI)
- 1997: IBM Deep Blue beats Garry Kasparov at chess
- 2011: IBM Watson wins Jeopardy!
- 2011: Apple launches Siri
- 2012: Deep learning revolution begins (ImageNet)
- 2016: Google DeepMind's AlphaGo beats world champion at Go
- 2020: GPT-3 demonstrates large language model capabilities
- 2022: ChatGPT launched, reaches 100 million users in 2 months
- 2023 to 2024: AI image generation, video generation, multimodal AI
- 2025: AI agents, reasoning models, AI integrated into everyday apps

Common Student Questions (with Answers)

“Can AI think?” No. AI processes data statistically. It has no consciousness, no understanding, no inner experience. When ChatGPT writes a paragraph, it’s predicting the most likely next word; it doesn’t “understand” what it’s writing.

“Will AI take all jobs?” AI will automate some tasks and change many jobs, but it also creates new jobs (AI trainers, prompt engineers, ethics officers). Historical pattern: every technology revolution has created more jobs than it eliminated.

“Is AI dangerous?” Current AI has no goals, desires, or motivation. The real risks are human misuse: deepfakes, bias, surveillance, job displacement. AI is a powerful tool, and like all tools, it depends on how humans use it.

“Can AI be creative?” AI can generate novel images, music, and text, but it’s combining learned patterns, not having original ideas. Whether this counts as “creativity” is a philosophical debate; great for class discussion!

Detailed Lesson Timeline

Time	Activity	Detailed Instructions
0 to 5 min	**Hook: Word Association**	Write “ARTIFICIAL INTELLIGENCE” in large letters on the board. Give students 60 seconds to write 3 words they associate with AI on mini-whiteboards or paper. Hands up to share. Teacher writes responses on board in two columns (don’t label them yet): one for accurate associations, one for misconceptions. **Likely responses:** Robots, Terminator, Siri, smart, scary, future, computers, ChatGPT, dangerous, helpful, internet, phones **Teacher script:** “Great ideas! Let’s find out which of these are accurate and which might be Hollywood myths.”
5 to 12 min	**Definition & Key Concept**	Write the working definition on the board: **“AI is technology that learns from examples and data to make decisions or predictions.”** **Key distinction** (the most important concept of the lesson): A **regular program** follows rules a human wrote: IF temperature > 30 THEN turn on fan. An **AI system** learns rules from examples: show it 1,000 hot days and 1,000 cold days and what people did; it discovers the pattern itself. **Pair-share:** “Turn to your partner and explain the difference in your own words.” Cold call 2 to 3 pairs to share.
12 to 20 min	**Teaching Analogy: Cat Lesson**	**Teacher script:** “Imagine you’re teaching a 2-year-old what a cat is. Would you write them a rulebook? “A cat has 4 legs, pointed ears, whiskers...” No! You’d point at cats: “Cat! Cat! Cat!” And the child would learn from examples. That’s EXACTLY how AI works.” Show 8 images on projector: 4 cats, 4 not-cats (dog, fox, rabbit, lion). Students vote for each: cat or not cat? Reveal: “A modern AI trained on 1 million images can identify cats with 98% accuracy. It learned from examples, just like the toddler, but it needed 100,000 times more examples!” Key point: **more data = better AI**.

Time	Activity	Detailed Instructions

20 to 35 min	**Activity: AI or Not? Card Sort**	Distribute card sets (20 items per pair). Students sort into “Uses AI” and “No AI” piles. **The 20 Items:** 1. Calculator (No): follows fixed mathematical rules 2. Siri / Alexa (Yes): uses NLP and machine learning 3. Basic alarm clock (No): simple timer circuit 4. Face unlock on phone (Yes): facial recognition AI 5. Netflix “Recommended for You” (Yes): recommendation algorithm 6. Traffic lights (Usually No): most use timers, some smart ones use AI 7. Google Search (Yes): AI ranks results by relevance 8. Toaster (No): simple heating element with timer 9. Autocorrect / predictive text (Yes): language model 10. Video game enemies (Yes): game AI adapts to player behaviour 11. Digital clock (No): displays time, no learning 12. Google Maps directions (Yes): predicts traffic, optimises routes 13. Microwave (No): follows timer settings 14. Email spam filter (Yes): learns to identify spam patterns 15. TV remote control (No): sends infrared signals 16. YouTube recommendations (Yes): personalisation algorithm 17. Light switch (No): simple electrical circuit 18. Fitbit step counter (Depends): basic = no; health insights = yes 19. Amazon “People Also Bought” (Yes): collaborative filtering 20. Nest thermostat (Yes): learns your schedule and preferences **After sorting:** Review as class. Focus discussion on the “Depends” items; these develop nuanced thinking.
35 to 48 min	**Activity: AI Scavenger Hunt**	Groups of 3 to 4. Distribute the AI Scavenger Hunt worksheet. Students brainstorm AI uses in 5 categories: Home, Phone/Apps, School, Out in the World, Entertainment. **Challenge levels:** • Bronze: Find 10 AI examples • Silver: Find 20 AI examples • Gold: Find 30+ AI examples and explain HOW each uses AI After 10 minutes, groups share their best/most surprising finds. Teacher adds any they missed. Common strong examples students discover: Google Translate, Face filters, Sat nav, Spotify Discover Weekly, smart doorbells, robot vacuum cleaners.

Time	Activity	Detailed Instructions
48 to 58 min	**Class Discussion**	**Facilitate using these prompts:** 1. “Can AI think?” No. It processes data statistically. It has no awareness. 2. “Is AI alive?” No. It’s software running on hardware. 3. “Can AI be creative?” It can generate new things, but is combining patterns “creativity”? Great debate topic. 4. “Will AI replace all jobs?” Some tasks, yes. But it creates new jobs too. Every major technology shift has done this. 5. “Should we be scared of AI?” Not of AI itself, but of human misuse. That’s why learning about AI is important. **Correct misconceptions gently:** If a student says “AI is a robot,” respond with “Great thought! Actually, AI is the brain (software) and a robot is the body (hardware). Most AI has no physical form at all, such as Siri or Netflix.”

58 to 65 min	**Exit Ticket (3-2-1)**	Students complete individually: • **3** things I learned about AI today • **2** examples of AI I use in my life • **1** question I still have about AI Collect as formative assessment. Read the questions and address the best ones at the start of Lesson 2. **Preview:** “Next lesson, we’ll discover all the hidden AI in the apps you use every single day, and you might be surprised at how much AI already knows about you!”

Differentiation Strategies

Strategy	Lower Ability / SEN	Core / Middle	Higher Ability / G&T;
Card Sort	Pre-sorted into 3 piles (AI, Not AI, Maybe). Students verify.	Standard 20-card sort in pairs.	Add 5 ambiguous items. Justify each decision in writing.
Scavenger Hunt	Provide word bank of 15 AI examples. Students match to categories.	Brainstorm freely. Target: 20 examples.	Target: 30+ examples. Must explain HOW each uses AI.
Discussion	Sentence starters provided. Pair discussion before class share.	Open discussion with teacher prompts.	Debate format. Research: find an AI that made a serious error.
Exit Ticket	Sentence starters: “AI is...”, “AI is different from a program because...”	Standard 3-2-1 format.	Extended: Write a “What is AI?” explanation for a 7-year-old.

SEN / Additional Needs Considerations

Visual impairment: Large-print card set available. Verbal descriptions for all projected images.

Hearing impairment: Written instructions alongside verbal. Visual timer on board. Subtitles on any videos.

Autism / sensory needs: Structured pair work rather than large groups. Clear, numbered instructions. Warning before activity transitions.

EAL (English as Additional Language): Key vocabulary pre-taught. Visual glossary provided. Bilingual support if available.

ADHD / attention difficulties: Frequent activity changes (built into lesson design). Movement break between card sort and scavenger hunt. Fidget tools permitted.

Assessment Criteria

Use this rubric for formative assessment based on exit tickets and activity participation:

Level	Descriptor	Evidence
Emerging	Can name examples of AI but struggles to define it or distinguish from regular programs.	Exit ticket mentions AI examples but definition is vague or contains misconceptions.
Developing	Can define AI and identify several examples. Beginning to understand the difference between AI and regular programs.	Exit ticket has reasonable definition and 2+ correct examples. Card sort mostly correct.
Secure	Clear, accurate definition. Multiple examples across categories. Understands AI learns from data.	Exit ticket definition is accurate. 3+ diverse examples. Can explain learning concept.
Excelling	Deep understanding. Can explain HOW AI learns. Can correct misconceptions. Discusses narrow vs general AI.	Sophisticated responses. Explains mechanism. Identifies nuance in ambiguous examples.

Key Vocabulary Reference Sheet

(Printable: distribute to students or display on wall)

Artificial Intelligence (AI): Technology that learns from data to make decisions or predictions without being explicitly programmed for each situation.

Algorithm: A set of step-by-step instructions that a computer follows to complete a task or solve a problem.

Machine Learning: A type of AI where the computer learns from examples and data, rather than following rules written by a human.

Data: Information that computers collect and process. Can be text, images, numbers, sounds, videos, or any digital information.

Pattern Recognition: The ability to identify regularities, trends, or structures in data. This is the core of how AI learns.

Narrow AI (ANI): AI that is designed for and excels at one specific task. All AI that exists today is narrow AI.

General AI (AGI): Hypothetical AI that could perform any intellectual task a human can. This does NOT currently exist.

Training: The process of showing an AI system many examples so it can learn patterns. Like studying for an exam.

Prediction: An AI's output or guess based on what it has learned from data. E.g., "this email is probably spam."

Bias: When an AI system produces unfair results because it learned from data that contained human prejudices.

Printable: AI or Not? Card Set

Print on card stock and cut along lines. One set per pair of students.

Item	How It Works	Answer
Calculator	Follows fixed maths rules	**NOT AI**
Siri / Alexa	Understands speech using ML	**AI**
Basic Alarm Clock	Simple timer mechanism	**NOT AI**
Face Unlock	Facial recognition AI	**AI**
Netflix Recommendations	Personalisation algorithm	**AI**
Traffic Lights	Usually timer-based	**USUALLY NOT**
Google Search	AI ranks results	**AI**
Toaster	Heating element + timer	**NOT AI**
Autocorrect	Language prediction model	**AI**
Game NPCs	Adaptive behaviour	**AI**
Digital Clock	Displays time only	**NOT AI**
Google Maps	AI predicts traffic	**AI**
Microwave	Timer-based heating	**NOT AI**
Spam Filter	Learns spam patterns	**AI**
TV Remote	Infrared signal sender	**NOT AI**
YouTube Suggestions	Recommendation algorithm	**AI**
Light Switch	Simple circuit	**NOT AI**
Fitbit Health Insights	ML analyses health data	**AI**
Amazon “People Also Bought”	Collaborative filtering	**AI**
Nest Thermostat	Learns your schedule	**AI**

Printable: 3-2-1 Exit Ticket

Print one per student. Cut along dotted lines if printing multiple per page.

EXIT TICKET | Lesson 1: What is AI?

Name: _____ Date: _____

*** 3 things I learned about AI today:**

1. _____

2. _____

3. _____

2 examples of AI I use in my daily life:

1. _____

2. _____

? 1 question I still have about AI:

_____

My definition of AI in my own words:

_____

_____

Post-Lesson Teacher Notes

Complete after teaching. Use to inform planning for Lesson 2.

What went well?

What would I change next time?

Common misconceptions that emerged:

Students who need additional support in Lesson 2:

Most interesting student question from exit tickets:

Additional Resources for Teachers:

- BBC Bitesize: Introduction to AI: bbc.co.uk/bitesize/topics/zf2f9j6
- CS Unplugged: csunplugged.org (hands-on computing activities)
- AI4K12 Initiative: ai4k12.org (US framework, excellent resources)
- Google’s Teachable Machine: teachablemachine.withgoogle.com
- Elements of AI (free online course): elementsofai.com