GR4AI

Ages 7–12

Get Ready For AI

An online book about AI for kids aged 7–12



15 short chapters with games and quizzes. Find out how AI works, one idea at a time.

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Free online book from gr4ai.org



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Meet the gang

Each of these eleven friends shows you their own topic!



Katerina

Age 9.5, loves experiments, maths & making stuff!

"I want AI to help me create a robot that will be my friendly lab assistant for my experiments."



Rebecca

Age 10, loves drawing & music

"Can an AI help me write a song that still sounds like me?"



Anish

Age 7.5, maths whiz & cricket fan

"If an AI watched every cricket match ever, could it learn to bowl the perfect ball?"



Ronan

Age 11, nature lover & explorer

"I'd love an AI that can tell me which bird is singing in the forest."



Bembe

Age 10, football star & inventor

"I want to invent a robot goalkeeper, but one I can still beat!"



Fleur

Age 9, language lover & dancer

"I want an AI that helps me say hello to all my friends in their own language."



Ling

Age 12, science geek & reader

"Before I believe an AI, I check its answer in a real book."



Nallah

Age 11, chef & storyteller

"I'd ask an AI to invent a new recipe, and then I'd taste it myself to see if it's really good!"



Nicola

Age 13, guitar player & street-art fan

"I'd ask an AI to find the chords to any song, but I'll always play it myself."



Tilly

Age 7, collects old coins

"Can AI help me recognise the coins where the letters are not legible? It will help me with organising my coin collection!"



Robert

Age 12, gamer

"I want AI to help create more difficult platforms in my games so I learn new tricks."

CHAPTER 1

01 Moving from the physical environment to the digital world

Play online

Before we explain what Artificial Intelligence (also known as AI) is, we need to understand how it is related to our everyday world.

Our everyday world is also called the physical environment, where we live, breathe, eat, learn and play. Artificial Intelligence works in the digital world.

Let's see how these two are different!

🌍 Physical world	🤖 Digital world
Information: sharing of ideas, thoughts and knowledge using speech, drawings, singing	**Data**: sharing of ideas, thoughts and knowledge using electronic files
Brain: a human processor of ideas, thoughts and knowledge to help us understand the physical world and create new knowledge	**Computer**: a digital processor of data that helps us work with big, tricky numbers
Sentences/Words/Numbers: the way of information sharing in the physical world	**Code/Numbers**: the way of data sharing in the digital world
Human Intelligence: the human ability to learn, understand and innovate	**Artificial Intelligence**: a human-made ability to learn from data, find patterns and help create new things



Hi, my name is Katerina.

Where do we live, eat, learn and play?

✏️ **Tick the answer you think is right.**

- ☐ **In the digital world**
- ☐ **In the physical environment**
- ☐ **Only inside computers**

Answer on page 52

✏️ **My notes: what did I learn in this chapter? Write or draw it here.**

02

CHAPTER 2

What is AI?

Play online



Hi, my name is Rebecca.

AI stands for Artificial Intelligence. It means making computers that can learn and solve some problems, in a different way from us!

🤔 So what IS Artificial Intelligence?

AI is a type of computer programme that can learn from information (we call it DATA), spot patterns, make decisions, and get better with more training, without being told every single step to follow. It is not a real brain: think of it as a pattern-finder made of maths and computer code!

🧠 Human Brain

- Learns from **EXPERIENCE**
- Recognises faces
- Understands language
- Understands what you really mean
- Makes decisions
- Gets tired & needs sleep

💻 AI Computer

- Learns from DATA
- Recognises faces too!
- Works with language, in its own way
- Can miss what you really mean
- Makes some choices much faster
- Never sleeps, but needs electricity!

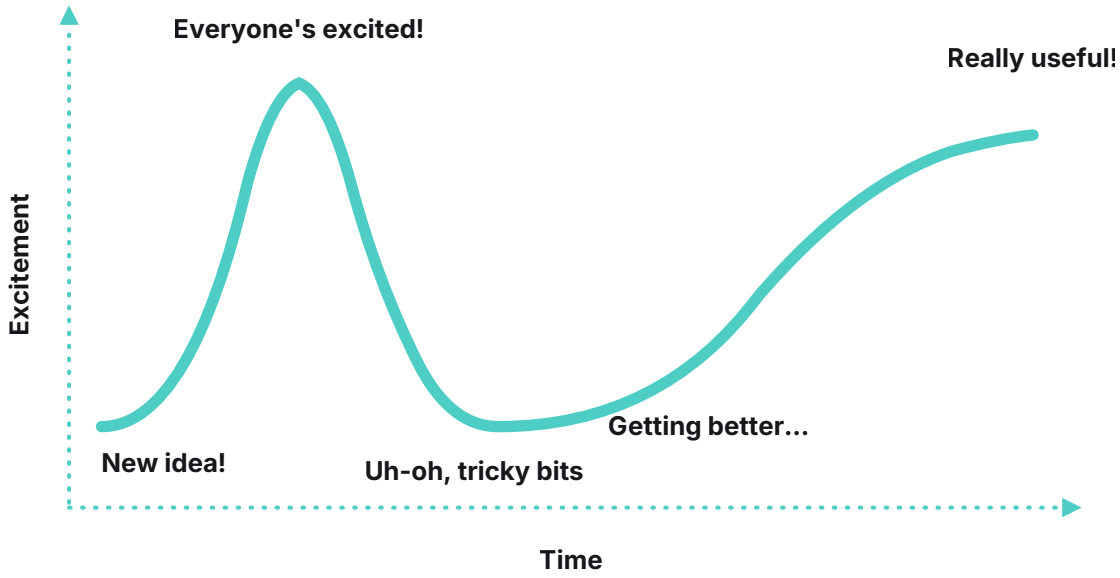
📈 How AI Learns

1. 📊 Collect Data
2. 🏷️ Label Data
3. 🏋️ Train AI Model
4. 📝 Test AI Model
5. 🚀 Deploy!
6. 🔄 Improve

💡 Fun fact!

The word "Artificial" means "made by humans" and "Intelligence" means "the ability to learn and understand." Together = smart tools made by people, to help us learn and understand better!

📊 AI's journey wasn't straight!



The "Gartner Hype Cycle" shows how new tech goes through peaks of excitement, then doubt, and then the point where it becomes truly useful, solving real problems and doing good for people. AI has gone up and down this curve more than once! Some AI is really useful today. Other AI is still on the bumpy part. Look at the curve above. Can you find the bit where everyone gets excited?

CHAPTER 3

03 How AI Actually Learns

Play online



Hi, my name is Tilly.

Imagine teaching a toddler to recognise a cat. You show them LOTS of cats.

AI also learns from lots of examples. But it does not understand things like a child does: it finds patterns. This is called MACHINE LEARNING.

📊 1. Collect Data

- Millions of examples (photos, words, numbers)

🏷️ 2. Label Data

- Humans mark what each example IS

🏋️ 3. Train AI Model

- AI finds patterns in all the examples

🧪 4. Test AI Model

- Try it on NEW data it hasn't seen YET

🚀 5. Deploy!

- Release it for real-world use

🔄 6. Improve

- Fix mistakes, retrain and improve

🧪 Experiment: train a pretend AI

AI learns from examples. If the examples are one-sided, it can learn the wrong clue. That's why people test it on NEW data and keep improving it.

3 Ways AI Learns:

👩‍🏫 Supervised Learning

- Teacher shows examples and correct answers.
- Like flashcards!
- **Example:** photos labelled “cat” or “dog”, until the AI can tell them apart.

🔍 Unsupervised Learning

- AI finds patterns without being told what to look for.
- Like sorting a box of building bricks by colour, without anyone telling you how!
- **Example:** a music app notices which songs people often play together.

🎮 Reinforcement Learning

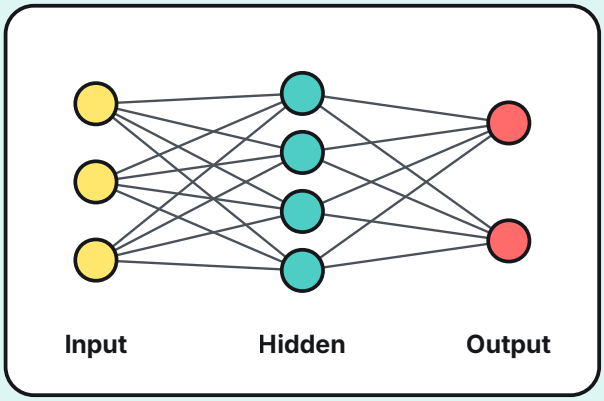
- AI tries things, gets rewarded for good moves.
- Like levelling up in a video game!
- **Example:** a robot learns to walk by trying again and again, and gets points when it doesn’t fall.

🧠 Neural Networks: How Deep Learning Works

Your brain has billions of connected neurons that help you learn. Artificial neural networks are only very loosely inspired by this. They are made of artificial neurons connected in layers, and they learn from the information we give them.



This is how the brain works to transfer information. Brain cells send tiny electric signals to their neighbours, so messages can zoom around!



This is how AI works to process data. More layers = 'DEEP LEARNING', a kind of AI that is used a lot today!

INPUT LAYER → HIDDEN LAYERS → OUTPUT LAYER



Tilly again. Quick question for you!

In supervised learning, how does the AI learn?

✏️ **Tick the answer you think is right.**

- [ ] It tries things and gets a reward for good moves
- [ ] It finds patterns without being told what to look for
- [ ] A teacher shows it examples and the correct answers

Answer on page 52

✏️ **My notes: what did I learn in this chapter? Write or draw it here.**

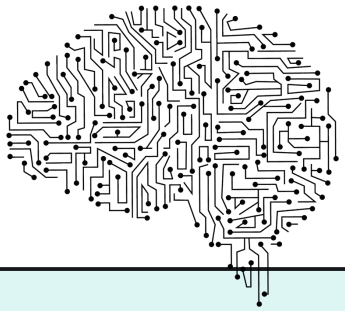
04

CHAPTER 4

How computers work

Play online

Artificial intelligence is a type of intelligence created by humans in the digital world to help automate tasks in the physical environment.





Hi, my name is Robert.

Before AI, let's understand computers! A computer has HARDWARE (the physical parts) and SOFTWARE (the programmes).

🔧 Hardware

- CPU: the brain
- RAM: short memory
- Storage: long memory
- Screen, keyboard, mouse, speakers

💾 Software

- Operating system (Windows / Mac / Linux)
- Apps & programmes
- The CODE that tells hardware what to do

🔢 Binary & Bits

- Computers store all data as 0s and 1s
- 1 bit = one 0 or 1
- 8 bits = 1 byte
- Your photo = millions of bits!

💡 Experiment: be the computer

1 bit = one 0 or 1, and 8 bits = 1 byte. Your photo = millions of bits!

How we talk to computers:

Your words, pictures, sounds → **Numbers (data)** → **Binary (0s & 1s)** → **Electricity On/Off**

Each arrow means **"gets turned into"**. What you type, say or show gets turned into numbers, the numbers into 0s and 1s, and those into tiny bursts of electricity: on, off, on, off.

🙈 AI makes mistakes too!

- 💭 **Hallucinations** AI sometimes makes up facts that sound true but aren't! Always double-check.
- 🧮 **Maths errors** AI can miscalculate even simple sums. Always check its sums!
- 🐶 **Image confusion** Image AI can mix up chihuahuas and blueberry muffins! (Yes, really!)
- ✏️ **Spelling slip-ups** AI can spell words incorrectly. Check everything!



Chihuahua or muffin? Can you tell which is which?
Photo: Karen Zack (@teenybiscuit)



Robert again. Here's a fun one!

Which of these is SOFTWARE?

✏️ **Tick the answer you think is right.**

- ☐ An app
- ☐ The CPU
- ☐ The keyboard

Answer on page 52

✏️ **My notes: what did I learn in this chapter? Write or draw it here.**

05

CHAPTER 5

What can AI do?

Play online

What can AI do?

- ☑ Do big calculations very quickly
- ☑ Find patterns in data
- ☑ Recognise faces from a crowd
- ☑ Help forecast the weather
- ☑ Help doctors spot illness in x-rays and MRI scans
- ☑ Design beautiful drawings very quickly
- ☑ Help scientists search for new medicines
- ☑ Support space exploration
- ☑ Find shortcuts for travel

What can AI not do?

- ☒ Decide on its own what happens to a patient
- ☒ Stop a war
- ☒ Know which new idea is really good
- ☒ Really feel happy or sad
- ☒ Be a friend to someone
- ☒ Do an operation without a doctor in charge
- ☒ Hug someone or hold their hand
- ☒ Raise a baby
- ☒ Decide for us what is right and wrong
- ☒ Really mean it when it says sorry

AI can help kids by:

- Fixing spellings
- Making reading easier
- Helping doctors find illnesses sooner
- Writing stories
- Making movies
- Creating new toys
- Developing new ideas
- Helping make the internet safer



Hi, I'm Ling. This one's tricky!

Which of these is on the list of things AI can NOT do?

✏️ **Tick the answer you think is right.**

- [ ] **Find patterns in data**
- [ ] **Be a friend to someone**
- [ ] **Find shortcuts for travel**

Answer on page 53

Show Us Your AI!

Play online

What do YOU imagine AI looks like? Draw it and take a photo, then share it with kids around the world below!

1

Create it. Draw your idea of AI on paper. Want to try an AI image generator? Only together with a grown-up: most of them are for ages 13 and up.

2

Snap it. Take a clear photo of your drawing, or save your AI-generated image.

3

Share it. Ask a grown-up to upload it for you, with your first name, age and country.

Scan with a phone or tablet to open it online

padlet.com/gr4ai/whatdoesailookliketoyou

A note for parents & guardians

Please submit this on your child's behalf. We only ever ask for a first name, age and country, never a last name, email or exact location. Every picture is reviewed by a real person before it appears publicly, so nothing goes live automatically.

Please also make sure the photo shows nothing that could identify your child: no faces, no names written on the drawing, no school uniform, no house or street in the background.

Want a picture removed? Just let us know.

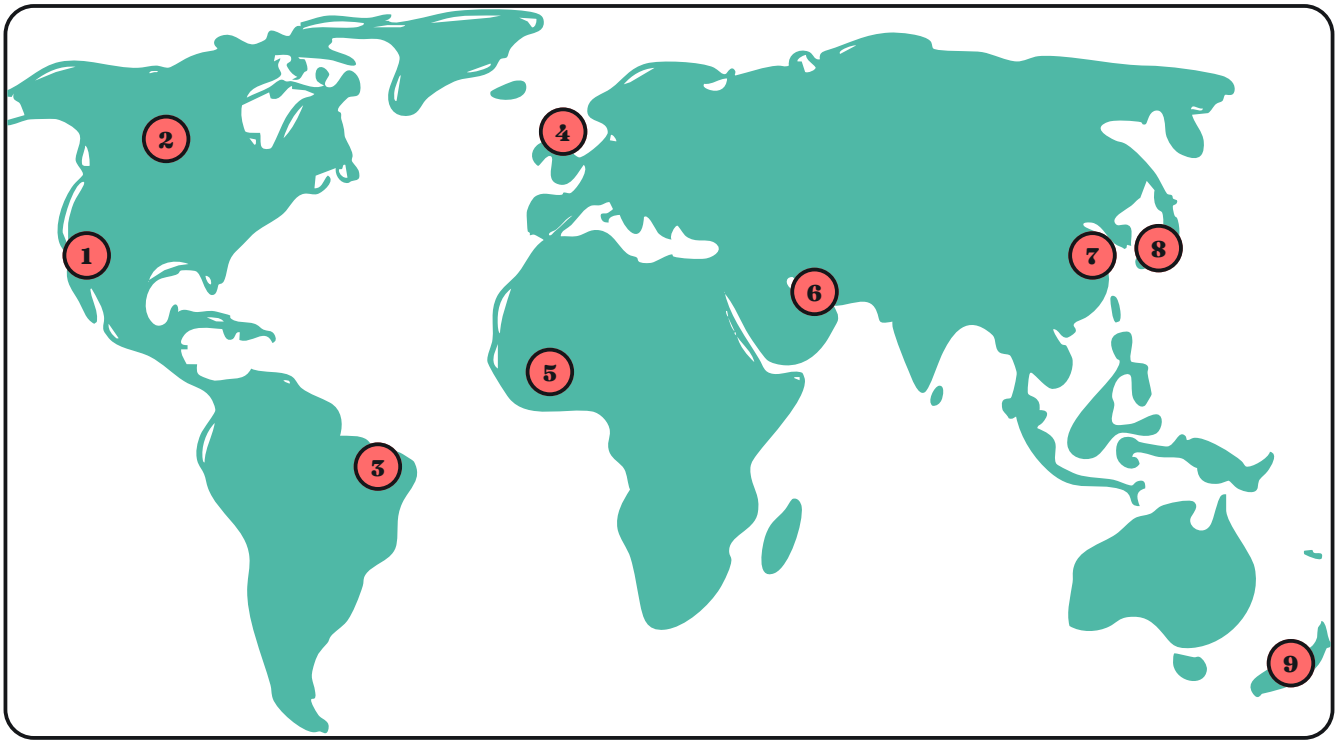
Draw your AI here!

CHAPTER 6

06 Real AI Jobs Around the World!

Play online

Meet 9 experts. They are made up, but their jobs are real! Tap a pin to meet them.



1 

Professor Chris · USA · AI Safety

Tests AI systems to find mistakes and unfair answers before people start using them.

2 

Prof. Callaghan · Canada · AI & Medicine

Trains AI to read brain scans and spot early signs of Alzheimer's disease.

3 

Prof. Alfredo · Brazil · AI & Environment

Uses AI and satellite pictures to watch over the Amazon rainforest and protect wildlife.

4



Prof. Crooke · UK · AI Ethics

Works to make AI systems fair for everyone.

5



Prof. Bernard · Ghana · AI in Education

Helps teachers use AI to personalise lessons for more children in Africa.

6



Prof. Merab · UAE · AI & Language

Builds AI translation tools so people who speak rare languages aren't left behind.

7



Prof. Xing · China (Beijing) · AI & Finance

Develops new AI tools to make online payments safe and effective.

8



Prof. Shy Jeans · Japan · AI Art & Culture

Explores how AI changes creativity and what it means to make art in the future.

9



Prof. Goldilocks · New Zealand · AI Chemistry

Uses AI to help design new medicines faster.

✏️ **My notes: what did I learn in this chapter? Write or draw it here.**

07

CHAPTER 7

AI in Daily Life

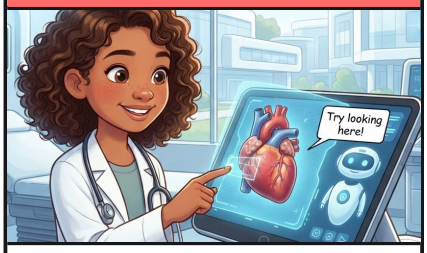
Play online



Hi, it's Ronan!

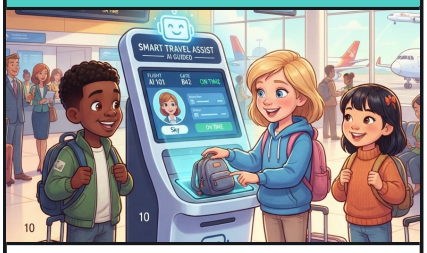
AI is in LOTS of places around you! Let's explore where you can find it in real life.

Healthcare



Helps doctors spot cancer in scans, helps scientists look for new medicines, warns early about flu outbreaks, helps doctors with paperwork.

Transport



Self-driving cars in some cities, smarter traffic lights, route planning, train safety checks.

Entertainment



Netflix recommends shows, Spotify finds your songs, video game opponents, movie special effects.

Smartphones



Face unlock on phones, voice assistants (Siri!), smart auto-correct, photo improvements.

Weather



Better weather forecasts, hurricane tracking, climate monitoring, early flood warnings.

Food

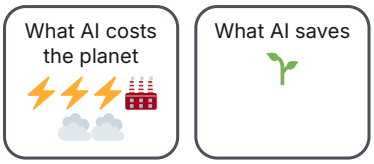


Robot pizza makers, food waste reduction, recipe suggestions, crop monitoring.

💡 Fun fact!

In 2025, the big computer buildings built mainly for AI used more electricity than the whole of Sweden! Teaching one big AI (called Llama 3.1) made about 8,900 tonnes of CO_2. A car would have to drive around the Earth about 900 times to make that much! That's why scientists are working on "green AI"!

A huge AI, always running



A huge AI that runs all the time uses lots of energy and water, and can make lots of CO_2 and heat. That is hard on our planet, so the scale tips down on this side.

Green AI



Green AI uses smaller AI models and cleaner electricity, so the cost on the scale gets much lighter. Now it is balanced.

AI helping nature



AI can also help nature! It can track forests, cut energy waste and make solar panels smarter. When it does more good than harm, the scale tips the other way!

🙋 Your turn: which AI do you use?

Tick every kind of AI you have used.

- ☐ **🗣️ Voice assistant**
  You talk to a phone or speaker and it answers.
- ☐ **💬 Chatbot**
  You type a question and it writes back.
- ☐ **🎬 Video and music picks**
  The app chooses what to watch or hear next.
- ☐ **📷 Photo and face tricks**
  Face unlock, funny filters, sharper photos.
- ☐ **🌍 Translator**
  It turns words into another language.
- ☐ **🎮 Game opponents**
  Characters in a game that react to how you play.
- ☐ **✏️ Learning apps**
  An app that picks your next exercise.
- ☐ **🎨 Picture makers**
  You describe a picture and AI draws it.
- ☐ **🤔 None of these yet**
  That's fine too!

CHAPTER 8

08 AI in Fashion, Space & More!

Play online



Hi, Fleur here!

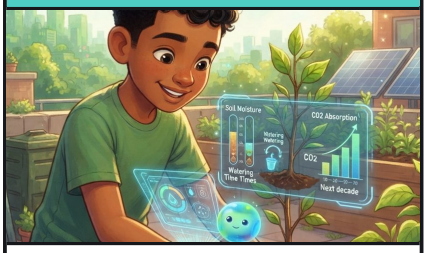
AI even designs clothes and helps us explore space! The list of what it can do keeps growing.

Fashion



- Designs new clothes
- Recommends your style
- Virtual fitting rooms
- Predicts next trends

Environment



- Tracks deforestation
- Monitors wildlife
- Helps cut energy waste
- Helps predict wildfire risk

Art & Music



- Creates paintings
- Composes music
- Writes stories
- Generates videos

Education



- Personalised lessons
- Instant feedback
- Language translation
- Answers some of your questions
- Teachers are still the best ones to help you learn and grow

Space



- Helps find new planets
- Guides Mars rovers
- Analyses star data
- Plans rocket routes

Defence



- Spots cyber attacks
- Monitors borders
- Warns about dangers early
- Helps keep us safe
- But only people can make peace



Fleur again. Did you read all the cards?

AI can give personalised lessons. Who are still the best ones to help you learn and grow?

✏️ **Tick the answer you think is right.**

- [ ] AI tutors
- [ ] Search engines
- [ ] Teachers

Answer on page 53

09

CHAPTER 9

The Good Side of AI

Play online



This is Nicola. Are you enjoying it so far?

AI can do so many AMAZING things to help people and make the world a better place. Let me show you some!

❤️ Helps Save Lives

- Helps spot cancer early
- Helps find rare diseases sooner
- Speeds up medicine research
- Helps watch over patients day and night

🤝 Helps Many People

- Reads text aloud for blind people
- Turns talking into written words
- Helps speech difficulties
- Makes tech accessible

🌍 Helps the Planet

- Tracks climate change
- Makes solar panels smarter
- Reduces food waste
- Plans eco-friendly routes

🎓 Better Learning

- Explains in YOUR way
- Gives instant feedback
- Translates many languages
- Works at your own pace

🔬 Science Booster

- Predicts the shapes of proteins
- Models weather patterns
- Analyses gene data
- Accelerates research

⏱ Saves Time

- Does repetitive tasks
- Answers questions fast
- Organises information
- Frees humans to be creative!



Nicola again. Now a question for you!

How can AI help people who are blind?

✏️ **Tick the answer you think is right.**

- [ ] It reads text aloud for them
- [ ] It turns talking into written words for them
- [ ] It helps find rare diseases sooner

Answer on page 53

✏️ **My notes: what did I learn in this chapter? Write or draw it here.**

10

CHAPTER 10

The Tricky Side of AI

Play online



Back to me, Katerina!

AI is powerful, but that means we need to be careful! Here are some real risks we need to think about and talk about.

Deepfakes

- AI can make fake videos
- Real people saying fake things
- Can spread wrong information
- ALWAYS check sources!

Privacy

- Some AI learns from what YOU share
- Facial recognition in public
- Apps may track what you do online
- Think before you share!

Unfair AI

- Trained on biased data
- Can treat people unfairly
- May ignore some groups
- Fairness must be designed in

Job Changes

- Some jobs may disappear
- New jobs may appear too!
- Learning skills still matters
- Humans + AI can work together

Fake News

- AI can write false things that sound true
- Fake photos and videos
- Hard to spot sometimes
- Even kids' voices in a podcast can be made by AI
- Check multiple sources!

Over-Reliance

- It's easy to let AI do all the work
- We might stop thinking
- Always use your brain too!
- Try it yourself first, then ask AI, then compare!
- AI helps, YOU decide!

🤔 What would you do?

Pause before you answer, keep private things private, check another way, and talk to a grown-up you trust.



Katerina again.

What can a deepfake show?

✏️ **Tick the answer you think is right.**

- ☐ A real person filmed live on camera
- ☐ A cartoon everyone knows is made up
- ☐ A real person saying things they never said

Answer on page **53**

✏️ **My notes: what did I learn in this chapter? Write or draw it here.**

CHAPTER 11

11 Responsible AI: Using It Wisely

Play online



Hi, Nicola here!

Ethics means thinking about what is RIGHT and FAIR. Good AI must be fair, safe, honest and helpful to EVERYONE, not just some people!

The 5 Principles of Responsible AI

⚖️ Fairness

AI should treat every person fairly, whatever their skin colour, gender, age or where they come from.

🔍 Transparency

We should be able to find out HOW AI makes its decisions. Experts are still working on it!

🛡️ Safety

AI must not hurt people. It needs to be tested carefully before being used in real life.

🔒 Privacy

AI should protect your personal data and not share your information without permission.

👷 Human Control

Humans must ALWAYS be in charge. AI is a tool. People should make the final important decisions.

💻 Staying safe when using AI online

Never share your full name, address, school or phone number with ANY AI chatbot.

Don't upload photos of yourself or your friends to AI websites without a parent's permission.

If AI says something that feels wrong or scary, tell a trusted adult immediately.

Remember: AI is NOT a friend, it's a tool. It doesn't have feelings or truly care about you.



Nicola again. One more question!

What does the principle of Transparency mean?

✏️ **Tick the answer you think is right.**

- ☐ **We should be able to find out how AI decides**
- ☐ **AI keeps your personal data private**
- ☐ **AI treats every person fairly**

Answer on page 53

CHAPTER 12

12 AI Careers: Your Future!

Play online



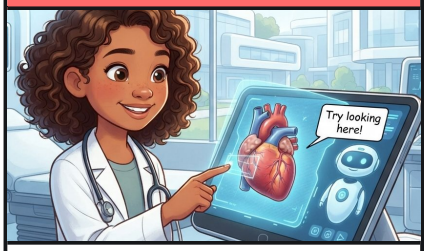
My name is Nallah, and I want to talk to you about the work you might do one day!

A lot of grown-ups are worried that AI will take their jobs away.

Jobs will change, but the problems stay. So ask yourself: which problem would I love to solve? Helping sick people? Protecting animals? Saving our planet?

Some jobs of the future haven't even been invented yet! Many of them will probably involve AI. Here are some exciting careers waiting for YOU!

AI Doctor



Uses AI to help spot diseases in scans and choose the best treatment for each patient.

Study: Medicine + Computer Science

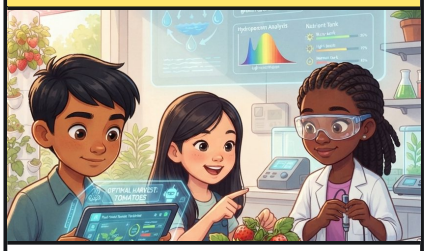
AI Game Designer



Creates intelligent characters and worlds in video games that learn and adapt to players.

Study: Computing + Art + Maths

AI Climate Scientist



Builds AI models to predict climate change and find solutions to save our planet.

Study: Science + Geography + Maths

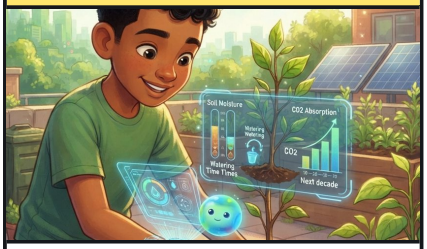
AI Ethics Lawyer



Makes sure AI is used fairly and legally. Fights for people's rights in the digital world.

Study: Law + Technology + Ethics

AI Food Engineer



Designs AI systems that create new foods, reduce waste and feed more people sustainably.

Study: Biology + Food Science + Computing

AI Teacher



Creates personalised AI learning tools that help every student learn in their own best way.

Study: Education + Psychology + Computing

AI Artist



Combines human creativity with AI tools to make breathtaking art, music and stories.

Study: Art + Creative Computing

AI Safety Engineer



Tests AI systems to find problems before they cause harm. The guardians of safe AI.

Study: Engineering + Computing + Ethics

AI Banker



Builds AI that spots a stolen card in a split second and keeps people's money safe.

Study: Maths + Economics + Computer Science

✏️ **My notes: what did I learn in this chapter? Write or draw it here.**

13

CHAPTER 13

What Should I Study?

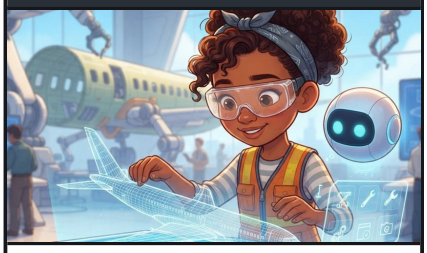
Play online



Hi, it's Katerina again!

You don't have to decide NOW, but it's never too early to start building brilliant skills! Here's what will help you work with AI.

Maths



Algebra & statistics, problem solving, logical thinking: the language of AI.

Computing



Basic coding (Scratch!), how computers work, data and databases, app & game making.

Science



How the natural world works, experiments & evidence, biology for AI doctors, physics for engineers.

Languages



Communication skills, AI translation tools, writing clearly, understanding culture.

Art & Design



Creative thinking, visual problem solving, UI/UX design, AI art and music.

Humanities



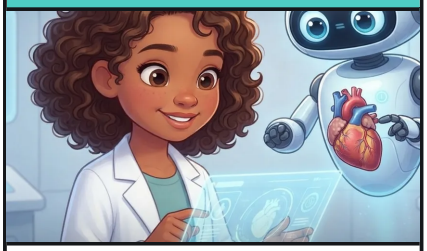
Ethics and philosophy, history of technology, geography for climate AI, understanding society.

Economics



How money, work and prices fit together: why things cost what they cost, how people and countries trade, and the maths behind it.

Psychology



Why people do what they do: motivation, how we make decisions, how crowds behave, and how to help in a crisis.



Katerina again! Here's a quick one!

What did I say about choosing what to study?

✏️ **Tick the answer you think is right.**

- ☐ **Pick one subject now and stick to it**
- ☐ **You don't have to decide now, but start building skills**
- ☐ **Only coding matters, nothing else**

Answer on page 54

✏️ **My notes: what did I learn in this chapter? Write or draw it here.**

14

CHAPTER 14

The Future of AI

Play online



Hi, I'm Anish! Let's look into the future!

The future with AI could be absolutely incredible, but only if WE make good choices now about how to use it responsibly.

Here are some ideas people are working on. Not all of them will come true!

♻️ Ecology

- Sustainable ways to make and buy things
- Energy-efficient data centres
- Reforestation where it is needed
- Better recycling

✈️ Aviation

- AI co-pilots for safer flights
- Self-landing planes
- Fuel-efficient routes
- Better turbulence warnings

🌡️ Climate

- Faster climate predictions
- AI that helps pull CO_2 out of the air
- Smart power grids
- Predicting extreme weather

🩺 Disease

- Pandemic early warnings
- Cancer treatments that fit each patient
- Faster vaccine research
- Apps that help people find someone to talk to

👗 Fashion

- Zero-waste clothing design
- Virtual fashion shows
- AI stylists for everyone
- Sustainable fabrics

🎨 Art & Music

- People and AI making art together
- AI symphonies & paintings
- Old art kept safe for hundreds of years
- New art forms yet to exist

🍲 Food

- Grown in vertical farms
- Personalised nutrition
- Meat grown in a lab instead of on a farm
- AI chefs & recipes

🔮 Today or maybe one day?

Ideas for the future are possibilities, not promises. Whether they come true depends on people: “only if WE make good choices now”.



Anish again. Your turn!

What did I say a great future with AI depends on?

✏️ **Tick the answer you think is right.**

- [ ] How fast computers get
- [ ] How many robots we build
- [ ] Us making good choices now

Answer on page **54**

CHAPTER 15

15 Our Responsibility: Keeping AI Good

Play online



Hi, I'm Bembe!

AI doesn't have a heart or conscience. WE do. That means humans must always be in charge of making sure AI is used for good.

What Makes a Responsible AI User?

🧠 Think Critically

Don't believe everything AI tells you. Always ask: is this true? Is this fair?

📢 Speak Up

If you see AI being used unfairly or dangerously, tell a trusted adult. Your voice matters!

📚 Keep Learning

AI is always changing. Curious, always-learning people will lead the AI future.

🤝 Think of Others

Does this AI help everyone equally? What about people with disabilities, or without computers?

⚖️ Know Your Rights

In many places, you have the right to know when AI is used on you. You can always ask questions about it!

🔍 Understanding AI mistakes is part of being responsible

AI can be wrong, biased, or even dangerous if not checked by humans. When you spot an AI mistake and tell someone, you help make it better! Good AI systems have HUMANS checking the AI's work, especially when it really matters. This is called "Human-in-the-Loop", and that human could be YOU one day!



Bembe again. Last one!

What does “Human-in-the-Loop” mean?

✏️ **Tick the answer you think is right.**

- ☐ **Humans check the AI's work**
- ☐ **AI checks the humans' work**
- ☐ **AI works with nobody watching**

Answer on page 54

✏️ **My notes: what did I learn in this chapter? Write or draw it here.**



AI is a tool. A brilliant one, but a tool. You are the one who decides what it is for.

Final Challenge

Play online

Answer 10 quick questions to see how much you've learned!

Choose the 10 questions for your age. Want a challenge? Try the others too!

✏️ **Tick the answer you think is right.**

Questions for ages 7 to 8

1 **What does AI stand for?**

- [ ] Automatic Information
- [ ] Advanced Invention
- [ ] Artificial Intelligence

2 **Where does AI work?**

- [ ] In the digital world
- [ ] Inside a real brain
- [ ] Only in the garden

3 **What do we call the information an AI learns from?**

- [ ] Data
- [ ] Pixels
- [ ] Wires

4 **Which of these is hardware, a part you can touch?**

- [ ] An app
- [ ] The keyboard
- [ ] A computer game

5 **Which of these uses AI?**

- [ ] A pencil made of wood
- [ ] A book made of paper
- [ ] Face unlock on a phone

6 **Which of these can AI NOT do?**

- [ ] Help forecast the weather
- [ ] Hug someone
- [ ] Find patterns in data

7 **What should you NEVER tell an AI chatbot?**

- [ ] Which colour and which animal you like
- [ ] Your full name and address
- [ ] Your favourite meal

8 **AI sometimes makes up facts. What should you do?**

- [ ] Always double-check
- [ ] Believe it anyway
- [ ] Never ask anything again

9 **Who should always be in charge of AI?**

- [ ] Robots
- [ ] The AI itself
- [ ] Humans

10 **An AI says something that feels wrong or scary. What should you do?**

- [ ] Keep it all to myself
- [ ] Tell a grown-up I trust
- [ ] Keep chatting with the AI

Questions for ages 9 to 10

1 How does AI learn, says Tilly?

- [ ] It reads one book and knows everything
- [ ] It finds patterns in lots of examples
- [ ] It understands things exactly like a child does

2 What is it called when an AI makes up something that sounds true but isn't?

- [ ] A glitch in the wires
- [ ] A hallucination
- [ ] A computer virus

3 Why do people test an AI on NEW data it has never seen?

- [ ] To check that it learned the right thing
- [ ] To make the computer run faster
- [ ] To give the AI a little rest

4 How do computers store all their data?

- [ ] As letters and colours
- [ ] As tiny pictures
- [ ] As 0s and 1s

5 In reinforcement learning, how does an AI learn?

- [ ] A teacher shows it the right answers
- [ ] It tries things and gets rewarded for good moves
- [ ] It finds patterns nobody told it to look for

6 **What is a deepfake?**

- [ ] A photo taken deep under the sea
- [ ] A very powerful computer chip
- [ ] A fake video or voice made by AI

7 **Why can an AI treat some people unfairly?**

- [ ] It was trained on biased data
- [ ] It gets tired and grumpy at night
- [ ] It simply does not like some people

8 **How can AI help doctors with x-rays and other scans?**

- [ ] It cooks food in the hospital kitchen
- [ ] It helps them spot signs of illness
- [ ] It decides on its own what happens to a patient

9 **What can happen if you rely on AI too much?**

- [ ] You might stop thinking for yourself
- [ ] You check everything the AI tells you
- [ ] You never use AI at all

10 **Who should always check an AI's work?**

- [ ] Nobody, AI is always right
- [ ] Humans
- [ ] Other AIs, on their own

Questions for ages 11 to 12

1 **A pretend AI learned from pictures where every dog was outside. Now it sees a cat in the garden. What might it guess?**

- [ ] "Dog", because it learned the wrong clue: outside means dog
- [ ] "Cat", because it understands animals just like we do
- [ ] "Cat", because it has seen millions of cats before
- [ ] Nothing, because an AI can only learn from words

2 **A team tests its AI and finds a mistake. What is the best next step?**

- [ ] Release it anyway and let users find the problems
- [ ] Add more varied examples, retrain it and test again
- [ ] Hide the mistake so that nobody gets worried
- [ ] Delete all of the data and give up on the idea

3 **A voice message sounds exactly like your friend and asks you for a secret. What is the smartest move?**

- [ ] Answer, because the voice is proof enough
- [ ] Send the secret, but ask them to delete it
- [ ] Check another way, together with a grown-up
- [ ] Send your address first to test them

4 **An AI chatbot gives you a fact for your school project. What should you do?**

- [ ] Copy it: AI is always right about facts
- [ ] Ask the same AI again: if it repeats it, it's true
- [ ] Change a few words so it looks like your own
- [ ] Check it in a book or another trusted source

5 **An app uses AI to pick players for a school team, and it almost never picks girls. Which principle of responsible AI is broken?**

- [ ] Fairness
- [ ] Transparency
- [ ] Safety
- [ ] Privacy

6 **A hospital AI suggests a treatment for a patient. Who should make the final decision?**

- [ ] The AI, because it has seen more scans
- [ ] The doctor, together with the patient
- [ ] The fastest computer in the hospital
- [ ] Nobody: it should happen automatically

7 **Why are scientists working on "green AI"?**

- [ ] Green screens are easier for AI to read
- [ ] AI only works if it runs on solar power
- [ ] Big AIs use lots of electricity and can make lots of CO_2
- [ ] Plants cannot grow without the help of AI

8 **What is a smart way to use AI for homework?**

- ☐ Let AI do all of it, then hand it in
- ☐ Ask AI first and copy the best bits
- ☐ Never use AI: it is wrong every time
- ☐ Try it yourself first, then ask AI, then compare

9 **What does “deep” mean in deep learning?**

- ☐ The AI thinks especially deep thoughts
- ☐ The neural network has many layers
- ☐ It was trained deep under the sea
- ☐ It has a real brain deep inside it

10 **A music app notices which songs people often play together, without being told what to look for. What kind of learning is this?**

- ☐ Supervised learning
- ☐ Reinforcement learning
- ☐ Unsupervised learning
- ☐ Binary learning

You scored _____ out of 10!

Answer on page 54 · Your certificate 60

Before you go: one tip from each of us!



Katerina

My tip for you

"Be curious like a scientist! Ask AI questions, but test the answers yourself."



Rebecca

My tip for you

"Use AI for ideas, but keep making things with your own hands. Your style is yours!"



Anish

My tip for you

"Practise, practise, practise! AI learns from lots of examples, and so can you."



Ronan

My tip for you

"Go outside and look closely. AI can help protect nature, but only if we care about it first."



Bembe

My tip for you

"Invent something! Start small, try it, fix it, and try again."



Fleur

My tip for you

"Say hello to someone new in their language. AI can help, but a smile works everywhere."



Ling

My tip for you

"Never believe the first answer. Check it in a book or ask a grown-up."



Nallah

My tip for you

"Taste before you trust! When AI suggests something, think about it before you use it."



Nicola

My tip for you

"Keep your private things private: your name, address and photos belong to you."



Tilly

My tip for you

"Collect what you learn, like I collect coins. Every new word from this online book is a treasure!"



Robert

My tip for you

"Take breaks from screens. The best level is still the real world!"



Glossary

Handy explanations for the tricky words you've met on this journey.

Accessible
Made so that everybody can use it, including people who cannot see, hear or move the way most people do.

Alzheimer's disease
An illness that slowly damages the brain, usually in older people, so that remembering and thinking get harder. AI can help doctors spot it earlier.

Artificial Intelligence (AI)
Computer programmes made by people that can learn from data, find patterns and help solve problems. Very fast, but not a real brain.

Autocorrect
The thing on a phone or computer that changes what you typed into what it thinks you meant. That is an AI guessing, and it guesses wrong often enough to be funny.

Bias
When AI treats some people unfairly because of things like their gender, their ethnicity or race (where their family comes from and the colour of their skin), their religion or their ability (a disability). Often it is because the examples it learned from were unfair too. The computer does not notice by itself, so people need to check.

Binary
The computer's own alphabet, made of just two signs: 0 and 1. Every photo, song and message is stored as a very long line of them.

Bit and byte
A bit is the smallest piece of computer data: one 0 or one 1. Eight bits together make one byte, which is just enough to store one letter, like A.

Carbon dioxide (CO_2)
A gas that goes into the air whenever we burn fuel: in cars, planes, power stations. Too much of it warms the whole planet up.

Chatbot
A computer programme you can chat with: you type or say something, and it writes or talks back. Many chatbots use AI to guess good words for an answer, so they can sound clever and still be wrong.

Climate change
The Earth getting warmer, year after year, mostly because we burn coal, oil and gas. It brings more heatwaves, floods and stronger storms. AI helps scientists measure it and predict what comes next.

Code
Instructions written in a special language that computers understand. They tell the computer exactly what to do, step by step. A set of code that does one job is called a programme.

CPU
The “brain” chip of a computer. It follows instructions one after another, very, very fast, so everything you ask the computer to do gets done.

Creativity
Making something that was not there before: a story, a tune, a way out of a problem. AI can rearrange what it has seen; deciding what is worth making is yours.

Curiosity
Wanting to know how something works, and asking until you do. It is the one thing every good scientist, engineer and artist has in common.

Cyber attack
When someone tries to break into computers to steal, damage or block what is on them. AI can help spot the attempt early.

Data
All the information an AI learns from: photos, words, numbers, sounds. AI learns from data and works with it. Good data helps make a good AI; messy or unfair data can make a messy or unfair one.

Data centre
A huge building full of computers that run day and night. Big AIs learn and work in data centres, which use lots of electricity, and water to keep them cool.

Deep learning
Machine learning with a neural network that has lots of layers. “Deep” means many layers, not deep thoughts. Many of today’s AIs, like the ones that recognise faces or voices, learn this way.

Deepfake
A fake video, photo or voice recording made by AI that looks or sounds real, but isn't. Always double-check!

Deforestation
Cutting down a forest faster than it can grow back. Satellites and AI can see it happening from space, almost as it happens.

Diagnosis
Working out which illness someone actually has. A machine can spot something odd in a picture; naming the illness and deciding what to do is a doctor’s job.

Disability
Something about a person’s body or mind that makes parts of the world harder to use, like not being able to see a screen, hear a voice, or climb stairs. Good design fixes the world, not the person.

Eco-friendly
Kind to the planet: using less energy, making less rubbish, doing less harm to animals, plants and air.

Ethics
Thinking carefully about what is right and wrong, and what is fair. For AI, ethics asks questions like: Is this AI fair to everyone? Who could it hurt?

Fake News
False information made to look true, sometimes written or spread by AI. That's why checking your sources matters!

Flu outbreak
When a lot of people in the same place catch flu at the same time. Spotting one early gives hospitals time to get ready.

Gene
A tiny instruction inside your body that helps decide things like your eye colour. You have about 20,000 different genes, and for most of them you get one copy from each parent.

Green AI
Building and running AI so that it uses as little energy as possible: smaller AI models, cleaner electricity, and machines that are not left running for nothing.

Hallucination
When AI makes something up and says it as if it were true. It is not lying on purpose. It is guessing what sounds right. Check anything that matters.

Hardware
The parts of a computer you can actually touch: the screen, the keyboard, the chips inside.

Humanities
Subjects like history, ethics and philosophy that help us understand people, society and right from wrong, skills AI still can't fully replace.

Innovate
To make something that did not exist before, or find a much better way of doing something. Inventing, improving, trying the idea nobody has tried yet.

Labelling data
Adding the right answer to each example so an AI can learn from it, like writing “cat” on a photo of a cat. People often do this by hand. If the labels are wrong, the AI learns mistakes.

Machine Learning
The way AI learns. Nobody writes the rules down: the computer looks at thousands of examples and works the rules out for itself.

Magnetic Resonance Imaging (MRI)
A medical scan that takes pictures inside your body. AI can help doctors read some MRIs faster and spot diseases earlier.

AI model
What an AI has become after training: the part that does the answering, spotting or predicting. Like a recipe someone has learnt by heart.

Monitor
To keep watching something so you notice the moment it changes. A machine that monitors a patient checks their heartbeat and breathing all night without getting tired.

Neural network
An AI made of lots of tiny maths parts, called artificial neurons, joined together in layers. Each part passes a number on to the next one. The idea came from the brain, but it works very differently.

Over-Reliance
Depending on AI so much that you stop thinking for yourself. Always use your own brain too!

Pandemic
When an illness spreads to lots of countries around the world at the same time, like the coronavirus did in 2020. AI can help spot the first signs early.

Pattern
Something that keeps coming back: the same shape, the same word, the same colour. Finding patterns is the thing AI is best at.

Personalised
Made to fit one person. A personalised lesson goes slower where you find it hard and faster where you don’t.

Power grid
The web of cables that carries electricity from where it is made to every house, school and hospital. A "smart" grid uses AI to send power where it is needed.

Privacy
Your right to keep personal information (like your name, address or photos) safe and only shared with people you trust.

Professionals
People who are trained to do a particular job and are paid for it: a doctor, a pilot, a teacher, an engineer.

Protein
A tiny machine inside every living thing. Proteins build your muscles, carry oxygen and fight germs. AI can now guess their shape, which helps scientists look for new medicines.

RAM
The computer's short-term memory. It holds what you are working on right now, so the computer can reach it quickly. When you switch the computer off, it forgets it all.

Reinforcement learning
A way for AI to learn by trying things out. It gets points for good moves and loses points for bad ones, until it finds what works best. Like levelling up in a game.

Repetitive
The same thing over and over again. People get bored and start making mistakes; a computer does not mind at all.

Satellite
A machine that flies around the Earth, high up in space. Some satellites take pictures of the ground, and AI can spot changes in them, like a forest being cut down.

Scan
A picture of the inside of a body, taken by a machine instead of a camera: an x-ray, an MRI, an ultrasound.

Software
The programmes that tell the hardware what to do. You cannot touch software. It is instructions, written as code.

Solar panel
A flat panel that turns sunlight into electricity. AI helps work out where to put them and when to tilt them at the sun.

Supervised learning
A way for AI to learn from examples that already have the right answer on them, like photos labelled "cat" or "dog". A bit like practising with flashcards.

Surveillance
Watching people to see what they do, with cameras, phones or computers. Watching people in secret can hurt their privacy, so many countries have rules about when it is allowed.

Sustainable
Done in a way that can go on for a very long time without using up the planet: taking only as much as can grow back, and wasting as little as possible.

Transparency
Being open about how something works, so people can see inside it, like looking through a window. With a transparent AI, people can find out how it made a decision.

UI/UX design
Designing how an app or website looks and how it feels to use: where the buttons go, what happens when you tap one, and whether the whole thing makes sense.

Unsupervised learning
A way for AI to learn when nobody gives it the answers. It looks through lots of data and puts things that are alike into groups, all on its own.

Vaccine
A medicine that teaches your body how to fight an illness before you ever catch it. AI helps scientists find new vaccines faster.

Answers

Did you tick the right one? Here are the answers to all the quizzes.
Try each quiz first!

01 Moving from the physical environment to the digital world

Where do we live, eat, learn and play? **page 5**

☑ **In the physical environment**

In the physical environment! That is our everyday world. AI works somewhere else: in the digital world. What AI is exactly, Rebecca explains in chapter 2.

03 How AI Actually Learns

In supervised learning, how does the AI learn? **page 10**

☑ **A teacher shows it examples and the correct answers**

Supervised means someone is guiding it. A teacher shows examples with the right answers, just like flashcards!

04 How computers work

Which of these is SOFTWARE? **page 13**

☑ **An app**

Hardware is the physical parts you can touch, like the CPU and the keyboard. Software is the programmes, and an app is a programme!

05 What can AI do?

Which of these is on the list of things AI can NOT do? **page 15**

☑ **Be a friend to someone**

AI is great at patterns and shortcuts, but it can't be a real friend. Friendship needs real feelings, and only living beings have those.

08 AI in Fashion, Space & More!

AI can give personalised lessons. Who are still the best ones to help you learn and grow? **page 23**

☑ **Teachers**

Teachers! AI can give quick feedback and answer some of your questions, but teachers are still the best ones to help you learn and grow.

09 The Good Side of AI

How can AI help people who are blind? **page 25**

☑ **It reads text aloud for them**

It can read text aloud! If you can't see the words, hearing them helps a lot. Written words on a screen help people who are deaf.

10 The Tricky Side of AI

What can a deepfake show? **page 27**

☑ **A real person saying things they never said**

A deepfake is a fake video where a real person seems to say things they never said. That's why you should always check where a video comes from!

11 Responsible AI: Using It Wisely

What does the principle of Transparency mean? **page 29**

☑ **We should be able to find out how AI decides**

Transparent means you can see through it. For AI, that means we should be able to find out HOW it makes its decisions.

13 What Should I Study?

What did I say about choosing what to study? **page 33**

☑ **You don't have to decide now, but start building skills**

You don't have to decide today! It's never too early to start building brilliant skills, and lots of subjects help, from maths to art.

14 The Future of AI

What did I say a great future with AI depends on? **page 35**

☑ **Us making good choices now**

The future with AI could be incredible, but only if WE make good choices now about how to use it responsibly.

15 Our Responsibility: Keeping AI Good

What does “Human-in-the-Loop” mean? **page 37**

☑ **Humans check the AI's work**

AI can be wrong or unfair, so good AI systems have people checking its work. One day, that person could be you!

🏆 Final Challenge

Questions for ages 7 to 8

1. What does AI stand for? **page 39**

☑ **Artificial Intelligence**

2. Where does AI work? **page 39**

☑ **In the digital world**

3. What do we call the information an AI learns from? **page 40**

☑ **Data**

4. Which of these is hardware, a part you can touch? **page 40**

☑ **The keyboard**

5. Which of these uses AI? **page 40**

☑ **Face unlock on a phone**

6. Which of these can AI NOT do? **page 40**

☑ **Hug someone**

7. What should you NEVER tell an AI chatbot? **page 40**

☑ **Your full name and address**

8. AI sometimes makes up facts. What should you do? **page 41**

☑ **Always double-check**

9. Who should always be in charge of AI? **page 41**

☑ **Humans**

10. An AI says something that feels wrong or scary. What should you do? **page 41**

☑ **Tell a grown-up I trust**

Questions for ages 9 to 10

1. How does AI learn, says Tilly? **page 42**

☑ **It finds patterns in lots of examples**

2. What is it called when an AI makes up something that sounds true but isn't? **page 42**

☑ **A hallucination**

3. Why do people test an AI on NEW data it has never seen? **page 42**

☑ **To check that it learned the right thing**

4. How do computers store all their data? **page 42**

☑ **As 0s and 1s**

5. In reinforcement learning, how does an AI learn? **page 42**

☑ **It tries things and gets rewarded for good moves**

6. What is a deepfake? **page 43**

☑ **A fake video or voice made by AI**

7. Why can an AI treat some people unfairly? **page 43**

☑ **It was trained on biased data**

8. How can AI help doctors with x-rays and other scans? **page 43**

☑ **It helps them spot signs of illness**

9. What can happen if you rely on AI too much? **page 43**

☑ **You might stop thinking for yourself**

10. Who should always check an AI's work? **page 43**

☑ **Humans**

Questions for ages 11 to 12

1. A pretend AI learned from pictures where every dog was outside. Now it sees a cat in the garden. What might it guess? **page 44**

☑ **"Dog", because it learned the wrong clue: outside means dog**

2. A team tests its AI and finds a mistake. What is the best next step? **page 44**

☑ **Add more varied examples, retrain it and test again**

3. A voice message sounds exactly like your friend and asks you for a secret. What is the smartest move? **page 44**

☑ **Check another way, together with a grown-up**

4. An AI chatbot gives you a fact for your school project. What should you do? **page 45**

☑ **Check it in a book or another trusted source**

5. An app uses AI to pick players for a school team, and it almost never picks girls. Which principle of responsible AI is broken? **page 45**

☑ **Fairness**

6. A hospital AI suggests a treatment for a patient. Who should make the final decision? **page 45**

☑ **The doctor, together with the patient**

7. Why are scientists working on "green AI"? **page 45**

☑ **Big AIs use lots of electricity and can make lots of CO_2**

8. What is a smart way to use AI for homework? **page 46**

☑ **Try it yourself first, then ask AI, then compare**

9. What does “deep” mean in deep learning? **page 46**

☑ **The neural network has many layers**

10. A music app notices which songs people often play together, without being told what to look for. What kind of learning is this? **page 46**

☑ **Unsupervised learning**

Thank you

GR4AI exists because a lot of people gave their time to it.

Who made this online book



Katerina

Lead author, age 9



Christina

Professor



Manuel

Explains things with drawings



Susan

Doctor for children's X-rays



Jan

AI expert

And a big thank you to

- Heath House Preparatory School and its consortium
- the NIHR Youth Council
- Nicola and Annika
- Mr Stathidis
- Mr Williams
- Mrs Rokakis
- Mrs Vatsitsis
- Ms Iris Deligianni
- Mrs Despoina Malamateniou
- Mrs Sofia Torre
- Dr Guil Couto
- Mr Pearce
- Dr Tapeinos
- Dr Erenstein and his children
- Dr Adibi and her children
- Mr Vitale and Mrs Svetlic and their children
- Claire Travers

DEDICATION

This online book is dedicated to all grandparents, especially grandpa Georgios and grandma Keti, for all the love, the endless stories, the hugs, the fun games, the yummy food and the constant care that makes us all who we are: curious, responsible and kind.

🛠️ How GR4AI was made

Some of the pictures were made with openart.ai, from a lot of fun prompts by Katerina.

Some of the text was drafted with the help of Claude, an AI assistant, to make it clearer and friendlier for younger readers. Every word and every picture was checked by people before it went in.

📚 Sources for grown-ups

Where the numbers in this online book come from. Tap a chapter to jump back to it.

- Chapter 7, “Fun fact!” (electricity and CO_2): IEA, Key Questions on Energy and AI (2026); Ember via Our World in Data (2025); Meta, Llama 3.1 model card (2024); US EPA (2026).

Further reading: Daniel Susskind, What Should My Children Do? How to Flourish in the Age of AI (Penguin, 2026), and his article for parents in The Guardian (6 September 2026).

This PDF is made from the online book at https://gr4ai.org/ and is updated together with it. This version: 2026-11-03. GR4AI is a free, non-profit project.

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CERTIFICATE

I finished Get Ready For AI!

I know how AI learns, where it helps us, and why we always check what it says. Colour in the stars!

My name

My age

Date

