

Accessibility Bias in GenAl Outputs: An Educator's Guide

Part One of the Series: 10 Types of Bias in Al-Generated Content.





What is Accessibility Bias?

Accessibility bias occurs when AI-generated outputs assume a default learner. The 'norm'. This learner is typically one who reads fluently, sees and hears clearly, processes quickly, and can write or type with ease.







The Assumption of Default Abilities

Al often assumes users read fluently, see and hear clearly, and can type with ease - overlooking diverse learning needs.

Invisible Barriers in Educational Materials

Bias can appear subtly in worksheets, task pacing, instruction formats, and lack of alternative formats.

Mitigation Through Awareness

Educators can identify triggers for accessibility bias and adjust their AI prompts to create more inclusive materials.

This bias is in-baked in the training data. As educators our role is to (a) ensure we are aware of the triggers for this bias and (b) mitigate our prompting against it, as much as is possible.

This guide aims to support educators with both awareness and mitigation. It starts the conversation and hopes educators will continue the discussion, and experiment with what works for your context.

Examples of Accessibility Bias in Al Prompts

Each of the following examples starts with a basic prompt, the kind of prompt educators starting out with GenAI may type when wanting to experiment with how GenAI can aid their pedagogy and workload.

The output from the original prompt is shown and analysed for bias and impact upon learners.

A refined prompt is then offered to mitigate against the bias, and this output is shown. Links to specific related aspects of statutory documents are provided to show the need for educators to address accessibility bias. What follows is a comparison of the two outputs and key takeaways.



1. Visual Accessibility

Link to the chat: https://chatgpt.com/share/6824d4e9-1328-8002-b152-ef4e30dad8b5

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Original Prompt: "Create a Year 6 science worksheet about the water cycle."

GenAl Output

Year 6 Science Worksheet: The Water Cycle

Learning Objective: Understand the key processes in the water cycle and describe how water changes state.

Part 1: Key Vocabulary

Match each word to its correct definition:

- 1. Evaporation
- 2. Condensation
- 3. Precipitation
- 4. Collection

A. Water falling to the ground as rain, snow, sleet, or hail

- B. The process of water turning from a gas back into a liquid
- C. Water gathering in oceans, lakes, and rivers
- D. The process of liquid water turning into water vapor

Write your answers:

1.	
2.	
3.	
4	

Part 2: Label the Diagram

Instructions: Label the key stages of the water cycle on the diagram below. Use the words:

- Evaporation
- Condensation
- Precipitation
- Collection

[Insert simple diagram of the water cycle: sun over water, clouds, rain, water running back to sea]

Part 3: Quick Questions

- 1. What causes water to evaporate from oceans, rivers, and lakes?
- 2. Why do clouds form in the sky?
- 3. What happens to the water after it falls as rain?

Part 4: Challenge Question

Explain in your own words why the water cycle is important for life on Earth.

(Write at least 3 sentences.)

✓ Teacher Tips:

- Encourage pupils to act out the water cycle using hand movements.
- Link to reversible changes in states of matter (solid, liquid, gas).
- Consider doing a follow-up practical: Water cycle in a bag!

Accessibility Biases Present

Assumes Visual Literacy

Bias: The worksheet expects all learners to understand and interpret a diagram of the water cycle, yet offers no alternative text or description.

Impact: This disadvantages students with visual impairments, processing difficulties, or low spatial reasoning.

? Unadapted Question Formats

Bias: Open-ended questions and matching tasks require specific executive function skills (e.g. working memory, sequencing).

Impact: This may exclude students with ADHD, autism, or processing differences unless supported or scaffolded.

Assumes Strong ReadingComprehension

Bias: Instructions and vocabulary definitions are text-heavy and pitched at a relatively high reading age.

Impact: Learners with dyslexia, EAL (English as an Additional Language) needs, or lower reading confidence may struggle to access the tasks.

No Multisensory or Interactive Alternatives

Bias: The worksheet is entirely print-based, with no audio, tactile, or interactive elements.

Impact: Students with neurodivergent profiles may not engage as effectively.

Refined Prompt with Mitigated Bias

Please create a Year 6 science worksheet on the water cycle that is accessible and inclusive for a diverse range of learners. Use clear, concise language suitable for pupils with varying levels of reading ability, including those with dyslexia or English as an additional language. Where diagrams are used, include descriptive text to ensure the content is understandable without relying solely on visual interpretation.

Incorporate a range of question formats to support different ways of expressing understanding, such as multiple choice, sentence completion, and structured open-ended responses. Design the worksheet to reduce cognitive load and support learners with attention, processing, or working memory difficulties. Where appropriate, suggest optional interactive or practical activities to reinforce the concepts through supported exploration and engagement.

Refined Prompt Al Output

🐥 Year 6 Science: The Water Cycle

Learning Objective: To understand how water moves around our planet in a continuous cycle.

/ Key Words (Use these to help you)

- Evaporation Water turns into a gas when it gets warm
- Condensation Water gas turns back into liquid when it cools
- Precipitation Water falls from clouds as rain, snow, or hail
- Collection Water gathers in rivers, lakes, or oceans

What is the Water Cycle?

Water moves around the Earth in a cycle.

It changes between liquid, gas, and solid forms.

The sun helps to heat up water in rivers and oceans.

This water evaporates into the air.

When the air cools down, the gas changes back into tiny drops of water.

This is called condensation and forms clouds.

The drops get heavier and fall as precipitation (rain, snow, or hail).

The water collects in rivers and lakes. Then it starts the cycle again.

Diagram with Description (insert here)

Visual description:

- Sun shines on a river arrows show water going up (evaporation)
- Cloud forms labelled "condensation"
- Rain falls from the cloud labelled "precipitation"
- Arrows show water going into a lake labelled "collection"

If you can't see the diagram, imagine this: water warms up, becomes a gas, rises, cools to form clouds, falls as rain, and gathers in lakes and seas.

Activity 1: Match the Meaning

Draw a line or write the correct word.

Word	What it Means
Evaporation	A. Water falls from the sky
Condensation	B. Water turns into gas
Precipitation	C. Gas turns back into water
Collection	D. Water gathers in lakes and oceans

Nactivity 2: Fill in the Blanks

Use the word bank: condensation – collection – evaporation – precipitation

- 1. When water heats up, it turns into gas. This is called
- 2. Clouds form when water vapour cools. This is called
- 3. Rain, snow or hail falling is called _____.
- 4. Water gathering in rivers and seas is ______.

Activity 3: Choose the Correct Answer

- 1. What helps water evaporate?
- A. Moonlight
- B. Wind
- C. Sunlight 🗸
- D. Ice
- 2. Where do we see condensation?
- A. On a sunny path
- B. On a cold mirror after a hot

Statutory Links:

- **UK Equality Act 2010**
- RNIB guidelines
- DfE Inclusive Teaching Report (2017)

Key Takeaways for Educators

1 Use Clear, Simple Language

Short sentences and ageappropriate vocabulary support all readers, especially those with dyslexia or EAL needs.

2 Reduce Cognitive Load

Break tasks into small steps with scaffolds like word banks and sentence starters.

3 Offer Multiple Response Formats

Mix multiple choice, matching, and structured writing to suit varied communication styles.

4 Make Visuals Accessible

Always describe diagrams in words so they are not a barrier to understanding.

5 Include Optional Practical Tasks

Simple, low-prep activities can reinforce learning and support engagement.

6 Plan for Inclusion, Not Adaptation

Design with diversity in mind from the start, rather than retrofitting for specific needs.

Screen Reader & Assistive Tech Compatibility

Original Prompt:

Create an infographic about climate change impacts.

Al Output

Here is your infographic on climate change impacts:



Climate Change Impacts



Rising Temperatures

- Increased heatwaves
- Melting glaciers



Sea Level Rise

- Coastal flooding
- Loss of habitats



Extreme Weather

- Stronger hurricanes
- Droughts and wildfires

Food Insecurity

- Crop failure
- Threats to livestock



A Human Health

- Heat-related illness
- Disease spread by insects

Climate Change Impacts



Rising Temperatures

Global average temperatures are increasing.

- More frequent heatwaves
- Glacier melt



Sea Level Rise

Oceans are expanding due to heat and ice melt.

· Coastal areas are at risk of flooding and erosion



Extreme Weather

Weather patterns are becoming more severe.

· Stronger storms, droughts, and wildfires



Food Insecurity

Climate affects how and where food can be grown

 Reduced crop yields and livestock challenges

Accessibility Biases Present



Non-Text Content

The graphic includes icons (thermometer, wave, wheat, medical) without descriptive alt text, making them meaningless to screen reader users.



No Semantic Markup

The structure is visual only — there are no heading tags, ARIA labels, or navigation markers, preventing accessibility software from parsing the sections properly.



Icon Dependency

Icons carry conceptual meaning (e.g. a thermometer symbolising temperature), but this meaning is lost without alternative descriptions.



Visual-Only Communication

Learners who rely on screen readers or text-based browsing would be excluded from this resource unless a transcript or accessible version was provided alongside it.

Refined Prompt with Mitigated Bias

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Create an accessible infographic about climate change impacts. Include full text descriptions of all visuals. Use screen-reader-friendly headings. Avoid icons or provide clear alt text suggestions.

Refined Prompt AI Output

Climate Change Impacts

Include full text descriptions of all visuals. Use screnreader-frendly headings. Avoid icons or provide cea alt text suggestions.

1. Rising Temperatures

Global average temperatures are increasing.

- More frequent heatwaves
- Glacier melt

Alt text: Thermomeater icon representing rising temperatures

2. Sea Level Rise

Oceans are expanding due to heat and ice melt

- Coastal flooding
- Habitat loss

Alt text: Ocean wave icon representing sea level rise

3. Extreme Weather

Weather patterns are more intense.

- Hurricanes, droughts, wildfires

Alt text: Storm cloud icon representing extreme weather

4. Food Insecurity

Climate affects farming and food supply.

- Crop failures
- Threats to livestock

Alt text: Medical symbol icon representing health impacts

Statutory Links:

- Schools must make reasonable adjustments, including accessible digital resources for disabled pupils.
- Public Sector Bodies Accessibility Regulations 2018
 Infographics and non-text content must be perceivable by assistive technologies.
- DfE Accessibility Guidance
 Encourages inclusive digital learning materials and resources.
- National Curriculum Links (Geography, Science, Citizenship)

Climate change is a cross-curricular issue — resources must be accessible to all learners, regardless of need.

Key Takeaways for Educators

1

Infographics should never stand alone

Provide accessible text versions or transcripts.

2

Avoid or explain icons

They are not screen reader friendly unless paired with alt text.

3

Plan for all learners

Including those using text-to-speech or braille display tools.

4

Prompt with explicit accessibility requirements

Don't assume tools will do it automatically.

3. Layout and Formatting Bias

Original Prompt:Summarise the key ideas from photosynthesis in a paragraph.

Al Output

Photosynthesis is the process by which green plants use sunlight to make their own food. It occurs in the chloroplasts of plant cells, which contain a green pigment called chlorophyll. During photosynthesis, carbon dioxide from the air and water from the soil are converted into glucose and oxygen. This glucose is used by the plant for energy and growth, while the oxygen is released into the atmosphere. Photosynthesis is essential for life on Earth as it provides the oxygen we breathe and is the basis of most food chains.

Layout and Formatting Biases Present

Lack of visual structure or headings

The information is presented as a dense block of text. Students with visual processing difficulties, dyslexia, or attention-related challenges may struggle to follow or retain information.

No clear signposting of key concepts

There are no bullet points, bold text, or highlighted keywords to indicate which parts are definitions, processes, or outcomes. This makes it harder for students with additional learning needs to identify and organise the key points.

Uniform sentence length and complexity

Each sentence is similar in length and complexity, with no scaffolding or chunking of information. This can be overwhelming for EAL learners or students with working memory difficulties.

No use of whitespace or line breaks

The paragraph is tightly packed with no visual separation of ideas, creating visual fatigue and reducing readability for many neurodiverse learners.

Refined Prompt with Mitigated Bias

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Summarise key ideas from a topic in a student-friendly way. Use short sentences, clear headings, and bullet points to break up information. Make sure the layout is easy to follow for students with dyslexia and visual processing needs.

Refined Prompt Al Output

Photosynthesis – Key Ideas

Y What is Photosynthesis?

- A process where plants make their own food.
- Happens in plant cells using sunlight.

***** Where it Happens:

• In chloroplasts, which have green chlorophyll.

What's Needed:

- Sunlight
- Water from soil
- Carbon dioxide from air

What it Makes:

- Glucose (sugar) for energy
- Oxygen, which plants release

() Why it Matters:

- Gives us the oxygen we breathe.
- Starts the food chain for many living things.

Improvements Over Original:

Text is broken into logical sections with emoji-style icons and headings.

Bullet points reduce cognitive load.

Whitespace between sections improves readability.

Sentences are shorter and simpler, supporting a wider range of learners.

Statutory Links

- DfE Accessibility Strategy (2018): Calls for inclusive digital content and layout adaptations.
- Equality Act 2010: Requires reasonable adjustments for students with SEND, including accessible information presentation.
- National Curriculum: Emphasises inclusive teaching practices and adapting for individual needs (SEND Code of Practice 2015).
- Ofsted EIF 2023: Looks for accessibility and ambition in curriculum delivery, especially for learners with additional needs.

Key Takeaways for Educators









Dense text blocks can unintentionally exclude learners

Students with visual, cognitive or literacy-related needs may struggle with traditional text formatting.

Clear formatting improves accessibility

Prompting for bullet points, headings, and short sentences makes AI outputs more inclusive for all learners.

Layout matters as much as content

Accessibility isn't just about what you teach, but how the information is visually presented to students.

Model accessibilityaware practices

Teachers who demonstrate inclusive digital content creation encourage students to develop these important skills too.

4. Task and Instructional Design Bias

Original Prompt:

"Design an activity where students draw and label the parts of a plant."

Al Output

Activity Title: Parts of a Plant Diagram

Instructions for Students:

- 1. Take a blank piece of paper.
- 2. Draw a large picture of a flowering plant.
- 3. Include roots, stem, leaves, and a flower.
- 4. Label each part with a ruler and pen.
- 5. Colour in the diagram neatly.

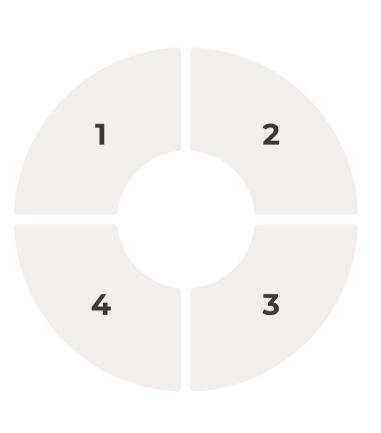
Task and Instructional Design Biases Present

Assumes Fine Motor Ability and Visual-Spatial Strengths

The task relies heavily on drawing and neatness, which may disadvantage students with dyspraxia, visual impairments, or physical disabilities.

Limited Instructional Scaffolding

No support provided for students who may not know what a plant looks like or who may need vocabulary support (e.g. EAL learners or those with limited science background).



Overemphasis on Presentation Over Conceptual Understanding

Success appears linked to neatness and colouring, which may mask learning in students who understand the content but struggle with presentation.

Lack of Multi-Modal Access

No alternatives offered for students who cannot draw or see visuals clearly (e.g. tactile diagrams, digital drag-and-drop tools, or oral explanations).

Refined Prompt with Mitigated Bias

Obesign an activity where students identify and label the parts of a plant. Include options for drawing, using cut-and-stick or digital tools. Use simple language and offer a word bank with definitions. Support pupils with different needs (e.g. EAL, visual impairment, fine motor challenges).

Refined Prompt Al Output

Activity Title: Exploring Plant Parts – Your Way

Instructions for Students:

- 1. Choose one of the following ways to complete the task:
 - Draw your own plant and label the parts.
 - Use a cut-and-stick template with printed parts.
 - Complete a drag-and-drop digital version on the tablet.
- 2. Use the word bank to help you label:
 - Root: takes in water,
 - Stem: holds up the plant,
 - Leaves: make food,
 - Flower: helps make seeds.
- 3. You can work with a partner if you'd like to discuss the parts first.
- 4. If you need help with reading or seeing the words, ask for a larger print, audio version, or symbols.

Rey Differences and Improvements:

- Provides multiple means of expression (drawing, tactile, digital).
- Offers clear, simple definitions to support understanding.
- Allows peer support and promotes inclusive grouping.
- Explicitly mentions reasonable adjustments (e.g. enlarged print, audio).

Statutory Links

- Equality Act 2010: Duty to make reasonable adjustments.
- SEND Code of Practice (2015): Inclusive teaching strategies.
- DfE Guidance on Inclusive Teaching (2022): Use of multimodal strategies to support access.
- National Curriculum (Science KS1/2): Identify and name the basic structure of common plants; use observations and simple scientific language.

Key Takeaways for Educators



Task bias often comes from how we ask students to show understanding, not just what we ask.



Provide multiple access routes so all learners can demonstrate what they know.



Clarify purpose to consider if you are assessing knowledge of plant parts or artistic skill?



Small changes to prompts (like adding options or supports) can significantly increase inclusivity.



Summary: Writing Bias-Mitigating Prompts for Accessibility

Even small changes in how we write prompts can help ensure genAI outputs are more inclusive. Here's how to bring it all together. Try the super-prompt example and compare it to the first initial prompt. Then use the customisable super-prompt with you own learners and resources.

Super-Prompt Example (Fully Mitigated)

Topic: Water Cycle | Audience: Year 6

Create a Year 6 reading comprehension worksheet about the water cycle that includes: - Clear headings and short paragraphs - Bullet points and bolded key terms - Dyslexia-friendly fonts and accessible layout - Visual support such as labelled diagrams - Alt-text descriptions for images - Scaffolded vocabulary with definitions - Multiple means of response (e.g. drawing, multiple choice, verbal) - Compatible formatting for screen readers and printable versions - High-contrast visuals that do not rely on colour alone - Clear, step-by-step instructions without idioms or figurative language

See the output here: https://chatgpt.com/share/6824e93a-3d9c-8002-9563-5030f201ae82





Customisable Super- Prompt

Use this version as a base for any topic:

Create a [year group / key stage] [resource type] about [topic] that includes:

- Clear layout with headings and visual organisation
- Accessible formatting (dyslexia-friendly, screen readercompatible)
- Multiple content modes (text, visuals, audio optional)
- Vocabulary support with definitions
- Alternative ways to respond (verbal, visual, tactile)
- No fine motor requirements unless alternatives are given
- Printable and digital versions if possible
- Language that avoids idioms and is inclusive for diverse learners

Final Word

Remember, this is just examples of ONE bias to mitigate against. Associated biases related to accessibility such as neurotypical assumptions will be covered in future articles in this series. You can compound all the superprompts from each series together to make a supersuper-prompt!

Check out our other guides, blogs, services and information at: **genedlabs.ai**

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