



Inclusive Science Curriculum Overview

Adapted Science Curriculum for SEND and Behavioural Challenges: Reception to Year 11
HOPECFI Science Curriculum has been tailored for children with Special Educational Needs and Disabilities (SEND) and challenging behaviours, using multi-sensory approaches, structured routines, and real-world applications. Activities focus on small, manageable steps and a calm, inclusive environment to promote engagement and confidence.

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1. Reception: Exploring the World Around Us

Autumn Term

- **Me and My Small World**
 - Explore basic body parts and similarities/differences between people.
 - Interact with small creatures and toys.
 - *Maths Link*: Sort objects by size, shape, or function; compare "bigger," "smaller," or "the same."
- **What's in My Basket?**
 - Identify sensory properties of fruits, vegetables, and everyday items.
 - Discuss how these items grow or are used.
 - *Maths Link*: Measure items using non-standard units and create patterns.

Spring Term

- **Changes in Winter**
 - Observe seasonal changes (e.g., bare trees, frosty mornings).
 - Learn how animals adapt (e.g., hibernation).
 - *Maths Link*: Collect and count objects, like pinecones or snowflakes.
- **Let It Flow**
 - Investigate water properties (pouring, splashing).
 - Explore freezing and melting.
 - *Maths Link*: Use containers to measure and compare capacities.

Summer Term

- **Animal Detectives**
 - Explore local wildlife using magnifying glasses.
 - *Maths Link*: Count features (e.g., legs, spots) and create simple charts.
- **Pushes and Pulls**
 - Experiment with motion (rolling balls, dragging toys).
 - *Maths Link*: Explore 3-D shapes like spheres and cubes.

2. Year 1: Exploring Science

- **Biology**: Human body parts and five senses.
- **Chemistry**: Material properties (waterproof, hard/soft).
- **Sustainability**: Recycling and reducing waste.

3. Year 2: Living Things and Habitats

- **Biology**: Needs for survival, plant growth, and habitats.
- **Sustainability**: Plastic impact and conservation projects.
- **Cross-Curricular Integration**: Use of charts, posters, and outdoor observations.



4. Year 3: Building Knowledge

- **Biology:** Skeletons, muscles, and balanced diets.
 - **Chemistry:** Rocks, fossils, and soil composition.
 - **Physics:** Light and shadow experiments.
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5. Year 4: Advanced Observation

- **Biology:** Classify living things and habitats.
 - **Chemistry:** States of matter (solid, liquid, gas).
 - **Sustainability:** Energy conservation and deforestation awareness.
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6. Year 5: Exploring Systems

- **Physics:** Forces (friction, air resistance) and space.
 - **Biology:** Life cycles, plant reproduction, and the circulatory system.
 - **Sustainability:** Plastic pollution and global warming projects.
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7. Year 6: Connecting Concepts

- **Biology:** Human body systems and biodiversity.
 - **Physics:** Electricity (circuits) and light pollution.
 - **Sustainability:** Renewable energy models.
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8. Year 7: Foundations of Science

- **Biology:** Cell structure and reproduction.
 - **Chemistry:** Particles, elements, and compounds.
 - **Physics:** Forces and energy transfers.
 - **Sustainability:** Human impact on ecosystems.
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9. Year 8: Expanding Knowledge

- **Biology:** Microbes, respiration, and circulation.
 - **Chemistry:** The periodic table and chemical reactions.
 - **Physics:** Waves and magnetism.
 - **Sustainability:** Projects on food waste and biodiversity.
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10. Year 9: Transition to GCSE

- **Biology:** Inheritance, evolution, and homeostasis.



- **Chemistry:** Atomic structure and rates of reaction.
 - **Physics:** Newton's laws and energy conservation.
 - **Sustainability:** Climate change and renewable energy projects.
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11. Year 10: GCSE Preparation

- **Biology:** Pathogens, bioenergetics, and ecology.
 - **Chemistry:** Organic chemistry and atmospheric changes.
 - **Physics:** Electromagnetic waves and motion.
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12. Year 11: GCSE Preparation

- **Biology:** Genetics, adaptations, and human body systems.
 - **Chemistry:** Analytical methods and sustainable development.
 - **Physics:** Space physics and magnetism.
 - **Themed Projects:** Exam prep through real-world applications.
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13. Cross-Curricular Integration for SEND

a) Maths

- **Visual Graphs and Data Representation:**
 - Use colourful, large-print graphs and charts to represent data collected during experiments (e.g., plant growth, weather patterns, or energy use).
 - Provide tactile graphing tools like Velcro charts or 3D models for learners who benefit from physical interaction.
 - Simplify mathematical concepts by using real-life examples, such as counting objects, measuring water capacity, or charting animal sightings.
- **Simple Calculations:**
 - Break down complex calculations into manageable steps with visual aids like number lines, pictorial representations, and manipulatives.
 - Link calculations to practical experiments (e.g., finding the average plant height over time or calculating simple speeds using toy cars).
 - Provide scaffolding tools, such as calculators or pre-made templates, to support independence.
- **Hands-On Measurements:**
 - Engage learners in measuring length, weight, and capacity using everyday objects (e.g., measuring tape, scales, beakers).
 - Use digital measurement tools (e.g., electronic scales or light meters) for added accessibility.



- Incorporate opportunities to measure in different environments (e.g., measuring the height of plants in a school garden or water levels in an outdoor water table).

b) Literacy

• Accessible Science Texts:

- Use large-print, easy-read science books with vivid illustrations and simplified language.
- Offer audio versions or read-aloud sessions for children who struggle with reading.
- Introduce dual-language resources for EAL learners, if applicable.

• Report Writing:

- Scaffold report-writing tasks by providing templates with clear headings (e.g., "What We Did," "What We Found Out").
- Allow alternative formats like oral reports, drawings, or videos for children who find writing challenging.
- Encourage collaborative group writing for peer support and shared learning.

• Scientific Vocabulary Development:

- Introduce key scientific terms with picture-word associations (e.g., diagrams of a plant labelled with "stem," "leaf," etc.).
- Create personal glossaries or word banks for repeated reference during lessons.
- Use flashcards or interactive games to reinforce vocabulary.

c) Art

• Model-Making:

- Engage learners in constructing models of scientific concepts (e.g., solar systems, animal habitats, or body systems) using accessible materials like clay, recycled items, or LEGO.
- Provide adaptive tools (e.g., larger handles for paintbrushes or sculpting tools) for children with fine motor challenges.
- Use group projects to foster collaboration and encourage creative thinking.

• Creative Diagrams:

- Integrate art into lessons by having children draw labelled diagrams (e.g., parts of a flower, food chains, or circuits).
- Offer pre-drawn outlines for learners who may struggle with freehand drawing but enjoy colouring and labelling.
- Incorporate digital tools, such as drawing apps or interactive whiteboards, for tech-savvy learners.

• Sensory Art:



- Include sensory materials in art projects, such as sand, leaves, or textured paper, to help children connect with scientific concepts (e.g., textures of soil or habitats).

d) Physical Development

- **Outdoor Experiments:**

- Use the outdoor environment for hands-on learning (e.g., measuring shadows, observing weather, or conducting soil experiments).
- Create sensory-rich outdoor activities, such as planting and tending to a garden, that build fine and gross motor skills.
- Include simple physical challenges like collecting natural materials or setting up experiments in a designated outdoor space.

- **Gardening:**

- Engage children in planting seeds, watering plants, and observing growth over time to reinforce biology concepts.
- Introduce simple tools (e.g., child-sized trowels or watering cans) to develop coordination and responsibility.
- Incorporate sensory elements, such as smelling herbs or touching different plant textures, to enhance engagement.

- **Sensory Activities:**

- Offer sensory play experiences linked to science topics, such as water tables, sandboxes, or textured slime for exploring states of matter.
- Use movement-based activities (e.g., acting out animal behaviours or mimicking the movement of waves) to build kinaesthetic connections to concepts.
- Include sensory-friendly options like quiet zones, noise-cancelling headphones, or weighted blankets for children who may feel overstimulated.

e) Additional Enhancements

- **Technology Integration:**

- Use interactive software, simulations, or videos to demonstrate abstract concepts like the solar system, chemical reactions, or ecosystems.
- Introduce adaptive devices, such as touchscreens or voice-activated tools, to increase accessibility for learners with physical or communication challenges.

- **Collaborative Learning:**

- Foster teamwork through group experiments, projects, and discussions, encouraging communication and social development.
- Pair learners with different strengths to support peer teaching and shared success.

- **Behavioural Support:**



- Establish clear, consistent routines to help children anticipate and prepare for transitions between activities.
- Use visual schedules, first-then boards, and positive reinforcement strategies to maintain engagement and reduce anxiety.
- Build emotional regulation skills by incorporating mindfulness or relaxation exercises before and after lessons.

14. Support Strategies for SEND

a) Multi-Sensory Learning

• Tactile Elements:

- Incorporate hands-on activities like building models, using sensory materials (e.g., textured paper, clay), or handling physical objects (e.g., leaves, rocks, magnets) to explore scientific concepts.
- Offer tactile learning aids, such as raised-line diagrams, Braille labels, or textured 3D models for concepts like cells, habitats, or the solar system.

• Auditory Enhancements:

- Use sound-based activities, such as listening to animal calls, exploring sound waves with musical instruments, or using audio recordings to explain complex topics.
- Provide headphones with audio lessons or calming music to help auditory learners stay focused during independent work.

• Visual Tools:

- Use bright, high-contrast visuals, infographics, and colour-coded charts to explain data or processes.
- Employ interactive digital resources like videos, animations, and simulations to visually demonstrate abstract or complex concepts.
- Integrate augmented reality (AR) apps for immersive experiences, such as exploring virtual ecosystems or inside the human body.

• Cross-Sensory Integration:

- Blend sensory inputs (e.g., combine visual diagrams with auditory explanations and physical activities) to reinforce learning.
- Create sensory bins with themed materials (e.g., sand and shells for marine habitats or different soil types for geology lessons).

b) Structured Routines

• Consistent Lesson Frameworks:

- Begin every lesson with a brief overview using visual or verbal cues (e.g., "Today we will learn about plants, observe seeds, and measure growth").



- End with a review or reflection activity to reinforce the day's learning and prepare for the next lesson.
- **Visual Schedules:**
 - Display daily schedules with pictures or symbols to indicate activities and transitions.
 - Use first-then boards to outline immediate tasks (e.g., "First we plant seeds, then we water them").
- **Checklists and Timers:**
 - Provide simple checklists for multi-step tasks, such as conducting an experiment or recording observations.
 - Use visual timers to help learners manage time and anticipate transitions.
- **Structured Breaks:**
 - Build short, structured sensory or physical breaks into the schedule to help learners reset and maintain focus.
- c) **Calm Environment**
 - **Sensory-Friendly Spaces:**
 - Designate quiet zones with calming tools, such as noise-cancelling headphones, weighted blankets, or fidget toys, for learners who need sensory regulation.
 - Use dimmable lighting, soft colours, and minimal clutter to reduce sensory overload.
 - **Calming Activities:**
 - Include relaxation or mindfulness exercises, such as deep breathing or guided imagery, before challenging tasks.
 - Use calming sensory materials, like kinetic sand, slime, or water play, to ease transitions or reduce anxiety.
 - **Predictable and Safe Setting:**
 - Arrange the classroom with clearly defined learning areas (e.g., a hands-on experiment table, a quiet reading corner) to help children navigate the space confidently.
 - Establish clear, simple rules and expectations for behaviour, reinforced with visual prompts.
- d) **Individualised Support**
 - **Tailored Instruction:**
 - Differentiate tasks to match individual abilities, offering simplified or extended challenges as needed.



- Provide task cards, step-by-step guides, or visual aids for learners who benefit from additional guidance.
- **Assistive Technology:**
 - Use voice-to-text tools for writing assignments, speech-generating devices for communication, or screen readers for visually impaired learners.
 - Incorporate interactive whiteboards, apps, or tablets with accessible learning software to engage learners at their level.
- **Personalised Learning Plans:**
 - Develop Individual Education Plans (IEPs) with clear, measurable goals that align with each learner's needs and strengths.
 - Regularly review progress and adapt teaching strategies to ensure ongoing growth and engagement.

e) Positive Reinforcement

- **Celebrating Effort and Milestones:**
 - Use stickers, certificates, or verbal praise to acknowledge participation, progress, and effort.
 - Celebrate individual achievements with personalised rewards or “show-and-tell” sessions to share successes with peers.
- **Behaviour-Specific Praise:**
 - Reinforce positive behaviours with specific feedback (e.g., “Great job focusing on your experiment!”).
 - Use behaviour tracking tools, such as token boards or reward charts, to visually represent progress.
- **Peer Recognition:**
 - Foster a supportive environment where peers acknowledge each other's accomplishments, building a culture of encouragement.
- **Intrinsic Motivation:**
 - Help learners reflect on their successes by discussing how their effort led to achievements, fostering a sense of pride and internal motivation.

f) Additional Enhancements

- **Social-Emotional Learning (SEL):**
 - Incorporate SEL activities to help learners recognise and regulate emotions, build relationships, and develop resilience in the face of challenges.
 - Use role-play or collaborative activities to practice empathy, teamwork, and conflict resolution.



- **Behaviour Support Plans:**
 - Develop individualised behaviour plans for learners with challenging behaviours, including strategies like de-escalation techniques and clear consequences.
 - Train staff in proactive behaviour management to anticipate and address potential triggers.
- **Parental Involvement:**
 - Provide parents with resources and updates on their child’s progress to encourage reinforcement of learning at home.
 - Collaborate with families to align support strategies between school and home environments.
- **Professional Development for Staff:**
 - Offer ongoing training in inclusive teaching practices, assistive technology, and behaviour management to equip educators with tools to support diverse learners effectively.

