

Curriculum Intent: How we aim to meet the range of SEND needs withing our teaching

Subject: Science

“The study of science fires pupils’ curiosity about phenomena in the world around them and offers opportunities to find explanations. It engages learners at many levels, linking direct practical experience with scientific ideas. Experimentation and modelling are used to develop and evaluate explanations, encouraging critical and creative thought. Pupils learn how knowledge and understanding in science are rooted in evidence. They discover how scientific ideas contribute to technological change – affecting industry, business and medicine and improving quality of life. They trace the development of science worldwide and recognise its cultural significance. They learn to question and discuss issues that may affect their own lives, the directions of societies and the future of the world.”

National Curriculum, QCA, 2009

Recent legislation and guidance make clear that all the teaching staff in a school are responsible for the provision for pupils with SEN and/or disabilities. All staff should be involved in developing school policies and fully aware of the school’s procedures for identifying, assessing and making provision for pupils with SEN and/or disabilities. Staff should help pupils with SEN to overcome any barriers to participating and learning, and make any reasonable adjustments needed to include disabled pupils in all aspects of school life.

Planning for pupils with SEN and/or disabilities should be part of the planning that you do for all pupils, rather than a separate activity. It doesn’t need to be complicated or time-consuming. You can simply jot down brief notes in your lesson plans on the learning objectives and approaches you will use to remove barriers for pupils with SEN and/or disabilities. Any personal targets the pupil has can inform this planning. At times it may be appropriate to plan smaller steps to achieve the learning goal or provide additional resources. It is often possible to use the support available to do this, either from the SENCO or teaching assistant/mentor.

You should also think about the questions you will ask different groups and individuals and the ways you will check that pupils understand. Some pupils with SEN and/or disabilities will show they understand in different ways from their peers, so you should look at a range of opportunities for pupils to demonstrate what they know and can do.

For some activities, you may need to provide a ‘parallel’ activity for pupils with SEN and/or disabilities, so that they can work towards the same lesson objectives as their peers, but in a different way – eg using a computer simulation of a process rather than manipulating equipment. Occasionally, pupils with SEN and/or disabilities will have to work on different activities, or towards different objectives, from their peers.

1. All children have common needs—for example, the need to receive effective teaching.
2. Some children have specific needs that are shared with a similar group—for example, pupils with a hearing impairment need access to means of audiological support.
3. All children have individual needs—for example, pupils with a Speech and Language Disorder may benefit from pre-teaching of vocabulary and scaffolded talk opportunities.

The following strategies are pedagogical approaches that will be used in our subject to support all students, but particularly those students with SEND. Strategies have been linked with areas of particular need but are not exclusive in supporting students with this area of need.

These strategies will be used flexibly in response to individual needs and used as the starting point for classroom teaching for all pupils

The following will be employed alongside and in addition to the needs and strategies:

Cognition and Learning

1. Practical skills- Evaluation, improvements, scaffolding of the layout of how to run investigations. Modelling of investigations.
2. Displays, word banks- vocabulary list with pictures.
3. Knowledge organisers which provide children with the information needed to learn about their topic.
4. Modelling ideas on an IWB.
5. Assessment – quick write, quizzes etc identify gaps and areas where support is needed.

Communication and Interaction

1. Investigations- demonstrations, pupil feedback, clear instruction and method on the board.
2. To use technology as part of a research lesson.
3. Adequate time provided for task as well as clear expectations and warning when lessons 'come back together as a whole.

Social, Emotional & Mental Health

1. Practical lessons which is inclusive as all are involved- allocation a technician.
2. Seating plan- mixed ability groups in science.
3. Website – information provided to staff, pupils and parents.

Sensory and Physical

1. Investigations and hands of approach.
2. Display boards made engaging with important information and focus vocabulary to help children with their topic.
3. Alternatives to written recorded work is offered- such as discussion, photo opportunities.

Maintaining an inclusive learning environment

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<p>Sound and light issues For example:</p> <ul style="list-style-type: none"> background noise and reverberation are reduced sound field system is used, if appropriate glare is reduced there is enough light for written work teacher's face can be seen – avoid standing in front of light sources, eg windows pupils use hearing and low vision aids, where necessary, and video presentations have subtitles for deaf or hearing-impaired pupils and those with communication difficulties, where required. 	<p>Sound and light issues Interactive whiteboards are non-reflective to reduce glare.</p>	<p>Resources Storage systems are predictable. Resources are:</p> <ul style="list-style-type: none"> accessible, eg within reach, and labelled clearly to encourage independent use, eg using images, colour coding, large print, symbols, Braille, as appropriate. 	<p>Resources Use systems such as racks so that science equipment can be found and put back easily. Get specialist advice on equipment for pupils with particular SEN or disabilities, eg tactile ridges on measuring glassware for pupils with a visual impairment.</p>
		<p>Displays Displays are:</p> <ul style="list-style-type: none"> accessible, within reach, visual, tactile informative, and engaging. <p>Be aware of potentially distracting elements of wall displays.</p>	<p>Displays</p>
		<p>Low-arousal areas A low-arousal area is planned for pupils who may need it and is available for use by all pupils. The area only needs to have immediately relevant materials/resources to minimise distraction.</p>	<p>Low-arousal areas</p>
<p>Seating Pupils' seating and the main board position are planned for the shape of the room. Pupils can see and hear clearly, as necessary:</p> <ul style="list-style-type: none"> the teacher each other, and the board/TV/screens. <p>Seating allows for peer or adult support. There is room for pupils with mobility difficulties to obtain their own resources, equipment and materials. Furniture is suitable. Consider the choice of chairs and desks, eg adjustable height tables, raised boards.</p>	<p>Seating Consider the accessibility of science demonstrations. Plan the demonstration area so that it is clearly laid out, uncluttered and gives all pupils a clear view. Height-adjustable tables and benches make activities more accessible. Seating should allow all pupils in the class to communicate, respond and interact with each other and the teacher in discussions. Avoid the need for copying lots of information. For example, notes on interactive whiteboards can be printed off for all pupils.</p>	<p>Health and safety Health and safety issues have been considered, eg trailing leads secured, steps and table edges marked. There is room for pupils with mobility difficulties to leave the site of an accident. Remember that pupils with an autistic spectrum disorder (ASD) may have low awareness of danger.</p>	<p>Health and safety Make sure pupils do not come into contact with any substances or materials that they are allergic to.</p>
		<p>Unfamiliar learning environments Pupils are prepared adequately for visits.</p>	<p>Unfamiliar learning environments Make sure pupils are well prepared for visits, particularly to museums. Preparation can include photographs, videos etc so that pupils are not worried about unfamiliar situations.</p>

Multi-sensory approaches, including ICT

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<p>Multi-sensory approaches Pupils' preferred learning styles are identified and built on:</p> <ul style="list-style-type: none"> when teaching – eg visual, tactile, auditory and kinaesthetic approaches are used, such as supporting teacher talk with visual aids; using subtitled or audio-described film/video for recording – alternatives to written recording are offered, eg drawing, scribing, word processing, mind maps, digital images, video, voice recording, and to promote security and aid organisation – eg visual timetables are used to show plans for the day or lesson; visual prompts for routines, such as how to ask for help; shared signals are developed so that pupils can convey their understanding, uncertainty or need for help. 	<p>Multi-sensory approaches Build on pupils' preferred learning styles when explaining concepts, by using different media – eg diagrams, stories, acting out processes, computer simulations, concept mapping, etc.</p> <p>Use mind maps to help pupils see patterns and relationships.</p> <p>Simple audio recorders can be used instead of written notes during investigations or field trips.</p>	<p>ICT ICT is used to support teaching and learning.</p> <p>Accessibility features are used to include pupils with SEN and/or disabilities, as appropriate, eg:</p> <ul style="list-style-type: none"> keyboard shortcuts instead of a mouse sticky keys a foot-controlled mouse, a head-controlled mouse or a wireless mouse screen filters to cut down glare increased font sizes for screen extension – in any case, fonts used in printed material should not be smaller than 12 pt (24 pt for screen presentations) clear font type (normally sans serif, such as Arial or Comic Sans) appropriate contrast between background and text, and/or a talking word processor to read out text. <p>Pupils with poor motor control may gain confidence and achieve success through writing/drawing on the computer.</p> <p>Predictive text can encourage pupils to use a more extensive vocabulary and attempt 'difficult' spellings. It can be enhanced by using subject-specific dictionaries.</p>	<p>ICT ICT can be used to make science lessons more accessible for all pupils. For example, it can be used to:</p> <ul style="list-style-type: none"> capture images and processes and replay them at different speeds and magnifications, and with particular image characteristics – eg to help pupils study events and causality, to identify underlying patterns or to look at detail monitor activities and experiments that require mobility and dexterity that some pupils do not have, and to explore difficult or dangerous environments carry out research present work in a variety of formats to a high standard, and extend the range of the senses and make difficult-to-see processes visible – eg using camcorders or CCTV.

Working with additional adults

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<p>Consulting pupils Wherever possible, pupils are consulted about the kind and level of support they require.</p>	<p>Consulting pupils</p>
<p>Planning support Support from additional adults is planned to scaffold pupils' learning, allowing them, increasingly, to work independently.</p> <p>Planning should identify:</p> <ul style="list-style-type: none"> • which individuals/groups will receive support • where in the lesson pupils will need support • the type of support pupils should receive, and • when pupils should be allowed to work independently. <p>Additional adults:</p> <ul style="list-style-type: none"> • are clear about the lesson objectives • know the sequence of the lesson • understand the lesson content • know how to break tasks into more manageable chunks • are provided with key questions to encourage formative assessment, and • where appropriate, are familiar with any ICT used to support pupils. 	<p>Planning support Consider:</p> <ul style="list-style-type: none"> • risk points in the lesson, eg for pupils with noise or smell sensitivity • when it would be useful to pre-tutor important science vocabulary, concepts or processes • whether pupils need support in using science equipment, especially for tasks that require a high level of skill or accuracy.
<p>Evaluation Additional adults report to the teacher on pupils' progress. The effectiveness of support is monitored and reviewed.</p>	<p>Evaluation</p>

Managing peer relationships

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<p>Grouping pupils All forms of pupil grouping include pupils with SEN and/or disabilities. Manageable mixed-ability grouping or pairing is the norm, except when carefully planned for a particular purpose. Sequence of groupings is outlined for pupils. The transition from whole-class to group or independent work, and back, is clearly signalled. This is particularly helpful for pupils on the autistic spectrum.</p>	<p>Grouping pupils</p>
<p>Managing group work and discussion Pupils move carefully from paired discussion to group discussion – the language necessary for whole-class discussion work may be a barrier for pupils who find it difficult to express themselves in public. Paired and small group discussions provide opportunities for all to take part. Pupils are assigned specific roles (eg chair, writer, reporter, observer) which gives all pupils something to do and keeps them focused.</p>	<p>Managing group work and discussion</p>
<p>Developing responsibility Pupils with SEN/disabilities are:</p> <ul style="list-style-type: none"> • given opportunities to initiate and direct projects, with support as appropriate, and • involved as equal contributors in class/school governance and decision making. 	<p>Developing responsibility</p>

*Supporting material from <https://dera.ioe.ac.uk/13808/1/science.pdf>