



## Barriers to and solutions for Engagement, Progress and Achievement in Science-

*Clarity of instruction, explanations and modelling are crucial*  
*Ensure that the most important aspect of learning is made clear – cognitive load theory is relevant for all pupils with SEND both in terms of what pupils see and hear and are expected to learn*  
*For many pupils with SEND, it is the recording of the content rather than the content itself which provides the greatest level of challenge in lessons, and this should be addressed in the planning and preparation for lessons.*  
*Safety and risk assessments should be in place for practical lessons with children's behaviour/sensory needs in mind*  
*Ensure adults have an overview for safety or do experiments in small groups*  
*Use of word banks support understanding of new vocabulary for all children*

	Hearing Impairment	Visual Impairment	Dyspraxia (fine/ gross motor) Physical Impairment	Memory/ processing	ASC/ADHD	Speech and Language	Cognition	SEMH
Barriers	<p>Difficulty in hearing instructions</p> <p>Vocab</p> <p>Managing practical investigations / interactions</p> <p>Filtering noise to hear what is important</p> <p>Difficulty with vocabulary.</p>	<p>Reading</p> <p>Navigating classroom</p> <p>Managing resources and equipment</p> <p>May struggle with contrasting colours on the board</p>	<p>Managing physical resources particularly "fiddly bits" such as crocodile clips in circuits</p> <p>Difficulty recording</p> <p>Difficulty following the organisation of charts or</p>	<p>Recall of instructions</p> <p>Remembering key facts and vocab</p> <p>Retaining focus</p>	<p>Specific interests</p> <p>Attention span</p> <p>Fine motor skills</p> <p>Managing physical resources particularly "fiddly bits" such as crocodile clips in circuits</p>	<p>Understanding instructions</p> <p>Memory of subject specific words</p>	<p>Understanding concepts</p> <p>Recording</p> <p>Retaining information</p> <p>Memory of subject specific words and definitions</p>	<p>Making links to prior learning</p> <p>Resilience/ fear of failure.</p> <p>Could be lack of science capital</p>

	Awareness of safety  Group work		reading of data from a graph		Difficulty recording  Concentration span  Safety regarding impulsive behaviour  Difficulties sharing			
Solutions	Positioning in classroom  Visuals  Pictorial representations  Vocab lists and explanations/dictionaries so words can be revised  Position with role model for safety  Task planners	Positioning  Colour coding for more hazardous equipment/possible allergens  Pre-experience/pre-teach  Enlarged texts  Extra support during practical experiments	Adapted equipment eg digital thermometer  Alternative ways of recording  Support with measuring and ensure pupil can use equipment  Adult support with cutting out etc.  Support with organisation of resources	Task planner  Visual representation / what to do in pictures  Visual clips  Well prepared resources/ mind map etc  Peer support  Writing and speaking frames  Use of mnemonics	Ear defenders if needed  Additional equipment if they need to work alone  Drawing and labelling to show understanding  Sentence starters  Support turn taking  Step by step instructions	Step by step instructions with visual clues  Key vocabulary pre-taught and recapped regularly with visual prompts  Key words on display  Definitions for subject words in books-pupils encouraged to look them up.	Revisit prior learning  Pre-teach and post teach  Ways of recording – cloze label diagrams, record, pictures  Knowledge organisers  Knowledge organisers  Sentence starters  Writing and speaking	Revisit prior learning  Ways of recording – cloze label diagrams, record, pictures  Knowledge organisers  Praise  Careful grouping if shared work/practices supportive peer.

		<p>Technology for recording (voice to text)</p> <p>Speak directly to child</p> <p>Peer support (vary the peer)</p> <p>Use adult/peer to support if outside</p>	<p>Writing and speaking frames</p> <p>Support for written tasks or reduced recording</p> <p>Adult used to draw charts etc and child completes</p>	<p>Allow time to answer – at least 10 seconds</p>	<p>Movement breaks</p> <p>Assess risks – eg certain smells or noise sensitivity</p> <p>Oral discussion and questions used for assessment if written work incomplete</p> <p>Writing and speaking frames</p>	<p>Ensure understanding</p> <p>Drawing and labelling to show understanding</p> <p>Writing and speaking frames</p> <p>Allow time to answer</p>	<p>frames</p> <p>Hovering of adults to ensure support is given as soon as needed</p> <p>Oral discussion and questions used for assessment if written work incomplete</p> <p>Closed recording</p> <p>Scaffolded support</p>	<p>Visual timetable so child knows when science takes place and pre-warn of group work</p> <p>Specific roles in group work</p> <p>Pre-empt conversations with parents eg when talking about inheritance, adopted children</p>
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