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Supporting SEND children in Science

Need	Strategies
Communication and Interaction	Help in acquiring, comprehending and using language ■ Use of "word banks", and explanation of key words, visually linking the apparatus to its name. ■ Permanent wall displays including labelled diagrams and matching pictures where possible. ■ Cupboard contents labelled with diagrams and written names. ■ Flashcards or equivalent with common name on one side, scientific on the other. ■ Breaking words down into meanings e.g. photosynthesis. Help in articulation ■ Verbalise new language (e.g. get all the class to speak new words and put them in a "word bank"). ■ Practice speaking and repetition. ■ Enable opportunities to discuss meanings in pairs or contributions to a group. Help in augmentative and alternative means of communication ■ Symbols can help (to a degree) with many students reinforcing the scientific vocabulary. ■ Physical movements symbolising their meanings can reinforce words (e.g. pushing and pulling a desk to show forces, kinetic – running motion with arms, ductile – make it look as though you are stretching out a piece of wire with your hands) Students communicating their ideas and understanding ■ Consider a variety of methods (e.g. brainstorms, mind maps, structured exercises).

	■ Consider open writing or imaginative pieces to encourage the development of language skills (e.g. "a day in the life of a blood cell", "a letter to an alien" or "the digestive journey of a crisp").
	Adopting a multisensory approach ■ Use a wide range of communication methods including speech, images, graphs, charts, pictures, diagrams, cameras, computers and symbols. Particularly useful when giving instructions relating to a practical.
	Concept acquisition and explanation ■ Try not to introduce more than one concept at a time, plan using small steps for progress. Look at the structure of the lesson – starter, main activity then plenary discussion.
	Learning and teaching with words ■ Think about the words you use and ensure that new technical words are introduced and explained.
	Consistency and predictability ■ Once you have found a method that works then stick with it. Some students feel safer if a consistent format is used, particularly for practical work. ■ Have a "safe area" if you have autistic children in the class
	Consult other people available for support and guidance. This includes SENCOs, TAs, speech and language therapists and other external services.
Cognition and Learning	Flexible teaching arrangements ■ Utilising small group work can enable individuals to develop their understanding with some flexibility. ■ Consider suitable approaches to match IEPs.

	Help with processing language, memory and reasoning skills ■ Start with "concrete" items and avoid going into too many abstract concepts. For example, make a bulb work with a battery and wires before considering the theory of electricity, examine household liquids to see if they are acids or alkalis, drop pieces of paper in different shapes before considering air resistance. ■ Focus on small steps so that the students are "guided" in learning (and not random discovery). This reduces anxiety and helps learning. ■ Structure lessons with starter, main and plenary activities. Help with processing language, memory and reasoning skills ■ Information has to be processed before doing an activity. Look carefully at the instructions provided in practicals and ensure it is clear which parts the students must perform, and where they have to write etc. ■ Before letting a class do the practical, ask them to explain in their words what they have to do. ■ Think about the questions you ask. Work with Teaching Assistants (perhaps suggest key questions for support staff to address, since what a student learns often comes from this questioning). Support in the use of technical terms and abstract ideas ■ Have a class science dictionary hanging on the wall compiled in simple language. Encourage its use as part of the lesson. ■ Communicating the meaning of the word will develop an understanding of the concept (e.g. chromatography). Help in understanding ideas, concepts and experiences when information cannot be gained through first hand sensory or physical experiences.

	■ Use a wide range of teaching methods e.g. modelling, role plays and simulations are methods that all teachers utilise to develop concepts. Fully utilise the senses and encourage involvement. ■ Think about the key concept you are trying to introduce and focus on teaching this. Help in organising and coordinating spoken and written English to aid cognition ■ This relates to communicating ideas. Think about how you can effectively use videos, displays and sound tapes. ■ Consider the font used on worksheets and get students to write new words to reinforce vocabulary. Help with sequencing and organisational skills ■ Sequencing can work well with practical instructions (on cards) or in the stages of a process (e.g. the water cycle, rock cycle or a plants lifecycle). Programmes to aid improvement of fine and motor competencies ■ Remember that science practicals provide the opportunity for individuals to develop motor skills. Consider the skills introduced (securing a clamp stand for the first time) and methods to support the development of such skills. ■ We must all learn how to organise and perform experiments. Consider safety aspects.
Social, Emotional and Mental Health Needs	Flexible teaching arrangements ■ Think about the structure of the lesson with distinctive sections (starter, main and plenary activities). Help with development of social competence and emotional maturity ■ ·Those working in science must be particularly aware of safety issues and responsibility. Help in adjusting to school expectations and routines

	■ Give praise and display good work. Investigation work can also be presented as a poster or a powerpoint presentation which may encourage participation in some cases.
	■ Routines can be useful when doing experiments e.g. where to get equipment from, wearing goggles, clearing away.
	Help in acquiring the skills of positive interaction with peers and adults
	■ The choice of compatible working groups (not random groups) and the positioning of equipment for groups can have a large impact on the success of a practical. Too much freedom for movement in a lab can lead to problems, since the rules for the students are not so clear (which equipment can be collected or handed out?, where should you be in the classroom? etc). Specialised behavioural and cognitive approaches
	Use the teaching assistants for support.
	■ Watch out for signs of student frustration and step in quickly. Provision of class and school systems which control difficult behaviours and encourage positive behaviour
	■ Celebrate good work or recognise when an experiment has gone well.
	■ Taking photographs of students working may positively reinforce in some cases.
	■ Whenever possible try to incorporate students' interests into lessons (football for forces and motion, music for sound and energy, pets for classification and adaptations etc).
	■ If a student has a special skill relevant to science try to get them to demonstrate and talk about it, perhaps even video them (e.g. model making, playing the guitar). This recognises their own importance and ability.
	Provision of a safe and supportive environment
	■ Choose relevant motivating tasks to maintain attention and concentration.
	■ Look for individual hints on IEPs.

	■ Safety must always be addressed. ■ Try to provide advice for teaching assistants.
Sensory and/or Physical needs	Flexible teaching arrangements ■ Student groupings should reflect academic, not physical ability. Appropriate seating and lighting ■ With hearing impaired students who rely on lip reading, it is important not to have strong lighting behind a teacher. Adaptations to the physical environment of the school ■ Equipment/resources situated at accessible heights.