Love God, Love others’ ‘Let your light shine’

Strategies for Equality of SEND pupils:

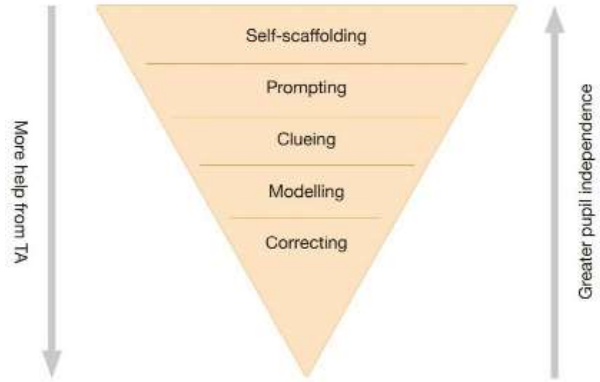
Science

Explicit Instruction: Language	Implications for the teaching of Science:
• Adapt language and communication to the needs of the children, through the use of: signs, symbols, pictures, gestures, modelling, practical demonstration and objects of reference. (Widget) • Where possible, pre-teach key vocabulary (Knowledge organisers)/ • Word questions carefully, avoiding complex vocabulary and sentence structures. • Prepare questions in different styles/levels for different pupils – careful preparation ensures all pupils have opportunities to answer open-ended questions. • Reduce the level of verbal instructions. • Use visual reinforcement of verbal instructions. • Ensure tasks are clearly broken down into stages and sequence, both verbally and visually e.g. use of task planners. • Model and scaffold language e.g. provide children with talk frames. (Language frames tower hamlets).	**Potential Barrier to Learning: Language and Vocabulary** • Recognise that the language of science may be challenging for many pupils – for example: ○ The specific scientific use of everyday words such as ‘weight’, or terms specific to science, such as ‘electrical circuit’. • Some of our children experience the following challenges: speech and language, processing and learning and cognition difficulties and because of this, the points below must be considered: **Quality First Teaching Pedagogy Approaches in Science:** • Plan to teach new language explicitly. E.g. pre-teach. Display new scientific vocabulary on working walls. • Use task planners which map out activities/investigations. • Dual coding e.g. When gathering equipment for an investigation, provide a picture and the corresponding word to prompt pupils. 

Cognitive and Meta-Cognitive Strategies:	Implications for the teaching of Science:
• Teach children to be independent to select resources to support their learning e.g. maths equipment, dictionaries, word mats, pencil grips, overlays etc. • Be aware of how the children in your class learn best and how they best access their learning. • Model and scaffold language e.g. providing children with talk frames. • Provide targeted support during parts of the lessons. • Regular use of different methods of recording. • Make explicit links between similar activities and the child's previous understanding and competency. • Excuse tasks which are not part of the learning objective e.g. in a task where children record why the River Nile was useful for the survival of the Egyptians, children would not be expected to draw the River Nile but should be provided with the relevant 'tools' to show their understanding, for example a more detailed map which has already been prepared for them. • When teaching, incorporate visual, tactile, auditory and kinaesthetic approaches, such as supporting teacher talk with visual aids; using subtitled or audio-described film/video for recording. • Ensure alternatives to written recording are offered, e.g. drawing, scribing, word processing, mind maps, digital images, video, voice recording.	**Potential Barrier to Learning: Learning and Cognition** • We recognise that some children, particularly those with an additional learning need, struggle to process, retain and learn new information. In school, we find that key component knowledge has not always been stored successfully in the children's long term memory, which means that schemata and the ability to link new information to what has already been learned, is not as easy task for our children. **Quality First Teaching Pedagogy Approaches in Science:** • **See Science schemes of work which will identify the essential component learning for children with SEND.** • Build on pupils' preferred learning styles when explaining concepts, by using different media − e.g. diagrams, stories, acting out processes, computer simulations, concept mapping, etc. • Use of scientific word mats with images. • Simple audio recorders/IPADS (Use of Pic Collage) can be used instead of written notes during investigations or field trips. • Identify 'risk points' in the lesson, e.g. for pupils with noise or smell sensitivity. • Whether pupils need support in using science equipment, especially for tasks that require a high level of skill or accuracy. • Build on investigations, using careful discussions that help pupils understand and use scientific vocabulary and help them to analyse and understand what they have observed. • In a plenary, after the class has completed an investigation, allow pupils time to discuss the answers to questions in pairs, before asking for verbal responses.

• Promote security and aid organisation e.g. ensure 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.	• Build up a chart (using a wallchart or other space) to show the focus of each lesson and how successive lesson topics link together to develop understanding of an area of science work. This could include symbols, images or objects • For example, ask pupils which key scientific words, concepts or processes were difficult and why, and how this could be improved. Ask them which parts of a task slowed them down and what could be done to make things go more efficiently − e.g. using ICT to log temperature continuously rather than taking frequent readings manually • Check pupils' understanding by inviting them to reformulate explanations in their own words or in other ways. For example, after an investigation of floating and sinking, ask pupils to explain what happened using diagrams, as well as explaining it orally or in writing. • Identify pupils' existing science knowledge and prior experience − e.g. using posters, concept maps or mind-mapping software. • Use real objects as a starting point for developing the concepts and the language needed to describe, discuss and explain what pupils have observed or experienced. • Use a digital camera to capture each stage of an investigation, or important findings on a field trip, for future reference. Images can also be used to build a visual record. • Use mnemonics to help pupils remember things like the order of the colours in a rainbow or the relative distance of the planets from Earth.
Scaffolding:	**Implications for the teaching of Science:**
• Ensure that support comes in a variety of ways: visual, verbal, or written etc.	**Potential Barrier to Learning: Independently access learning** • Children may require the use of scaffolding for many reasons. Some of these reasons may include:

- Use writing frames, partially completed examples, knowledge organisers, prompts and sentence starters.
- Remind children of what equipment is needed for each lesson and ensure classroom routines are consistent, clear and embedded.
- Provide scaffolding for discussion of texts: promoting prediction, questioning, clarification and summarising.
- Scaffold questions in the following ways:



- Scaffold writing and recording using colourful semantics.

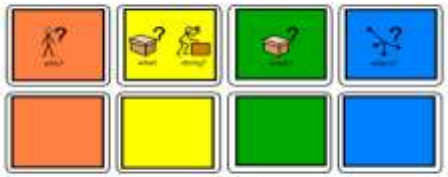
  - Competency concerns for reading and writing
  - Difficulties in sequencing information
  - Poor working memory
  - Speech and Language difficulties
  - EAL

Quality First Teaching Pedagogy Approaches in Science:

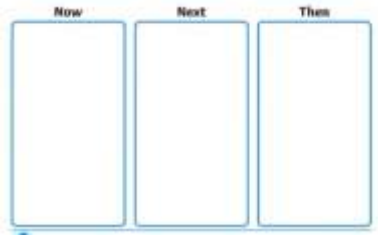
- Prepare diagrams for the student to label.
- Allow the use of templates.
- Provide part-prepared hand-outs or photocopied sheets to reduce unnecessary writing.

When organising a practical session consider:

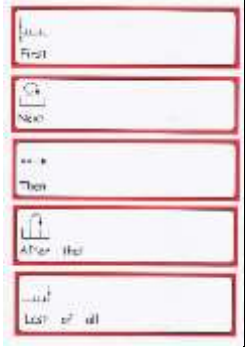
- Use templates to help drawing tables and graphs
- Ask them to talk through what graphs and tables are showing
- Task plans - provide instructions for a task visually using the headings: what do I need? What do I need to do? What happens after that? This can be also be used as a scaffold to support homework tasks. The student progressively is given more responsibility for creating the plan.
- A visual framework can be used as a consistent guide for planning an investigation in science. Headings of what am I finding out? What I need? What will I do? What to look for? What happened? Why did it happen? Each with picture support will simplify the method, results and conclusion format for many students.
- A card listing ideas, e.g. for 'Five things to do if you are stuck with your work'
- Use of scientific vocabulary word mats.



- Use task planners to scaffold the children's learning or next step in a task.



- **Consider ways to use scaffolds in resources e.g.:**
  - Consider ways of achieving the same learning outcome but in a way that is appropriate for the learner.
  - Scaffolds such as cloze procedure tasks
  - Provide children with a sentence opener, instead of asking children to write a bigger section of text.
  - Use of technology rather than a 'worksheet'.
  - Get the children to 'say it' or 'draw it', rather than 'write it'.
  - 'I do…we do….you do'



Flexible Grouping: Social and Emotional needs

- Manageable mixed-ability grouping or pairing is the norm, except when carefully planned for a particular purpose.
- Ensure that 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.

Implications for the teaching of Science:

Potential Barrier to Learning: Social and emotional difficulties

- Some children may struggle to work as part of a larger group, a smaller group or even independently. Careful consideration of individual needs must be given when planning learning tasks.

Quality First Teaching Pedagogy Approaches in Science:

• Be aware that 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 pupils to take part. • Consider assigning pupils to specific roles (e.g. chair, writer, reporter, and observer) which gives all pupils something to do and keeps them focused. • Consider the needs of children with ASD who may prefer to work alone.	• For some pupils, e.g. those on the autistic spectrum, developing ideas with others can be challenging. Pairings and groupings need to be sensitive to this. • Allow additional time for task completion. This may need to be considered when grouping children. • Set achievable expectations e.g. be aware that some children are not able to retain complex instructions and activities but may be guided through the activity, with support from their peers.
Using Technology:	**Implications for the teaching of Science:**
• Ensure that ICT is used to support teaching and learning. • Utilise accessibility features to include pupils with SEN and/or disabilities, as appropriate, e.g.: 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	**Potential Barrier to Learning:** • Some children may not be competent readers and writers; they may also struggle to verbalise their ideas. Children may have poor co-ordination, may be dyslexic or have speech and language issues. As a result of their learning difficulties, they may suffer from poor self-esteem. • However, remember that sometimes ICT can add an extra barrier to learning, because it can be too complex, or pupils can be

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).
- Where appropriate consider the contrast between background and text.
- Consider the use of speech to text software.
- Consider that pupils with poor motor control may gain confidence and achieve success through writing/drawing on the computer.
- Be aware that predictive text can encourage pupils to use a more extensive vocabulary and attempt 'difficult' spellings. It can be enhanced by using subject organisers.

distracted by all the different possibilities of adding graphics, sound, animation etc.

Quality First Teaching Pedagogy Approaches in Science:

- ICT can be used to make science lessons more accessible for all pupils. Pic collage can be used to minimise the amount of writing and can include photos.

ICT can also be used to:

- Capture images and processes and replay them at different speeds and magnifications, and with particular image characteristics – e.g. 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 using ICT.
- Present work in a variety of formats to a high standard
- Extend the range of the senses and make difficult-to-see processes visible

PROTECTED CHARACTERISTICS:

Consideration also needs to be made for the wider needs of children, taking into account race, gender, sex, disability, religions and beliefs, socio-economic backgrounds, language and accent, and intersectionality.

Personalised Curriculum:

As far as possible, as children must access the relevant curriculum for their age range. However, there may be instance where this is not appropriate to the needs of the child and a more personalised curriculum may need to be put in place. Ultimately, it is the class teacher's role to differentiate appropriately for the children in their care.