

Literacy in science

Main messages from the unit

There are four important aspects to literacy in science – words, reading, writing and talk.

Words in science

Science is rich in specialised words, many of which have an everyday meaning as well as a scientific meaning. Improving pupils' spelling and understanding of these words will improve their understanding of science.

The use of 'word roots' helps to develop an understanding of the scientific meaning of the word.

The taxonomy of words (words that describe objects, processes and concepts) can be used to identify those words which are 'key' to the communication of ideas and understanding.

Identify key words with care, matching your list to the needs of your pupils.

Explore new words together, consider their structure, word roots and correct meaning.

Provide opportunities for pupils to practise using key words during class discussion or during question-and-answer sessions.

Review words regularly (little and often).

Reading in science

Reading in science should be a demanding activity.

Supporting pupils in reading and offering them ways to access text is better than reducing the amount and quality of their reading.

Tell pupils how to read (continuous reading; close reading; skimming; scanning) and why.

Make use of a range of DARTs (directed activities related to text) where pupils are actively engaged with the text and are clear about why they are reading and what they should gain from the experience.

Develop the use of a range of texts related to particular topics and purposes.

Shared reading is a good way to introduce new or more difficult texts, especially those that contain a lot of new, specialised vocabulary.

Writing in science

Research shows that, on average, pupils spend about a third of their time writing in science lessons. It is important to ensure that what we ask pupils to write helps them to learn science.

Writing supports learning in science when:

- the purpose is clear;
- pupils are challenged to think and make decisions about their writing;
- the writing helps pupils to organise their thinking;
- pupils are asked to write for a variety of purposes and audiences;
- the writing is well chosen and supports the objective of the lesson.

Copying notes for 'revision' is not a very effective use of time; copying does not promote learning and understanding.

There are six main types of writing (text types) which are important in science. These can all be taught using the strategy for teaching writing outlined in section 2 of the *Literacy across the curriculum* folder.

Talk in science

Pupils need opportunities to describe, explain and justify their understanding in science lessons. They need opportunities to 'think aloud', discussing and exploring ideas with each other.

Where talk is modelled well, it helps pupils to write – it gives them a voice into their writing.

Discussion needs to be organised to be effective. It should be planned and have clear, explicit and useful outcomes. It should engage all pupils and lead to some other task, such as writing or practical work.

Discussion is often used at the beginnings and ends of lessons. Oral starters can engage and motivate pupils and develop their scientific language very effectively.

We should expect pupils to make progress with their science talk.

Small-group discussion can take many forms and encourages pupils to work together in different groups to reach predetermined outcomes. This widens their learning experience and helps to develop their confidence.

Implications for the department

The priority the department has given to developing literacy in science will be reflected in the action points identified in the departmental action plan. A number of actions which could be taken by individual teachers, or the department as a whole, are listed below.

For the department

- Review the scheme of work for science to ensure appropriate opportunities are provided for reading, writing, talk and the introduction and use of key words.
- Check whether these opportunities allow for progression as suggested in the unit.
- Use the discussion sheets to promote debate about the purposes of writing in science.

Consider how you will evaluate the effectiveness of any changes you make.

For individual teachers

Consider a future topic:

- Review the key word list in the light of the taxonomy provided (names, processes, concepts).
- Select one of the suggested techniques (from words, reading, writing and/or talk) and integrate it into your teaching of that topic.
- How will you evaluate how effective the change in teaching has been?

